Rs. 30.00
ISSN-0566-2257

UNIVERSITY NEWS

A Weekly Journal of Higher Education

Association of Indian Universities
Vol. 59 • No. 47 • November 22-28, 2021

Special Issue

on

REALIZING SDGs THROUGH HEIs FOR ENSURING EQUALITY AND SUSTAINABLE SOCIETY

on the occasion of

AIU NORTH ZONE VICE CHANCELLORS' MEET–2021- 2022

at

SHOOLINI UNIVERSITY, SOLAN

(November 26-27, 2021)

#Let'sBeatCoronaTogether

UNIVERSITIES HANDBOOK – 34th EDITION (2018)

(Set of Two Volumes) : (ISBN 81-7520-147-9)

PRICE : Rs. 8000/- (+ Postage/Courier Charge Rs. 400/-)

The **34th Edition of Universities Handbook** is a compendium that contains latest information on 402 Universities level institutions of AIU Members including 56 Technical, 41 Agriculture, 24 Health Sciences, 13 Law, 03 Journalism, 15 Open Universities and Five Associate Members : Kathmandu University, Nepal; University of Mauritius, Mauritius; Royal University of Bhutan; Middle East University, United Arab Emirates and Semey State Medical University, Semey have also been included in this Edition.

The Handbook gives information relating to : Courses of Studies; Minimum Requirements for admission to each course; Duration and the subjects of study for each course; Library and Research Facilities; Scholarship and Fellowships; Academic year – date for admission and the approximate dates of examinations; Names of Faculties; Deans of Faculties, Names of Professors and Readers/Associate Professors with their specialization (department-wise); Staff, Officers and Name of Affiliated Constituent Colleges together with the names of Principals and Heads of Postgraduate Departments in the Colleges.

The Handbook also includes an introductory chapter giving an overview of the University System in India.

The payable amount is required to be remitted **in advance** by any of the following modes of payments :

A. **CASH DEPOSIT**: The required amount could be remitted directly to our Saving Account in any branches of Canara Bank from places other than Delhi & NCR Area.

B. **DEMAND DRAFT ONLY** : Such instrument is required to be prepared be in the name of **"ASSOCIATION OF INDIAN UNIVERSITIES" (payable at New Delhi), preferably from the Nationalised Banks ONLY.**

C. **CHEQUES OF ANY KIND ARE NOT ACCEPTABLE.**

D. The **requisite amount could also be transferred for its direct remittance to our Saving Account via NEFT/RTGS using the following details :**

1	**Bank Account No.**	**0158101000975 (Saving)**
2	Beneficiary Name	**Association of Indian Universities**
3	Address	16, Comrade Indrajit Gupta Marg New Delhi – 110 002
4	Bank & Branch Name	CANARA BANK, DDU MARG
5	Bank's Address	"URDU GHAR" 212, Deen Dayal Upadhayaya Marg New Delhi – 110 002
6	MICR Code	110015005
7	Branch Code	0158
8	IFSC Code	CNRB 0000158
9	PAN NO.	AAATA0407F
10	Contact No.& E-mail ID	(011) 23230059 Extn. 208/213 **(M)** 09818621761 **E-Mail ID : publicationsales@aiu.ac.in**

NOTE : In case of **Cash Deposit** and **Transfer via NEFT/RTGS/ECS**, the proof of payment in the form **Counterfoil of the Cash Deposit Slip** and the **NEFT UTR Number** may be communicated IMMEDIATELY BY MAIL for linking and crediting of the same against the respective Order/ Bill, please.

- **THE HANDBOOK WILL BE AVAILBLE ON CASH BASIS FROM THE SALES COUNTER OF THIS OFFICE.**

Please send Pre-paid Order to :

The Under Secretary

Publication & Sales Division

ASSOCIATION OF INDIAN UNIVERSITIES

16, Comrade Indrajit Gupta Marg, New Delhi 110 002

Phones: 23230059 (Extn. 208/213), Fax 91-011-23232131

UNIVERSITY NEWS

A Weekly Journal of Higher Education

Vol. 59 No. 47 November 22-28, 2021

Special Issue

on

REALIZING SDGs THROUGH HEIs FOR ENSURING EQUALITY AND SUSTAINABLE SOCIETY

on the occasion of

AIU NORTH ZONE VICE CHANCELLORS' MEET—2021-2022

at

SHOOLINI UNIVERSITY, SOLAN

(November 26-27, 2021)

Table of Contents

Editorial
– *S Rama Devi Pani* 5

Conceptualising the North Zone Vice Chancellors' Meet on Realizing Sustainable Development Goals through Higher Education Institutions 7
– *Pankaj Mittal* and *S Rama Devi Pani*

A Profile: Shoolini University, Solan 14

1. Realizing Sustainable Development Goals for All: Societal Contribution of Institutions of Higher Education
   – *Prem Kumar Kalra* 18
2. Higher Education for a Sustainable Society
   – *PB Sharma* 26
3. Strengthening the Sustainability in Higher Education Institutions: The Role of Jain Vishva Bharati Institute
   – *B R Dugar* 29
4. Sustainable Development Goals for Higher Education: Cultivating Humanity
   – *Hema Raghavan* 33
5. Contributions of Higher Education Institutions in Achieving Gender Equality
   – *Kesari Singh and William Asamoah-Appiah* 37
6. Footprints of Higher Education in Reducing Inequality: Present Status and Way Forward
   – *Kuldeep Chand Rojhe and Amar Rao* 42
7. Sustainable Cities and Townships : A Strategy for Effective Implementation of Sustainable Development Goal -11 by Higher Education Institutions
   – *Shyam Singh Chandel and Rahul Chandel* 49
8. Responsible Consumption and Production: Potential of E-waste in Sustainable Road Pavement Construction
   – *M S Thakur, Navsal Kumar, Arunava Poddar and K S Nagial* 56
9. Challenges in Needo-education for Equality and Sustainable Society
   – *M M Goel* 62
10. Realising Sustainable Development Goals through Life Skills : An Accelerator of Women Empowerment
    – *Poonam Tiwari and Anjali Bajpai* 65
11. Inclusive Education: Policy Provisions and Challenges Ahead
    – *Sunita K Sharma and Eisha Kannadi* 70
12. Inequality in India: A Review of Levels and Trends
    – *Himanshu* 79
13. Decade of Action: Taking Sustainable Development Goals from Global to Local
    – *NITI Aayog* 98

Convocation Address

PES University, Bengaluru 108

Book Review

Documenting the Pandemic
– *Jyotirmoy Dutta* 110

Campus News 111

Theses of the Month (Social Sciences) 115

Advertisement 120

EDITORIAL

At the start of creation, there was dark without origin
At the breaking of creation, there is fire without end

Ravindranath Tagore

The beautiful blue-green planet Earth which is our home now started its journey 17 billion years ago out of void, i.e., nothingness, *ex nihilo*. Beauty of Earth is the true gift of nature. Earth free from pollution and diseases, and endowed with oceans lakes, rivers, mountains, forests, clear blue sky and living creatures that roamed around the land, water and sky is a thing of joy which is slowly parting. In fact, it took many years for the earth to become a planet which accommodated life in many forms including the human form which is blessed with a thinking mind. It is this thinking mind that is pushing the life on this earth to a stage of uncertainty. There is a widespread feeling that the Earth is in precarious state and needs intervention to make it a planet livable for *today, tomorrow and forever.*

This intuitive sense of a threat to human survival lies behind the power of the term Sustainable Development. The mission now is to steward the use of earth's resources in a manner that protects natural ecosystems, supports local industry, improves public health and educates for aiming to be at the forefront of sustainability. In view of this, the United Nations (UN) had set 17 sustainable development goals and 169 targets to achieved by 2030. These Sustainable Development Goals also known as *Global Goals* are a call from the United Nations to all countries around the world to address the great challenges that the humanity faces and to ensure that every living being has the same opportunity to live a better life on our planet without compromising on essential requirements. In view of the interlinkages between the social, economic and environmental dimensions of sustainable development as well as the linkage between the 17 goals themselves, it is essential to achieve all the goals collectively at the same time in a mission mode instead of w o r k i n g on them one by one. Achieving SDGs require cooperation, contribution and effort of every single individual on the Planet. However, it is not easy to comprehend the wide range of complex social, economic, and environmental challenges and translate them into tangible action points. This will require guidance and handholding from the intelligentsia of the society. That is where, the role of Higher Education Institutions become prominent.

Higher Education Institutions (HEIs) have the responsibility to aid society in its development and in meeting new challenges as they come along. As educational establishments, their function is not only to induce, sensitise and train their own students towards SDGs but also to create awareness in local community. The HEIs should produce able, self-directed learners that are independent and confident and contribute to the society through civic duties. Time and again, the HEIs have displayed their potential and involvement in solving the crucial challenges and supporting the society. During the COVID-19 crisis, the HEIs have demonstrated their expertise as well as indispensability. Indian HEIs are no exception. It is with this dispensation that the Association of Indian Universities, as a flagship body of Higher Education Institutions in India assumed the task of reinforcing and propelling the Indian HEIs towards realizing the Sustainable Development Goals.

This Special Issue of the University News is being brought out on the occasion of North Zone Vice Chancellors' Meet of the AIU being hosted by Shoolini University, Solan on the theme of great national and international consequence '*Realizing SDGs through HEIs for Ensuring Equality and Sustainable Society.* In this Special Issue, articles touching upon the SDGs 5, 10,11, and 12 are presented specifically. These

articles will supplement the outcome of the Vice Chancellors' Meet to create a roadmap for the higher education institutions to work towards the realization of these SDGs. This will also contribute to the Government of India in its virtuous initiative of supporting the United Nations in realizing the 2030 Agenda.

We are now left with less than a decade to attain the UN-SDG Agenda 2030. By adopting measures of sustainable development, we have to protect the Planet Earth. Sustainable Development is not just a concept at this point, it is trigger for action.

Let's march past!

Sistla Rama Devi Pani

Conceptualising the North Zone Vice Chancellors' Meet on Realizing Sustainable Development Goals through Higher Education Institutions

Pankaj Mittal* and Sistla Rama Devi Pani**

Since the dawn of the industrial era, the natural resources on this planet are being rampantly exploited in the name of social, economic and industrial developments without leaving scope for the earth to restore its natural state. Nature is being continuously exploited in order to meet the material needs of the people and to make money. In the last three to four decades, there has been a dramatic acceleration in this exploitation due to globalization, competition and market demand for the amenities required for an ultra-modern, comfortable and luxurious life style. But these developments are taking place at the cost of depletion of the natural resources which are essential for sustaining life on this planet. If the speed of consuming and exhausting the natural resources remains the same, our coming generations will stay deprived of the essentials required for life. There will be existential crisis and threat to planet itself. In view of this, the concepts of sustainability and sustainable development are being promulgated at international level by the UNESCO. Sustainability, in this context is the development that fulfils the needs of the present generation while guaranteeing the balance between social wellbeing, economic growth and environmental protection so that the needs and well-being of the future generations are not compromised. The official definition of Sustainable Development was derived for the first time in 1987 in the Brundtland Report, also called Our Common Future', published by the World Commission on Environment and Development (WCED). According to the Report, Sustainable Development is defined as the development that –meets the needs of the present without compromising the ability of future generations to meet their own needs. While warning on the negative environmental consequences of economic growth and globalisation, the Report also described how it could be achieved.

Subsequently in the year 2000, in a three-day Millennium Summit of world leaders held in New York at the headquarters of the United Nations, the UN General Assembly proclaimed the Millennium Declaration from where the millennium development goals originated**.** The eight Millennium Development Goals (MDGs) mainly focused on reducing extreme poverty by 2015, among other things. On seeing the impact of MDGs which were targeted only till 2015, and also in view of urgent need to take care of the planet Earth, in June 2012, the United Nations Conference on Sustainable Development was held at (Rio+20) in Rio de Janeiro, Brazil where the Member States adopted the document *'The Future We Want'* in which they decided, *inter alia,* to launch a process to develop a set of Sustainable Development Goals (SDGs) by upgrading the MDGs and to establish the UN High-level Political Forum on Sustainable Development. In January 2015, the General Assembly began the negotiation process on the post-2015 and in the UN Sustainable Development Summit held in May, 2015 it came out with 2030 Agenda for Sustainable Development with 17 SDGs at its core. The 17 goals of the new agenda of the UN are --- Goal 1: End poverty in all its forms; Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture; Goal 3: Ensure healthy lives and promote well-being for all at all ages; Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all; Goal 5: Achieve gender equality and empower all women and girls; Goal 6: Ensure availability and sustainable management of water and sanitation for all; Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all; Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation; Goal 10: Reduce inequality within and among countries; Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable; Goal 12: Ensure sustainable consumption and production patterns; Goal 13: Take urgent action to combat climate change and its impacts; Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development;

* *Secretary General, Association of Indian Universities, New Delhi-110002. E-mail: sgoffice@aiu.ac.in*

***Editor, University News, Association of Indian Universities, New Delhi-110002. E-mail:rama.pani2013@gmail.com/ ramapani.universitynews@gmail.com*

Goal 15: Protect, restore and promote sustainable use of terrestrial; ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss; Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels; Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

In India, National Institution for Transforming India (NITI) Aayog has been entrusted with the task of coordinating the SDGs. The Ministry of Statistics and Programme Implementation (MoSPI) is engaged in the process of developing national indicators for the SDGs. Many of the Government's flagship programmes such as *Swachh Bharat*, *Make in India, Startup India, Skill India, Digital India,* etc., provide the ladder to climb the steps in realizing SDGs. State and local governments have a very vital role to play in visioning, planning, budgeting, and developing implementation and monitoring systems for the SDGs.

Due to their unique position in the society, Higher Education Institutions (HEIs) have a critical role to play in the achievement of the SDGs. In fact, realizing the SDGs without the involvement of higher education sector is quite an impossible task. The role of HEIs is thus, very crucial if we have to realize all the SDGs. HEIs have a direct role in the components of education and research towards realising the SDGs. HEIs can provide the best research-based knowledge and opportune platforms for much needed partnerships. But there are several other known and unknown ways in which the universities can contribute in realizing each one of the SDGs which need to be crystallized collectively. In view of significant role of HEIs, the Times Higher Education has initiated ranking of universities on the basis of SDGs. In the impact ranking of Times Higher Education which assesses universities with reference to their contribution in realizing UN SDGs, only 2 public universities and 9 private universities could find place.

It is also a matter of concern that India is placed at 120th rank in United Nations Sustainable Development Report-2021. This calls for an urgent action from all sectors of the country. In India, there is a lot of tacit contribution of HEIs towards realizing SDGs but there is no data on classified efforts of HEIs on the same. This compels us to think whether the Indian Higher Education Institutions are responsible enough in their approach towards inculcating sustainability. Most importantly, it makes us ponder why we are not able to tap the potential of HEIs in achieving SDGs.

Association of Indian Universities (AIU) as an apex representative body of higher education plays a significant flagship role in motivating and reinforcing the higher education institutions towards the issues of common cause for the society. As research-based policy advise institution, it has always been supporting the Government in various activities related to higher education in general, and youth in particular. In case of working towards meeting the United Nations Agenda 2030 for Sustainable Development also, AIU has initiated its forwards march and is now instigating the universities to join this righteous initiative. It also aims to support the Government in the process of realizing SDGs. As a preliminary step in this process AIU, has set-out to organize all the Zonal and National Vice Chancellors Conferences in 2021-22 on the themes based on 'Realising Sustainable Development Goals through Higher Education Institutions'. This is in view of apprising the Indian HEIs about their role, and to reinforce them to take up the task of accomplishing SDGs as their prime responsibility. Accordingly, the Annual Vice Chancellors' Meet of AIU in 2021-22 is on the theme *Realising Sustainable Development Goals through Higher Education Institutions'* which will encompass all the 17 SDGs for discussion. At zonal level, a set of 4 closely related SDGs will be deliberated in each of the Zonal Vice Chancellors' Meets. On the basis of the recommendations of the Zonal and National Vice Chancellors' Meets, a Roadmap for HEIs 'Action Plan on realizing SDGs*'* and a policy document for the Government entitled *' Realizing SDGs through HEIs'* is proposed This preliminary step is quite crucial to gear the HEIs towards this most urgent, important and inevitable task. The outcome of these Meets will help in providing input to the Government in its efforts to accomplish these goals in our country.

The first Vice Chancellors' Meet in the series is the North Zone Vice Chancellors' Meet which is being hosted by Shoolini University, Solan, Himachal Pradesh during November 26-27, 2021. It is on a theme of great national and international consequence ie. '*Realizing SDGs through HEIs for Ensuring Equality and Sustainable Society'* in which SDGs 5, 10,11, and 12 will be taken up. The questions that the sessions in the Meet seek to address are:

i. What is the status of realization of the concerned SDG in India?

ii. What are the reasons for not being able to achieve the concerned SDG to its fullest potential?

iii. What are the strategies which HEIs can adopt to contribute in realizing the concerned SDG?

iv. Recommendations for the Government for speedy implementation of SDGs.

Apart from these fundamental questions, the following questions are proposed to guide the discussions during the conference:

i. What is the assessment of international agencies on India's performance on this Goal, and likely cooperation available from other countries to the HEIs in India for addressing the issues involved in achieving this goal?

ii. What are the Best Practices and Bottlenecks of HEIs in other countries which have performed well in achieving this goal? What are the takeaways for Indian HEIs from them?

iii. What is the cause and effect of accomplishing this SDG in India on achievement of SDGs in global context? How Indian HEIs can support HEIs of other countries in achieving this goal?

iv. How can Indian HEIs contribute substantially towards achievement of this SDG?

The questions pertaining Government and Policy Makers are:

i. What is the progress of India in the global context in achieving this SDG? What are the various social, financial, administrative, governance and other dimensions of addressing the problems involved in achieving this SDG?

ii. What are various challenges and bottlenecks for the country in achieving this goal and what are the specific ways through which HEIs can support the Government in accomplishing this SDG?

iii. What are the administrative, financial and other ways of support that the government can provide to HEIs in their process of achieving this SDG?

iv. How can the Government facilitate national and international collaborations among HEIs to accomplish this Goal?

The questions pertaining Academics and Practitioners are:

i. What are the specific ways through which HEIs can support the Indian Government and the United Nations in accomplishing this SDG? Are there any exemplary cases?

ii. What are the various social, financial, administrative, governance and other dimensions of addressing the problems involved in achieving this SDG? What are the structural barriers/ challenges for HEIs in achieving this SDG?

iii. How can HEIs mainstream this SDG in all key strategies, policies, curriculum, governance, operational and administrative aspects in the HEIs and embed sustainable development component in teaching, research and community engagement?

iv. In what ways can HEIs create capacity, generate skills and produce suitable manpower required to achieve this goal?

v. How can HEIs create quality and resilient systems which can sustain crisis situations like COVID-19?

vi. What are the areas of common interests of different universities which can lead to linkages and collaborations and how can the HEIs engage stakeholders and form partnerships with local authorities, private players, civil society and philanthropic organizations, among others, for strengthening the efforts towards achieving this SDG?

vii. What is the support which HEIs need from Government and international organizations, particularly, the United Nations to accomplish this goal?

As mentioned above, the Meet will have four sessions. The first session is on Contribution of HEIs in achieving gender equality and empower all women and girls' based on SDG-5; the second session is on contribution of HEIs in reducing inequality within and among the countries' (SDG-10); third session is on Contribution of HEIs in making cities and human settlements inclusive, safe, resilient, and sustainable (SDG-11); fourth session is on SDG -12: ie., Contribution of HEIs in ensuring sustainable consumption and production patterns (SDG-12) .

Contribution of HEIs in Achieving Gender Equality and Empower All Women and Girls

Sustainable Development Goal 5 is about creating Gender Equality. It says, Achieve Gender Equality and Empower All Women and Girls'. Gender inequality constitutes to be one of the persistent and widespread forms of injustice prevailing across the world. Long-standing inter-generational cycles of gender discrimination towards almost half of Indian population is impacting our present and will have repercussions for the future as well. Gender equality is not only a fundamental human right of women, but is an essential requirement for development of the society. It is a necessary foundation for a peaceful, prosperous and sustainable world. The multiplier effects of it will impact all the dimensions of development.

Since 2000, UNDP together with other UN partners and the rest of the global community has made gender equality central to its work. The outcome is remarkable as the number of girls going to school increased, fewer girls are forced into early marriage, more women are coming into positions of leadership, and laws are being reformed to advance gender equality. In India too, all these developments are visible to some extent but many challenges still remain. In education, the mean years of schooling for girls is 4.7 years whereas for boys it is 8.2 years. We have achieved parity at the primary education level and is on track to achieve it at all education levels. Though the proportion of seats in the Lok Sabha held by women had reached 11% and in Panchayati Raj Institutions it has gone up to 46%, women continue to be underrepresented in political leadership. Challenges of violence against women are still continuing in large numbers. 1 in 5 women and girls between the ages of 15 and 49 report experiencing physical or sexual violence by an intimate partner within a 12-month period. In higher education, though there is a rise in enrolment of women, the upward mobility of women in employment is very low. Leave aside highly technical professions, even in the university sector, the studies indicate that the women are less than one fourth in the top levels and women Vice Chancellors were less than 3% in the country in 2015 as per University Grants Commission. Now also, in 2021, the situation doesn't appear to have changed much.

In first-ever SDG Gender Index which measured progress made in achieving gender commitments against internationally set targets, India was ranked 95th out of a total 129 countries. Recently. the World Economic Forum has also come up with a startling news that India has slipped into 112th Rank in Gender Gap Index. India's ranking is lower than China (106th), Sri Lanka (102nd), Nepal, (101st) and Bangladesh (50th). It is a matter of concern that we are lagging much behind our smaller neighbors. The Government of India has initiated schemes like *Beti Bachao Beti Padhao* aiming at equal opportunity and education for all girls in India and there are couple of other schemes. HEIs also have a lot to do in this area.

In the session on Contribution of HEIs in achieving gender equality and empower all women and girls', there will be deliberations on : strategies to end all forms of discrimination against women and girls; strategies to ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life; creating sound policies and enforceable legislation for the promotion of gender equality and the empowerment of women and girls at all levels; gender violence, gender sensitization, gender budgeting, gender audit, sexual harassment at work place and the effective ways to deal with it; POSH Act etc. Supreme Court of India has come out with a landmark verdict which declared transgenders as the third gender', affirmed that the fundamental rights granted under the constitution of India will be equally applicable to them, and gave them the right to self-identification of their gender as male, female or third gender. In the session, there will be deliberations on rights of Transgender as well. The Session will come out with Policy inputs for the Government; Action Points for HEIs and other stakeholders.

Contribution of HEIs in Reducing Inequality Within and Among the Countries

Sustainable Development Goal 10 is about *reducing inequality within and among the countries*. Inequality which deprives people of opportunity, and subjects them to conditions of extreme poverty and thus it is a roadblock to progress. Inequalities are based on many factors viz income, sex, disability, race, ethnicity, origin, religion or economic status etc. and there is growing consensus that economic growth is not sufficient to reduce poverty if it is not inclusive and if it does not involve the three dimensions of sustainable development – economic, social and environmental. Rising inequalities adversely impact

human development. According to the inequality-adjusted Human Development Index (HDI), Sub-Saharan Africa loses 33% of its HDI to inequality and South Asia by 25%.

Indian society is characterized by a high degree of structural inequalities, based on the institutions of caste hierarchy, ethnic identity, religious affiliation, gender, and economic status. Victims discriminated on the basis of caste hierarchy and ethnic identity suffered from isolation, exclusion, neglect and underdevelopment, denial of right to resources around which they live, and displacement induced by economic development. The Indian Government's approach towards these groups consisted of legal and other safeguards against discrimination; affirmative action measures in Government Institutions; general developmental and empowerment measures. Indian Government is also taking empowerment measures to eliminate Gender-based inequality and launching different schemes for reducing poverty. The Government of India's three pronged *Jan Dhan-Aadhaar*-Mobile programmes are aimed at a comprehensive strategy of inclusion, financial empowerment and social security. Despite these measures, inequality is a persistent problem in India. Inequality among countries is also a persistent cause for concern.

COVID 19 has further contributed towards these inequalities hitting the poorest and most vulnerable communities the hardest. It has put a spotlight on the economic inequalities and fragile social safety nets that leave vulnerable communities to bear the brunt of the crisis. At the same time, social, political and economic inequalities have amplified the impacts of the pandemic.

Sustainable Development Goal 10 presents following tasks to the country: ensure that the income growth of the bottom 40% of their population is higher than the national average by the year 2030; to reduce inequality, policies should be universally applicable, paying attention to the needs of disadvantaged and marginalised populations; Inclusion has to be promoted actively, in social as well as political spheres, for all ages, sexes, races, religions and ethnicities to create conditions of equity within countries; to create a fairer international system globally, global financial markets will require improved regulation, and developing countries will have to have a greater voice in international decision making.

In the Session on 'SDG-10-- Reducing Inequality Within and Among the Countries 'there will be deliberations on strategies to reduce inequalities in India. The conference is also aimed at understanding sources, magnitude over time and the impact of discrimination against marginalized groups in perpetuating inequality. Persistent inequalities are putting the country at risk of economics and political instability. There will be discussions on how can this be prevented and these disadvantages alleviated. Have the anti-discrimination and affirmative action policies delivered their stated goals? If not, how can they be improved? Do they correctly identify and target the individuals that need it the most? There are debates that affirmative actions are not moral. Should affirmative actions continue? What could be the Policy inputs for the Government. What could be the Action Points for HEIs and other stakeholders. What will be the strategies adopted by HEIs to realize SDG 10?

Contribution of HEIs in Making Cities and Human Settlements Inclusive, Safe, Resilient, and Sustainable

SDG-11 is making cities and human settlements inclusive, safe, resilient, and sustainable. Present world is characterized by rapid urbanization and fast development. Most cities are growing quickly and it is projected that by 2050, 6.5 billion people i.e two-thirds of the projected world population, will live in cities. Urban living offers many benefits to residents including more job opportunities and higher incomes, and to businesses including lower input costs, greater collaboration and innovation opportunities etc. But urbanization, especially if it is unplanned and rapid bring more challenges than advantages. Cities and metropolitan areas are powerhouses of economic growth—contributing about 60 per cent of global GDP. However, they also account for about 70 per cent of global carbon emissions and over 60 per cent of natural resource use. Rapid urbanization is resulting in a growing number of slum dwellers, inadequate and overburdened infrastructure and services (such as waste collection and water and sanitation systems, roads and transport), worsening air pollution.

India is one of the fastest growing economies in the world and thus, it is one of the rapid urbanizing countries also. Between 2001 and 2011, the country's urban population had increased by 91 million. India is projected to add 416 million urban dwellers between

2018 and 2050. By 2030, India is expected to be home to seven mega-cities with populations above 10 million. 68% of the country's total population live in rural areas, while 17% of the country's urban population live in slums. Most Indian cities are very densely populated and congestion, noise, traffic jams, air pollution, stinking smell and major shortages of key necessities characterize the urban life. Every major city of India faces the same proliferating problems of grossly inadequate housing, transportation, sewerage, electric power, water supplies, schools, and hospitals. An increasing number of trucks, buses, cars, three-wheel autorickshaws, motorcycles, and scooters, producing uncontrolled fumes contribute to increasing air and noise pollution and climate change. Most of the cities are having the air 2.5 times more polluted than standards deemed acceptable by the World Health Organization. In cities like Delhi, many times pollution levels soar to hazardous levels leaving a toxic grey haze ha nging over the city and causing poor visibility. Air quality deteriorates so significantly that the local government declares public health emergency, schools are shut down and flights cancelled. By one estimate, breathing Delhi's air for one day during high pollution times has health impact of smoking least 25 cigarettes. Only by addressing the issues we can ensure a good quality of life for millions of people living in urban India.

Governments at local and national level bring out several schemes for managing the impacts of urbanisation on poverty, inequality, employment, services, transport, climate change and politics. PURA--Providing Urban Amenities in Rural Areas, Smart Cities Mission, the Jawaharlal Nehru National Urban Renewal Mission, and the Atal Mission for Rejuvenation and Urban Transformation(AMRUT), *Swachh Bharat Abhiyan*, Prime Minister's Pradhan Mantri Awas Yojana and many such schemes are working to address the challenges of improving urban conditions.

In the Session Make cities and human settlements inclusive, safe, resilient, and sustainable based on SDG-11, there will be deliberations on ways to create Livable Urban Environments, Urban Planning and Designing; Removing compartmentalization and promoting Integrated Governance, Technologies for development of urban agglomerations; urban development according to the concept of green economy, sustainable pro-ecological development, creating earthquake proof infrastructure, low cost housing for settlements, developing fully energy and ecologically autonomous, economically self-sufficient modern smart cities in accordance with the principles of sustainable pro-ecological development and implementation of the Industry 4.0 technology. The deliberations will come out with the Policy inputs for the Government; Action Points for HEIs and other stakeholders; and strategies to be adopted by HEIs to realize SDG 11.

Contribution of HEIS in Ensuring Sustainable Consumption and Production Patterns

Goal-12 aims at ensuring sustainable consumption and production patterns lack of which is the major cause of the continued deterioration of the global environment particularly due to industrialization. In India, the issue of resource use is glaringly high. The major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly due to industrialization. Sustainable consumption and production aims at, increasing net welfare gains from economic activities by reducing resource use, degradation, and pollution, while increasing the quality of life. Sustainable development will be achieved not only by growing our economies, but minimising waste in the process of doing so. Growth that contaminates the environment sets development back. If everyone develops the habit of responsible consumption, most of the issues regarding sustainability can be taken care of.

Whereas, Earth is for all the living beings on it, only humans use up more resources than what the planet can renew in a year. The global material footprint, which is the quantum of raw materials extracted to meet the consumption demands, has increased by 113 per cent from 43 billion metric tons in 1990 to 92 billion tons in 2019. It is projected to grow to 190 billion tons by 2060, which could be disastrous for the planet and its life. Another striking development is the shift of energy and resource-intensive stages of production to developing countries with less resource efficiency, which results in the usage of more resources. Each year, an estimated one-third of all food produced – equivalent to 1.3 billion tons worth around USD 1 trillion – ends up rotting in the bins of consumers and

retailers or spoiling due to poor transportation and harvesting practices. More than one billion people still do not have access to freshwater. Less than 3 per cent of the world's water is fresh (drinkable), of which 2.5 per cent is frozen in Antarctica, the Arctic and glaciers. Humanity must, therefore, rely on the rest 0.5 per cent for all freshwater needs.

In India, the issue of resource use is glaringly high. About 63 per cent of the net available groundwater in India is withdrawn whereas, the national upper limit is 70 per cent. it has only 4% of global water resources, whereas the country is home to 18% of the world's population. Only 19.9% of India's urban waste is processed. India is the third highest emitter of carbon-dioxide and is responsible for 6.9% of global emissions. As of October 2019, the installed capacity of grid-interactive bio- power per one lakh population for India is 0.758 MW. The target is to achieve 2.11 MW installed capacity of grid-interactive bio-power per 100,000 population by 2030. In October 2015, India made a commitment to reduce the emissions intensity of its GDP by 20-25% from its 2005 levels by 2020 and by 33-35% by 2030. On 2 October 2016, India formally ratified the historic Paris Agreement. The National Policy on Biofuels and the National Clean Energy Fund are some of the government 's flagship schemes aimed at achieving sustainable consumption and production, and managing the efficient use of natural resources.

In India, the added problem is of want of proper place and procedures to store the produce. This is particularly a problem after green revolution when the production of food has increased voluminously but we have not equipped ourself with requisite storage places and procedures. As a consequence, there is a lot of wastage. Overall. we are living in turbulent times witnessing complex challenges in environmental, social and economic systems, for which we need a different way of thinking and doing to find effective solutions. Sustainable Development Goal 12 is to ensure sustainable consumption and production patterns. It is about responsible consumption and production and this is the crux of all sustainable development goals and is a far-reaching topic whose importance for a sustainable future is central to the 2030 Sustainable Development Agenda.

In the Session on Contribution of HEIs to ensure sustainable consumption and production patterns', there will be deliberations on role of education in creating awareness on complex challenges of unsustainability and how to meet these challenges; ways to re-think education as a driver for a more caring, just and sustainable world; environmental responsibility and leadership; strategies to equip the next generation to move towards developing sustainable futures; integrating SDGs in curriculum; creating a value system that encourages consumption standards that are within the bounds of the ecologically possible and to which all can reasonably aspire; using alternate and renewable energy sources, minimizing wastage, teaching students about sustainable consumption patterns, developing policy inputs for the Government on promoting sustainable consumption and production; action points for HEIs and other stakeholders; strategies to be adopted by HEIs to realize SDG.

Conclusion

Given the increased demands placed on societies and the environment due to, increased urbanisation, migration, industrialization, deforestation depletion of non-renewable resources etc., it is clear that action is required from all quarters to create a sustainable future. sustainable development not only deals with environmental issues, but economic, social and cultural issues as well. In this scenario, it is befitting for higher education institutions to take the lead and work towards realization of all the 17 Sustainable Development Goals. Motive of AIU is to realise this responsibility of Higher Education System. ❑

Shoolini University, Solan: A Profile

Shoolini University, Solan is hosting the North Zone Vice Chancellors' Meet—2021-22 of the Association of Indian Universities (AIU), New Delhi on November 26-27, 2021.

The Beginning

It All Started With an Academician - Prof P K Khosla. At an age when people prefer to retire from active work and spend quiet time at home, Prof Prem Kumar Khosla after retiring from Vice Chancellorship of Himachal Pradesh Krishi Vishva Vidyalaya, Palampur and as Senior Scientific Advisor to Government of Himachal Pradesh, took a calculated risk to invest his and his wife's lifetime savings in establishing a non-profitable organization, Shoolini Institute of Life Sciences and Business Management (SILB) in 2004 with a mission to provide affordable quality education to the youth from rural and semi urban areas of Himachal Pradesh. Soon SILB became a beehive of academic activities under his stewardship and emerged as the most preferred biotechnology, sciences and business management post graduate institution amongst colleges affiliated to Himachal Pradesh University.

Prof Khosla always dreamt about setting up a state-of-the-art university that pursued world class research and trained students through a flexible curriculum to meet the needs of the industry. With the credibility and goodwill created by SILB, the Himachal Pradesh Government invited Prof Khosla to set up a specialized private university of biotechnology and management sciences, the first of its kind in India.

As a result, Shoolini University of Biotechnology and Management Sciences (short Shoolini University) was established in 2009 in the serene surroundings of the Kasauli Hills. Shoolini is a not-for-profit multi-disciplinary private university with the clear goal of becoming a research-driven university that promotes innovation in science, technology, and management sciences.

Vision

Shoolini University aspires to be a Top 200 Global University by 2022 through high-impact global research standards and innovative multi-disciplinary pedagogy.

Seven Pillar Model that Makes Shoolini Distinctive

- Culture for Innovation and Excellence: e-Learning digital tools and learning management system, 'LEARNINNS' makes us, ready for future.
- Unique Research Focused Model: A specialized research and innovation-led university.
- Inspirational Faculty: Academicians from top Indian and global universities Oxford, Duke, IIT's, IIMs, ISB, NIH, NCI, IISc, St. Johns and others; as well as leaders from the corporate world.
- Focus on Placements and Careers: Top MNCs and Indian Corporates; 250 global alliances for higher education.
- Governance: Founded and managed by an academician; not-for-profit.
- Innovative Pedagogy: eUNIV (online), writing seminars, flexible learning, minors, majors, liberal arts.
- Highly Motivated Students: Distinctive students from all walks of life.

Green Campus

Shoolini University campus is uniquely located in Kasauli Hills in Himachal Pradesh in the middle of a pine forest. It is one of India's modern, clean, and inspiring campuses. It is a true green campus – 100% Solar, 100% recycling of water, and energy efficient buildings. Shoolini campus was awarded one of India's top cleanest campuses in the Swachh Bharat Survey, 2020 and the Yogananda library has won several national and international architectural awards.

Rankings

In Scimago rankings for 2020-21, Shoolini University isplaced 37th in India overall, third in the northern region, and 16th in research across the country. It is ranked 89th out of the top 100

universities in the country in 2021 NIRF rankings, with the School of Pharmaceutical Sciences ranked 36th, the Faculty of Management ranked 76-100, and the School of Engineering ranked 103rd. In QS Asia 2022 rankings for citations per paper, an indicator of quality research, the varsity has been placed at Number One in the country and 6th in Asia.

Research

Shoolini University chose a research theme that focuses on the conservation and sustainable use of Himalayan bio-resources while simultaneously addressing the region's social and economic requirements. Over the last twelve years, it has made remarkable progress in research (with a $4.2 million investment), as evidenced by tangible outputs such as over 1870 papers in Scopus-listed journals and 715+ patent applications. It has a 'h-index' of 82, suggesting that we have constantly worked to maintain the quality of our research; the 'h-index' is the second highest among all Indian private and public universities founded in 2009 and thereafter.

The Government of India's Department of Science and Technology has awarded the FIST grant of Rs 65 lakh for purchase of high-end instruments. With the help of a Thailand-based donor, a Cancer Research Centre has been built on campus. Five research groups are housed inside the institution, each working on a different element of cancer biology, such as herbal cancer therapy, cancer immunotherapy, and chemical biology. Vardhman Group, a renowned Indian industrial conglomerate, has pledged Rs 3 crore to support cutting-edge nanotechnology research and the acquisition of a Transmission Electron Microscope.

Undergraduate Summit Research Programme

Shoolini University promotes undergraduate research through 'Summit Research Programme (SRP)' in biotechnology and food technology. The SRP is extremely popular, with students publishing research papers in high-quality SCOPUS-indexed journals and filing patents. Some of them have received scholarships to pursue master's degrees at some of the world's most prestigious universities and have gone on to work for some of the world's most prestigious corporations.

New Initiatives

- Artificial Intelligence (AI): Realising AI is one of the fastest growing and most transformational technologies of our time, we are promoting its comprehensive development as an academic discipline and in research.
- Collaboration with iHUB: Shoolini is set to contribute to smart agriculture, smart cities, digital medicine, and Edu Tech to make the world a better place through the power of technology ib collaboration with iHUB, a joint initiative of the Government of India's Department of Science and Technology and IIT Roorkee.
- Collaboration with IBM, Microsoft, and AWS Academy: The university has a valuable collaboration with IBM that allows students to gain access to the latest technology platforms and earn Certifications in a total of 180 professional modules. These cover all the primary specialisations. Global giants like Microsoft and AWS Academy also support Shoolini's engineering curriculum with course-material, access to technology platforms and certifications.

Excellence in Energy Science and Technology

The Centre of Excellence in Energy Science and Technology at Shoolini University promotes multidisciplinary energy research in accordance with the United Nations Sustainable Development Goals for energy for all and climate change. According to the SCIMAGO Institutional Rankings 2021, it is ranked 12th in India for energy research. Its primary mission is to create comprehensive, innovative solutions to various energy and environmental challenges through leadership projects involving energy efficiency, clean energy adoption, geothermal, and renewable energy sources.

Food Testing Lab

The Ministry of Food Processing Industries (MoFPI) of the Government of India has funded the establishment of a commercial food testing lab. This laboratory has a total cost of about four crore rupees. All commercial food processing enterprises and commercial food production units will be able to use it for quality testing. NABL (National Accreditation Board for Testing and Calibration Laboratories) approved food product certification will also be available.

Implementation of National Education Policy-2020 (NEP–2020)

Shoolini University has developed a comprehensive strategy for restructuring academic programmes in accordance with the NEP–2020. In the beginning, four-year undergraduate programmes in a variety of fields will be offered. At various points,

students would be able to exit and re-enter. Some existing programmes have been updated, and several new skill-based programmes have been added. In accordance with the NEP 2020 recommendations, the university has also implemented Massive Open Online Courses (MOOCs), which provide an affordable and flexible way to learn new skills, advance careers, and deliver high-quality educational experiences.

Implementing a State-of-the-art India Centric Online Learning Solution

The COVID-19 lockdowns have made educational institutions all over the world aware of significant gaps in the online academic support required for students. To fill the gaps, the university implemented a comprehensive solution that included technology, processes, and training. The core initiatives are:

- Better e-learning experiences in case of lower connectivity through a custom-built virtual classroom module (using a customized module of Big Blue Button) that uses a whiteboard and voice lecture.
- Asynchronous learning through offline availability of videos lectures, followed by audio tutorials.
- Regular faculty development programmes and weekly sharing of best practices within and between departments; enabling teachers to adapt to new online teaching scenario and resolve key issues.
- Curating over 20,000 lecture videos including transcripts available through speech-to-text modes.

Skill Progression through Rapid Intensive and Innovative Training (SPRINT™)

An accelerated development programme and credit course at Shoolini University SPRINT™ is inspired by Stanford's mini-MBA programme to help students reach their potential, gain knowledge, practical skills and confidence required to thrive in the competitive corporate world. It complements academic studies and career ambitions and help students a raft of competencies to upgrade their capabilities.

Consequent to successful implementation in the School of Business Management, SPRINT™ programme has been extended to cover the Faculties of Engineering, Biotechnology, Pharmaceuticals and Science. It involves exhaustive subject matter sessions combined with technical and soft skills based on highly interactive approach.

Visionary Learning Community of India (VLCI)

Shoolini University is an academic partner of India's Visionary Learning Community, a collaborative initiative between the Japan International Cooperation Agency and the Confederation of Indian Industries. The programme, which was launched by Padma Shri Prof Shoji Shiba, a world-renowned Quality Management specialist, aspires to develop outstanding visionaries and leaders to improve the standard of Indian manufacturing and guide it toward future growth.

Well-designed Management Information System

Shoolini University has a well-designed Management Information System known as my Shoolini. It is the most comprehensive source of information on academic and nonacademic matters, programs, and policies of relevance to students, faculty, and staff members. Reports generated on my Shoolini include enrolled students, registration analysis, domain/open elective courses; Students faculty attendance, session plans and internal/external marks; timetable; Faculty allotment, consolidated timetable report, class allocations, etc. Apart from this, Shoolini University has developed eUniv portal to supplement classroom teaching wherein syllabus and lecture plans, video lectures are developed and provided to students for all courses taught in the university. Students can access these with login and password provided at the time of registration. eUniv also acts as a platform for online exams, class discussions, case studies and other activities.

Fellow of Consortium of Himalayan Universities

International Center for Integrated Mountain Development, Kathmandu has welcomed Shoolini University as Fellow of Consortium of Himalayan Universities because of its academic and research contributions in the development of the Himalayan region. Simultaneously, we have partnered with Hainan Tropical Ocean University, Yunnan Agriculture University and Lanzhou University in far-east of Himalayan Mountain Range.

International Students' Exchange Programmes

In today's highly competitive world, we recognise the importance of internationalization that would prepare our students for global opportunities. Shoolini has established meaningful alliances

with over two dozen international universities and institutions across all continents, including countries like USA, UK, Canada, Australia, China, South Korea, Taiwan, Russia, Ukraine, Argentina, Afghanistan, Ethiopia, and Nigeria. Several Shoolini students have undertaken a semester exchange in these countries and vice versa. As many as 24 Shoolini students have been selected to pursue higher studies in New Zealand, Germany, Taiwan, China, South Korea, Italy, France, and UK.

INSPIRE Science Camps

The university is at the forefront of organising regular science training camps for top senior secondary school students from Himachal Pradesh as part of the Department of Science and Technology's Innovation in Science Pursuits for Inspired Research (INSPIRE) programme. The main purpose is to explain to the country's youth the thrills of creative scientific endeavours, to attract talent to science at a young age, and to establish the crucial human resource pool needed to strengthen the science and technology system and R&D foundation. The varsity has hosted 36 camps and trained approximately 7980 students to date.

Radio Shoolini – A Campus Radio Effort to Spread Awareness and Help Upskilling

Shoolini campus has its own broadcasting portal, 'Radio Shoolini,' to provide students with quality education and exposure to improve their communication and writing skills. All students are encouraged to create their own shows, which are both played on campus and posted on myShooliniApp for listeners. In addition, students can record their other talents such as music, storytelling, and poem recitation. The university has a fully equipped studio with recording equipment.

Shoolini TV

- TV Bulletin: It's a weekly TV Bulletin available on YouTube and dedicated to news from the campus. It was started during the pandemic to keep the journalism students engaged and to keep other students and staff informed about news from the campus. The unique and unprecedented weekly bulletin has been brought out without a break or delay in deadlines since it was launched in May 2020. It has so far completed over 70 weekly editions.
- Shoolini Samwad: It's a weekly TV News Bulletin in Hindi. It was introduced to mark the one year of the launch of the English Shoolini TV Bulletin. It is scheduled for release every Monday and has come out with about 40 weekly editions so far.

Shoolini Newsletter

Launched in October 2017, Shoolini University Newsletter was conceived with the idea of providing practical, hands-on experience to journalism students in planning, reporting, editing, designing, production and printing of a regular newsletter. Aimed to be fortnightly publication, the broadsheet sized four-page Newsletter is designedto mimic a standard newspaper. It is a unique product with no parallel in the country. The content is confined to the activities relating to the University within and outside the campus.

Yoga and Naturopathy Hospital

Shoolini has been shortlisted by the Ministry of Ayush for the establishment of a 100-bed Yoga and Naturopathy Hospital.

Way Forward

Shoolini is looking forward to progress further by building on the momentum it has generated to become a unique centre of higher learning with its out-of-box approach and intellectual environment. Within twelve years, our initial strength of 300 students and 50 faculty members has grown to 3919 students (including 310 PhD students) in various programmes, with 259 qualified teachers and 214 non-teaching employees. The university has established relationships with industry to collaborate on joint research initiatives, training programmes, and curriculum development. The Memorandums of Understanding (MoUs) with the automobile, pharmaceutical, biotechnology, artificial intelligence, computer, and engineering sectors are being used efficiently for research and academic alignment with the Skill India Mission.

In order to implement United Nations Sustainable Development Goals (SDGs), the university has already initiated several research and academic programmes along with a number of policy initiatives for the implementation and achievement of SDG targets. With the support and concerted efforts of all stakeholders, Shoolini will be well positioned to attain even greater levels of quality and distinction in the higher education arena both nationally and internationally in the coming five years, building on its triumphs to date.

Realizing Sustainable Development Goals for All: Societal Contribution of Institutions of Higher Education

Prem Kumar Kalra*

On September, 2015, the world leaders at United Nations unanimously adopted 2030 Agenda for transforming our world with 17 Sustainable Development Goals and their 169 targets which may be termed as one of the most striving and important global agreements in the recent history. These goals ensure that all people enjoy a prosperous, healthy and fulfilling life; and also promote a peaceful, just and inclusive society free from any form of fear and violence.

Realizing the SDGs for All: Ensuring Inclusiveness and Equality for Every Person Everywhere

SDGs are designed with the agenda of "leaving no one behind" in the heart of the United Nations Development Program for 2030. They ensure inclusion and equality for every individual, as well as recognize that the dignity of an individual is fundamental. They also pledge to achieve all the goals and objectives for all the nations, peoples and societies.

These goals address asymmetries at a higher platform than the traditional, routine definition of inclusivity. They promote a stress-free lifestyle, peace and love among society members following the golden mean path in life. Thus, inclusiveness brings to fore the concept of '*Fatherhood of God and the Brotherhood of man'*. Once this concept is idealized and implemented by the Institutes, the dream of achieving inclusivity in higher education will not be far behind.

As institution of higher learning are knowledge builders, they have an exceptional role to play in helping to achieve the SDGs. Specifically with reference to Goal-4education for all; which is directly related to inclusivity, equitable and quality education and enhance lifelong learning openings for all. UN SDGs address the global challenges we face, including those related to poverty, inequality, climate, environmental threats, prosperity, peace and justice. The reflections of higher education can be seen in each SDG, for example, institutions of higher education plays a significant role in SDG-1 reducing poverty SDG -10 reducing inequalities; SDG-5 achieving gender equality and SDG 8 decent work and employment . For many years, such institutions have given priority to reducing their carbon footprints (SDG 13), decent work and economic growth (SDG 8) and working with local governments for sustainable practices in cities (SDG 11), among many actions.

Higher education undeniably potentializes innovation and prepares citizens with a humanitarian ground. Institutions of higher learning (Colleges/ universities) are projected to serve both local and global communities. They are distinctively placed to lead the cross-sectoral execution of the SDGs, providing an irreplaceable source of expertise in research and education in addition to being widely considered as neutral and influential players.

"They prerequisite to act and hasten the ongoing processes to achieve the revolution of our societies has been put into evidence, for which higher learning institutions are fundamental pieces."

In order to establish a socially responsible university, the following issues are to be addressed:

1. Higher Education policies and approaches for a socially responsible university.
2. Preparation and training of highly qualified professionals committed to the society.
3. Demonstratable socially responsible management & behaviour of the Universities in area of environment, energy and sustainable development.
4. Integration and utilization of technology to support the social and national missions of the universities.
5. Improvisation of the training of educational and health professionals as an expression of socially responsible universities.

Contribution of Dayalbagh Educational Institute to UN Sustainable Development Goals (A Case Study)

The various activities and programs implemented at Dayalbagh Educational Institute

* *Vice Chancellor, Dayalbagh Educational Institute Dayalbagh, Agra 282005.*

also effectively contribute to the attainment of UN Sustainable Development Goals. Our model of education accommodates all forms of asymmetries and biases. Equity in outcome is achieved in terms of becoming a quality global citizen and an ambassador of consensus building. Believing in frugal living with minimalism, and respecting wellbeing is a natural phenomenon among students. DEI system of holistic education prepares students for life with a strong belief and adherence to healthy democratic practices, pluralism, inclusivity and service of mankind.

Philosophy of Dayalbagh Educational Institute

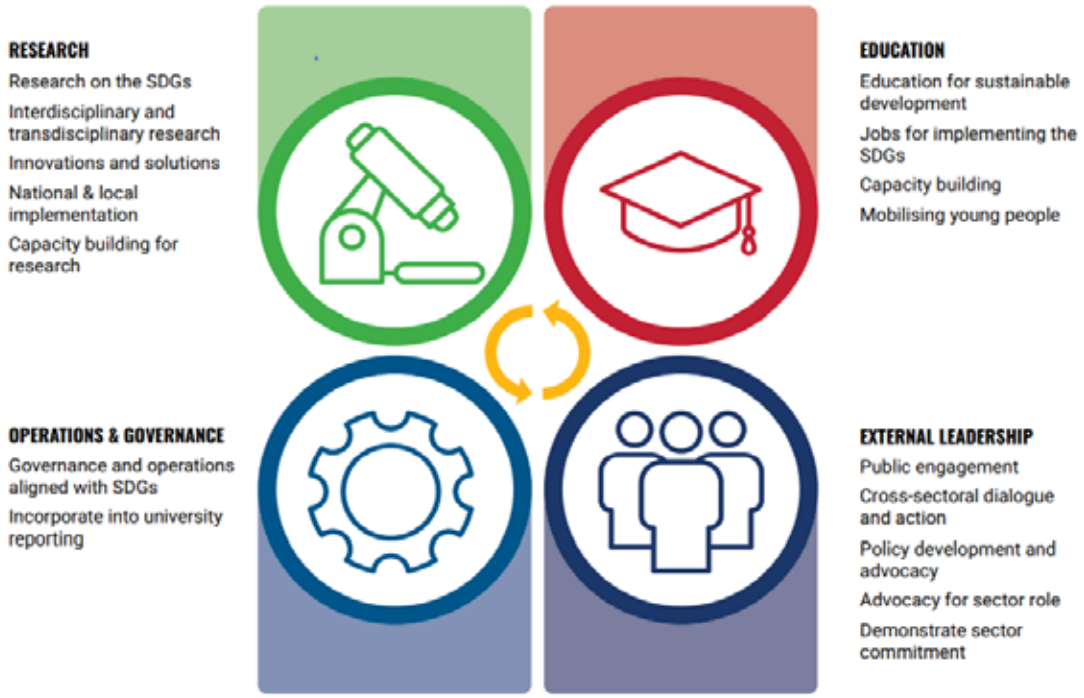
Dayalbagh Educational Institute is located on the outskirts of the historical city of Agra in the tranquil environment of the Colony of Dayalbagh, a self-sustaining colony renowned for its secular establishments and spiritually supercharged atmosphere. The inhabitants of the colony lead an active and disciplined life of rigour, simplicity and devotion in conformity to the high ideals of their Faith. Dayalbagh Educational Institute (DEI) is nestled amidst lush green fields surrounded by the ambience of Dayalbagh, which provides an ideal educational setting for learning within the framework of its unique educational program.

The DEI Education Policy is an innovative, comprehensive and flexible higher and technical education policy with the mission objective of evolving a "complete man" (total quality person), which conforms to the concept of total quality management and is geared for transformation of India to a knowledge society." – Revered Professor P.S. Satsangi, Chairman, Advisory Committee on Education, Dayalbagh Educational Institutions, Dayalbagh.

The DEI Education Policy conceived, planned, formulated and executed in 1975 under the visionary leadership of His Holiness Dr. M.B. Lal Sahab, the August Founder Director of the Institute, was instrumental in the decision of the Government of India to grant University status to Dayalbagh Institutions in 1981. The policy endeavours to create an educational system that strives towards the fulfilment of the Holy Mandate given by His Holiness Sir Anand Sarup Kt., the fifth Revered Leader of the Radhasoami Faith and the August Founder of Dayalbagh, ***"Education, more education, education made perfect is the only panacea for all our countries".*** The ISM model of DEI Education System is comprehensive structure which exabits the development of a complete person through organizational elements and academic mechanism.

Figure-1: Implementing inclusivity -The 17 SDGs are grouped into 5 themes: People, Planet, Prosperity, Peace, Partnerships

Figure-2: Overview of Pniversity Contributions to the SDGs



Dayalbagh Educational Institute, Dayalbagh, Agra is abided by the time tested, broad-based, integrated and inter-disciplinary system of education from nursery to higher education, to allow mankind to evolve fundamentally from a Homo Sapiens into Homo Spiritualise. It allows one to experience the macrocosm within the microcosm of the human body.

Its innovative feature is to break away from the traditional form of higher education. The main aspect of this feature are embodied in the integrated Systems Approach to comprehensively "bring about the physical, intellectual, emotional and ethical integration of an individual with a view to evolving a complete man who possesses the basic values of humanism, secularism, and democracy and who is capable of giving a fuller response to social and environmental challenges".

The spirit of co-operation, collaboration, and enthusiasm towards fulfilment of duties, with a specific focus on Shramdaan and Seva through Social Service and Agricultural Operations has been infused into every individual of the Institute's cohort groups of staff, students, administration and management across the decades, unifying them into a collective action in the face of unfavourable and challenging situations. DEI is a NAAC A+ and AICTE approved Institute. It has been adjudged as the fifth cleanest graded educational institute of India and also adjudged as one of the five green campuses of the country with ISO 21001- 2018 certification. Dayalbagh, which means "Garden of the Merciful," stands tall among peer communities as an ecological paradise and a "health habitat" providing shelter to its stakeholder communities to resiliently challenge the COVID 19 pandemic.

The purposive and conscious thought leadership at DEI believes in a minimalist and frugal living; and pursues the lofty ideals of higher order quality education for self-realization. A way of life, which celebrates Better Worldliness, and rejects both mindless worldly pursuits on the one hand, and asceticism on the other, encourages progress towards development of the Complete Man in the peaceful vicinity of Dayalbagh. The six threads of innovation, water quality, air quality, education and healthcare, agriculture and dairy, and values are focussed upon to help sustain and improve the quality of life. This has been termed as the $\sum A * \sum 6$ Q & Vs model, and it indicates a Systems Approach to sustainability. 'A' in the model stands for attributes and 'Q' for Qualities. 'V' stands for values. The multiplicative interaction of attributes with qualities and values, signifies the cumulative impact of our responsible initiatives in relation to the way we have decided to

Figure-3: Conceptual Model for Total Quality Management at DEI

spend our lives, which is far greater than the sum of its parts.

The Dayalbagh Model of Better Worldliness is succinctly as Sigma Six Q where Q stands for qualities which are promoted in the pursuit of spiritual awakening while fulfilling the worldly duties. Sigma indicated the interplay of these qualities which increases the overall effect multi-fold in emergent manner.

The institute thrives on its interaction with 4651 node around the globe for imparting education, skilling and societal contribution.

"Fatherhood of God and Brotherhood of Man" with "Better Worldliness"

"Excellence with relevance" which is an application of the ***principle of Better Worldliness*** guides DEI with its mode of education and research

Figure 4: The Sigma Six (Q-V-A) model of DEI/Dayalbagh

activities. Two major special days: "Education Day", celebrated on New Year's Day, and "Quality and Values Day", celebrated on Diwali, have been created that strengthen the community's value system. These days have deliberately been chosen to align with major holidays, to redirect the community's attention towards higher principles in life, and steer them away from less productive activities like firecrackers or costly parties. Sustainable development is another self-explanatory example of Better Worldliness.

A mandatory uniform ensures students from all different ethnic, religious, and financial backgrounds dress the same when they come to the campus to learn. This eliminates artificial barriers of caste, class, creed, and gives all students a sense that they are on an equal footing, and promotes both unity and meritocracy. This eliminates many deep-rooted psychological barriers to education that do exist but are often not acknowledged.

A mandatory assembly in the morning, with a non-denominational prayer, also promotes *"Fatherhood of God and Brotherhood of Man."* Core courses including comparative study of Religion, also have a definite role to play.

Students part in numerous activities contributing to the upliftment of the disadvantaged. A noteworthy example is the Medical/Rural Assistance Camp, held in rural areas throughout India, with support from student volunteers, doctors and many other members of the community. Villagers are given free medical consultations, treatment and medicine from trained doctors, and their children are given access to a variety of educational activities. There are special provisions for training of Women and youth in various skills to increase their employability. Not only do the Medical/ Rural Assistance Camps directly provide access to education and employment for those who attend them, but they also have a profound impact on the mind-set, social skills, and world view of the students who volunteer and participate in them.

Realizing all SDGs at Dayalbagh Educational Institute

A survey conducted at the Institute in the session 2019-20 mapped the most prominent 34 features and activities of Dayalbagh Educational Institute with the 17 SDGs, with more than 2200 respondents participating. Only those goals that more than 75% of the activity respondents positively identified were considered to make a meaningful impact. (Assessment of Activities & Features Of Dayalbagh Educational Institute For Global Competencies & Sustainable Development Goals 2019-2020) The results of this study are presented in the graphical abstract given below:

The highest scoring activity was the Free Medical and Assistance Camp which contributed to Goal 3: Good Health and Well-Being along with Rural and Tribal Empowerment, Agriculture Operations

Figure-5: Number of Activities of DEI Contributing towards the UN Sustainable Development Goals

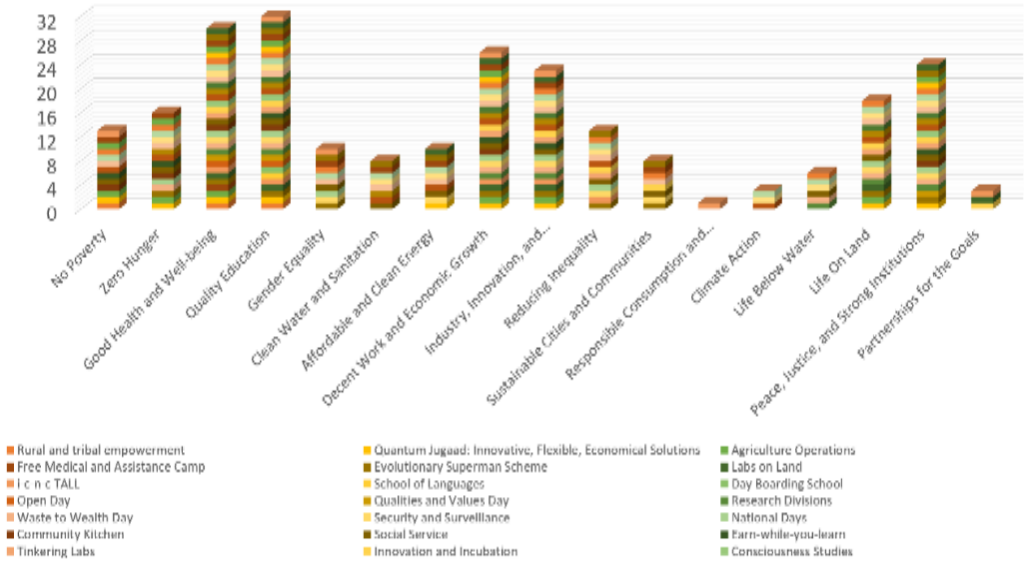
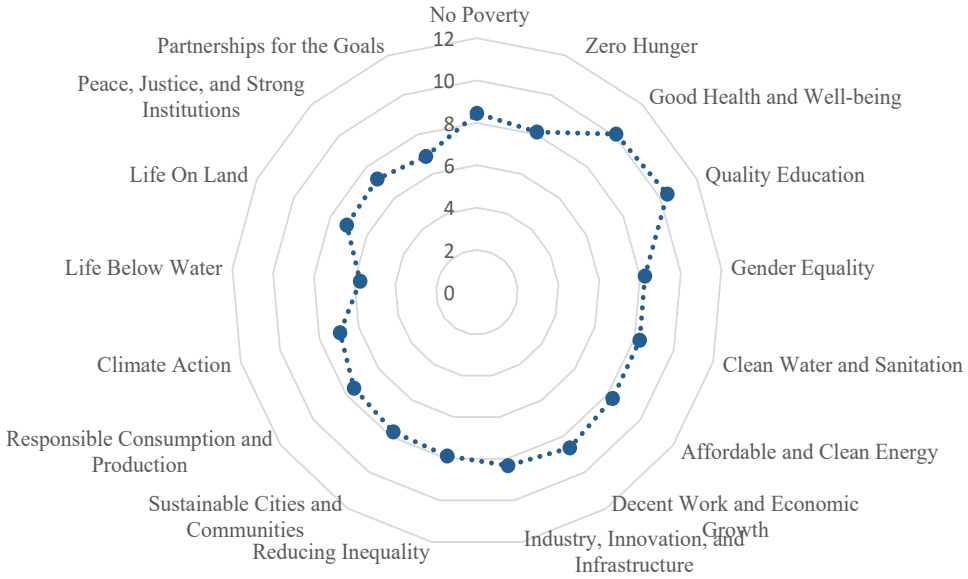


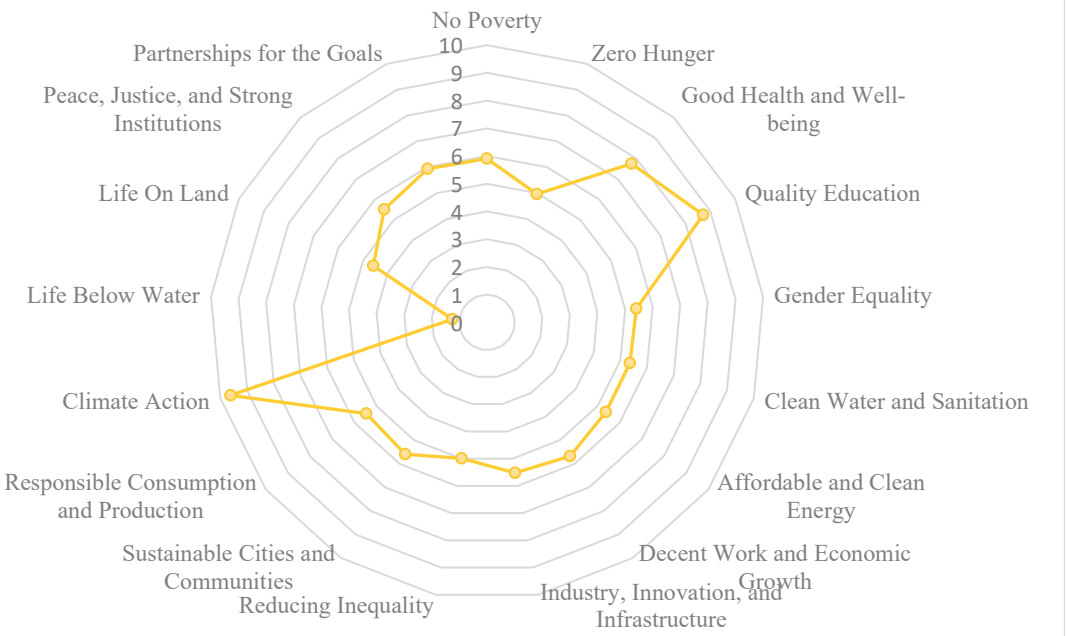
Figure-6: Contribution of DEI to UN Sustainable Development Goals Before COVID-19



and Quantum Jugaad. Uniform and Institute prayer contributed to Goal 16: Peace, Justice, and Strong Institutions.

The study analyzed that the Institute contributes to all seventeen UN SDGs while making the most significant impact in Goal 4-Quality Education (32 activities and features), Goal 3-Good Health and Well-Being (30 activities and features), Goal 8-Decent Work and Economic Growth (26 activities and features), Goal 16 -Peace, Justice, and Strong Institutions (24 activities and features). (Annexure -1 Mapping of top five best activities and features of DEI with United Nations SDGs)

Figure-7: Contribution of DEI to UN Sustainable Development Goals during COVID-19



Annexure -1

Survey Results: Top five activities and Features at DEI Contributing to 17 SDGs.

Goal	Weighted Mean	Activities and Features at DEI
1	4.15	[Rural and tribal empowerment]
	4.35	[Affordable and accessible education]
	4.19	[Earn -while -you-learn]
	3.65	[Quantum Jugaad: Innovative, Flexible, Economical Solutions]
	4.27	[Agriculture Operations]
2	4.35	[Community Kitchen]
	4.27	[Agriculture operation]
	3.65	[Quantum Jugaad: Innovative, Flexible, Economical Solutions]
	3.96	[Rural Development]
	4.23	[Dairy Operations]
3	4.73	[Free medical camp]
	4.38	[Agriculture operation]
	3.81	[Evolutionary Superman Scheme]
	3.88	[Quantum Jugaad]
	3.88	[Rural & Tribal Empowerment]
4	4.23	[Affordable and accessible education]
	4.04	[Day boarding school]
	4.08	[Value Education]
	3.92	[School of Languages]
	3.46	[Open Day]
5	3.85	[Rural & Tribal Empowerment]
	3.73	[Quantum Jugaad]
	3.62	[Evolutionary Superman Scheme]
	3.62	[Open Day]
	3.96	[Village Development]
6	3.73	[Waste to wealth]
	3.88	[Rural & Tribal Empowerment]
	4.23	[Dairy Operations]
	3.88	[Core Courses]
	4.27	[Affordable & Accessible Education]
7	3.96	[Quantum Jugaad: Innovative, Flexible, Economical Solutions]
	3.96	[Waste to wealth]
	4.27	[Green campus]
	4.38	[Dairy Operations]
	4.15	[Rural & Tribal Empowerment]
8	3.85	[Rural and tribal empowerment]
	3.85	[Quantum Jugaad: Innovative, Flexible, Economical Solutions]
	4.15	[Agriculture Operations]
	4.15	[Earn While You Learn]
	3.50	[Evolutionary Superman Scheme]

Goal	Weighted Mean	Activities and Features at DEI
9	3.58	[Quantum Jugaad: Innovative, Flexible, Economical Solutions]
	3.85	[Labs on land]
	3.88	[Innovation & Incubation]
	4.12	[Agriculture Operations]
	4.00	[Rural & Tribal Empowerment]
10	3.88	[Rural and tribal empowerment]
	4.04	[Agriculture operations]
	3.62	[Evolutionary Superman Scheme]
	3.77	[Open Day]
	4.04	[Dairy Operations]
11	4.00	[Rural & Tribal Empowerment]
	3.81	[Quantum Jugaad]
	3.96	[Labs on Land]
	4.23	[Consciousness Studies]
	4.27	[Affordable & Accessible Education]
12	4.27	[Agricultural operations]
	3.81	[Core Courses]
	4.27	[Affordable & Accessible Education]
	3.85	[Job Fairs]
	4.19	[Value Education]
13	3.96	[Rural & Tribal Empowerment]
	4.27	[Agriculture Operations]
	4.00	[Work Experience]
	4.00	[Core Courses]
	4.04	[Waste to Wealth]
14	3.92	[Research Division]
	3.88	[Village development]
	3.96	[Value Education]
	3.77	[Work Experience Courses]
	3.92	[Waste to Wealth]
15	4.12	[Agriculture Operations]
	3.96	[Waste to Wealth]
	3.81	[Labs on Land]
	4.23	[Affordable & Accessible Education]
	4.00	[Rural & Tribal Empowerment]
16	3.92	[Value Education]
	3.65	[Core Courses]
	3.46	[Quality & Value Day]
	3.88	[Social Service]
	4.00	[Affordable & Accessible Education]
17	4.12	[Consciousness studies]
	3.62	[Alumni Meet]
	3.92	[Day Boarding]
	3.65	[Open Day]
	3.96	[Earn While you learn]

The visionary model of the Dayalbagh Education Policy 1975 also addresses and provides resilient solutions to combat COVID-19 challenge with its practices, which effectively contribute to the 2030 agenda for sustainable development. (Assessment of The Best Practices of Dayalbagh Educational Institute to combat the COVID-19 Challenge 2020-2021).

The most prominent contribution was towards Goal 3: Good Health and Wellbeing and Goel 4: Quality Education, closely followed by Goel 8: Decent Work and Economic Growth and Goel 1: No Poverty.

The second round of survey "DEI Best Practices and Activities to combat COVID-19" was conducted in session 2020-21 in which 4533 respondents were present and mapped the most prominent 34 features and activities of the Dayalbagh Educational Institute with the 17 SDGs during the pandemic. This showed a similar pattern but a remarkable contribution to Climate Action was observed. The activities planned at DEI have amplified the support to the goal of climate action. The Institute continues to support Good Health and Wellbeing and Quality Education on priority even during the pandemic.

The comparison highlighted the significant contribution of the best practices of the Institute, like; Quantum Jugaad, Agricultural Operations, Affordable and Accessible Education and Earn-while-you-learn scheme to the achievement of the SDGs even during the pandemic.

DEI can be viewed as a Higher Education Institute that believes in peaceful coexistence, with the aim of common good on this common planet, and in living a life of dignity and higher purpose, social trust and towards better health, security and well-being.

It is obvious that inclusion has been addressed in several ways and numbers indicate that our model of education accommodates all asymmetries and biases. Equity in outcome is achieved in terms of becoming a quality global citizen, ambassador of consensus building, believing in frugal living with minimalism, and respecting wellbeing is natural among its students. The best outcome of education is a good human being.

The notion of inclusivity is a cardinal principle of the DEI Education Policy which aims to mould its students into 'Complete Persons', inculcating in them a value system; entrepreneurial skills for self-support and awakening; a higher order thought process that would enable the search for the Ultimate Reality.

References

1. Boni, A., & Walker, M. (2016). Universities and Global Human Development: Theoretical and empirical insights for social change. London: Routledge.
2. Brennan, J., King, R., &Lebeau, Y. (2004) "The role of universities in the transformation of societies: an international research project", synthesis report. London: Association of Commonwealth Universities and the Centre for Higher Education Research and Information. https://eclass.upatras.gr/modules/.
3. Inga Žalėnienėa , Paulo Pereira (2021) "Higher Education For Sustainability: A Global Perspective"; Geography and Sustainability journal homepage: www.elsevier.com/locate/geosus;PP 99-106
4. Maia Chankseliani and Tristan McCowan(2020) "Higher education and the Sustainable Development Goals" ;Springer Nature,6th November, Higher education and the sustainable development goals (springer.com)
5. NataliiaStukalo and Maryna Lytvyn(2021) "Towards Sustainable Development through Higher Education Quality Assurance"; Educ. Sci. 2021, 11, 664. https://doi.org/10.3390/educsci1111066.
6. Tandon Rajesh (2017) "Contributions of Higher Education to SDGs"; Community Based Research & Social Responsibility in Higher Education.
7. United Nations (2020) "Accelerating education for the SDGs in universities :A guide for universities, colleges, and tertiary and higher education institution"; September .

- Survey Report

  www.dei.ac.in

  eDEIwww.education

1) Assessment of Activities & Features of Dayalbagh Educational Institute for Global Competencies and Sustainable Development Goals 2019-2020.
2) Assessment of The Best Practices of Dayalbagh Educational Institute to Combat The COVID-19 Challenge 2020-2021. ❑

Higher Education for a Sustainable Society

PB Sharma*

As we move deeper into the scientific explorations and mind boggling technology innovations now on, the education in Indian universities should take on board sustainability and sustainable development goals as the guiding principles for accelerating innovations and rolling out startups powered by the inspired minds of young India to make New India a prosperous and happy abode of humanity alongside achieving the goal of inclusive development powered by mass entrepreneurship and sustained focus on creating a green and sustainable future. The author of this article has advocated a strong case for redesigning our education system tuned to sustainability.

Education in Ancient India's *Gurukuls* and Universities

Education, especially higher education all along has been considered to be a formidable means of empowerment to serve the society and the global community with utmost devotion and with an unconditional commitment to integrity and service above self. The purpose of education was not only to get enlightened and earn glory but to engage relentlessly in the service of man and mother nature. This purpose of education prevailed in India from the ancient times of Vedic Gurukuls and maintained its continuity till around 1960s irrespective of the kingship or the governance. For, education in ancient India was neither a subject of governance nor was dependent on the patronage of any, including the rulers and was aimed at preparing an equitable society that could sustain for millenniums maintaining the beauties of nature and celebrating life in harmony with nature. It had its fullest of autonomy and enjoyed the freedom infinite to delve into the realms of unknown, mysteries of creation and preparing the educated as the responsible citizens of the world who adorned the global society as a world family, prescribed in the Vedas as '*Vasudhaiv Kutumbakam'*.

People of my age and the generations before us have also witnessed such an education imparted at all levels from schools to colleges and universities by teachers of conscience who spared no effort whatsoever to make education a valid means of man making, developing capabilities, character and conscience among their students and instilled in them inspiration from within to remain self-regulated with *'Aatmasanyam'* till the last breath of life. Unclenching devotion to achieve perfection in work activity through '*Yoga Karmeshu Kosalam'*and selfless service to the society with an unbiased mind keeping the welfare and wellbeing of a common man as the supreme object of service remained the hall mark of the educated in such a society. The people in the society were also greatly contended with what they had, the level of anxieties was low and the career aspirations were not so dominating on the goals of life as today. This created a just society that lived a life full of happiness and bliss. India remained a happy abode of the vast humanity for millenniums and could also impact great many civilizations around the globe with its education system that attracted scholars from different parts of the world to India for education and enlightenment. For then the education in Indian Gurukuls and the ancient Indian universities was a great inspiration to integrate universal values of truthfulness, personal integrity, purity of thoughts and action and the integral education that covered the performing and practicing arts that made them celebrate the harmony with nature and the noble citizens of a global world.

A caring society working and ensuring equity and wellbeing of the masses was in fact the hall mark of the Indian society for thousands of years that was built on the foundations of its education. The villages in rural India were self-dependent '*Aatmanirbhar'* where everyone had something to do as per his vocation and interest areas and enough to meet the needs of living a life of bliss and happiness. Naturally, for such a society, *"Sarve Bhabhantu Sukhina, Sarve Santu Niramaya, Sarve Bhadrani Pashyanti, nakaschid Dukhbha Bhavet*" was the guiding principle of a caring and affectionate humanity. People were enterprising and everyone was engaged in work activity with utmost respect for the work performed, be it farming, business or service. Here again, there was no work, as such, that was high or low. In fact, work was truly a worship

* *Vice Chancellor, Amity University, Gurugram-122051(Haryana), Past President, Association of Indian Universities, Founder Vice Chancellor, Delhi Technological University, New Delhi and Rajiv Gandhi Proudyogiki Vishwavidyalaya, Madhya Pradesh. E-mail: pbsharma@ggn.amity.edu*

and an offering of one's service to God Almighty. Professional integrity and purity of actions in performance of work activity and giving the best of all the time to the work activity made truly the work as a real worship and enabled Indian workmen and performing artists to achieve perfection and attain the highest altars of glory. We find expression of this perfection in the purity of the rustless Iron Pillar in Delhi Kutub Complex that was uprooted from an ancient Vishnu Temple at Vidisha and transplanted in Kutub complex in 11th Century by invaders, in the Rock Temple of Lord Shiva at Ellorawhich is still a challenge to the world Artists and construction agencies to create a marvel like that by carving a rock temple from the top, *Shikhar* to the plinth with such magnificent details !

People in such a society despite having economic disparity, were enjoying a healthy and equitable participation in the workplace without exploitation of labour of the kind that was witnessed in the modern era of industrialization. Relationship with each other, in such a society was based on *Aatmiyata*, affinity, having a broader understanding of the *'Oneness of Aatman'*, that was the foundation of India's spiritual civilization from the early Vedic times that celebrated the 'Oneness of Diversity' and 'Diversity of Oneness' as the foundation of a just and equitable society.

The Departure from a Equitable and Sustainable Society Post World War-II

But the moot question is what has gone wrong to make education largely career oriented as today and a valid means to serve the interest of the corporates and the industries to increase production and also the ever-increasing demands for consumption. I have a view that much of this has happened post World War-II when a major devastation of economies of the developed nations took place. This included Japan, countries of Europe, UK and even US. India was already under severe economic pressures due to British rule and its policy to destroy the cottage industry of India and shift the manufacturing from India to UK so that the Industries in UK. This led to shipment of minerals and natural resources from India to UK and make India dependent on the imports from abroad. Once the mass entrepreneurship base of India's small and medium industries was destroyed and the system of *Aatmanirbhar* Villages was disturbed, the Indian society became dependent on the mercy of their British masters. The fabric of equity and sustainability was destroyed by the British masters and the education system they introduced as modern education also created a desire to serve the masters rather than to be a valid means of creating enlightenment and capabilities to work for a just and a sustainable society, The villages were badly effected and so were the town and cities. The education system left little or no inspiration to create mass entrepreneurship that once created a blissful society practicing a perfect harmony with nature in ancient times.

The Post World War Economic Growth Promoted Mass Production

The post-world war economies relied on accelerating mass production and export oriented economic growth that created great corporates and MNCs. Here in India too the cottage industry and home-grown Industrial base of very many natural resources-based industries gave way to the rise of heavy industries and corporates that promoted mass production and increased consumerism and ever escalating consumption that further created demands for increased production. Much of initial development even in the post India's independence was in collaboration with advanced nations such as UK, US, Germany, and USSR with a sustained focus on establishment of heavy industries and industries for mass production. A new India reconstruction post-independence thus began with a big role for the MNCs and corporates marginalizing the cottage industries and small and medium scale enterprises. The mass production led industrial development in India created increased demand for labour both skilled as well as unskilled and also created huge migration of labour from villages to industrial hubs in large cities and metros. The great economic disparity that Indian economic growth created during 75 years of Indian independence is a matter of grave concern. 42.5% wealth of India is still in the hands of top 1% of population while the bottom 50% account for mere 2.8% of India's wealth in 2020 as per a paper by Maitreesh Ghatak of London School of Economics (June 2021). It is interesting to note that the corresponding figures for 1991 were 16.5% for top 1% and 8.8% for the bottom 50% of the population. Thus, the globalization and liberalization that made Indian economy to grow leaps and bounds also resulted into greater economic disparity due to growth centric development devoid of equity and inclusiveness. The damage it did for environment

and air and water pollution created further tears and distress.

The education system including the university education post globalized economy in India was also greatly impacted by its increasing dependence on employment in heavy industries, corporates and MNCs. The avenues for enterprising minds were restricted as the environment for many decades was not so supportive to startups as it is now. But the dependence of education on corporates and their philosophy of increasing automation and mass production continues to dominate the mindset of both the educators and the students who look towards education as a valid gateway to great career goals. Career aspirations of working in MNCs and great corporates still continue to dominate the education goals and outcomes in universities in India. This need a major shift in our approach to education for the New India.

The rise of IT Industry and Advantage India it Created

The rise of IT industries and love for computer science and engineering in Institutions of Higher Learning including colleges of engineering and universities in India has undoubtedly created Advantage India in respect of Indian talent rising to great fame in world's leading IT companies world wise. India's IT industry was also greatly benefitted by India's talent in computer science and engineering and IT disciplines that enabled a continuous supply of trained manpower enabling Indian IT industries to cater for ever increasing demands for IT services in advanced countries. Thanks to globalization and liberalization of Indian Economy in the early 1990s that provided avenues for rapid growth of IT industry in India. The career aspirations to join IT industries and through them migrate abroad for a lucrative job became a phenomenon that continued till recently. Thanks to Covid-19 and the positive policies and programs of Government of India and its missions such as Digital India, Make In India and Startup India that today the youth of India graduating from colleges and universities are having great opportunities of innovation led startups in India creating an upsurge for mass entrepreneurship led by enterprising minds of young India.

This is absolutely necessary now that the ever-increasing pressure of automation and use of intelligent robots in mass production as in Industry 4.0 is causing a major fear of job losses in formal high tech manufacturing and in service industry that is powered increasingly by machine learning. Large data analytics, intelligent market research and marketing led by increasing use of AI, artificial intelligence.

The Hope for the Future Lies in Integrating Sustainability as the Major Thrust in Higher Education

The future of education, especially higher education is bright and highly exciting. Firstly, a New India is in the making that will be prosperous, *Aatmnirbhar* and tuned to high sustainability and green practices making tomorrow's India achieving compliance to the sustainable development goals of equitable and inclusive sustainable development. But this would require a major shift from a massive consumption and ever-increasing consumption-based society to a society that shall understand the value and worth of *sustainable consumption* like the concept of *Aparigriha*, that is possess as much as needed and consume as much as necessary. It would then make us go back to our roots, infact to the basics aligning the meaning and purpose of education with the meaning and purpose of life. A major shift in the way the curriculum is designed and imparted would be required. Education for sustainability and for living a life full of divine bliss, peace and harmony would find its place in the agenda of education policies and programs at all levels. For there is no alternative. ❑

Strengthening the Sustainability in Higher Education Institutions: The Role of Jain Vishva Bharati Institute

B R Dugar*

The Higher Education Institutions (HEIs) provide the role models for excellence in education with the added responsibility of providing guidance on social upliftment and environmental sustainability to the community. The sustainability based curricula and cultural change are the keys to mindset transformation. HEIs have an essential role in sustainable development as they are the key agents in the education of future leaders with knowledge that will contribute to the successful United Nations (UN) Sustainable Development Goals (SDGs) implementation. The academics and policymakers consider the HEIs as an enabler for an effective and sustainable transition by organizations and are also the strategic stakeholders in achievement of the SDGs through their initiatives. In this sense, the contributions of HEIs are twofold; one they contribute through their teaching and research activities and secondly they contribute through their strategies and initiatives. The increasing relevance of sustainability has involved the multiple institutions around the globe. According to Sustainable Development Solutions Network (SDSN, 2017), the role of HEIs in the context of SDG implementation is related to their inclusive learning and teaching activities, including undergraduate and graduate teaching, professional training, online learning, co-curricular activities, student clubs and societies. Many HEIs have been proactively trying to action the SDGs in policies, curriculums and practices through the scattered and isolated initiatives.

The SDGs is the roadmap towards achieving a better and sustainable future for all. According to the Brundtland Report *Our Common Future* (Brundtland, 1987), the sustainable development meet the needs of the current generation, while not jeopardizing the needs of future generations. The report cemented three-dimensional or pillar approaches to sustainability, in which sustainability has environmental, economic and the social components. These three pillar approaches need to be balanced to achieve the sustainable development:

Social-Concerned to preserving social equity and maintaining cultural identity, equality to ensure social well-being.

* *Vice-Chancellor, Jain Vishva Bharati Institute (Deemed University), Ladnun, Rajasthan. E-Mail- vc@jvbi.ac.in*

Economic- Concerned with the ability to support people economically and also to support economic production.

Environmental-Concerned with preserving environmental resources and to maintain environmental quality towards ensuring the availability for future generations.

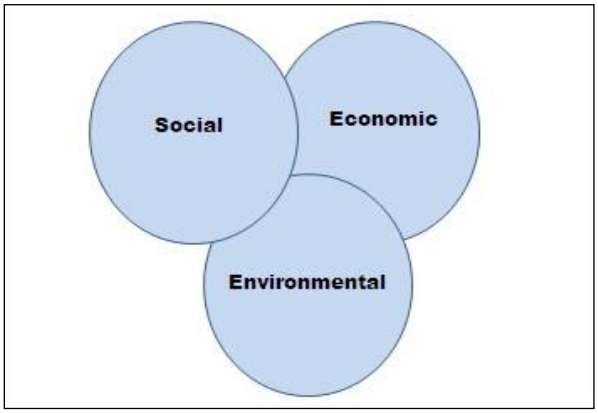
As initiatives of the United Nations (UN) and delivered by United Nations Educational, Scientific and Cultural Organization (UNESCO), the period from 2005-2014 was declared in the year 2002, the United Nations Decade of Education for Sustainable Development (DESD) to emphasize the importance of education towards increasing world sustainability. The overall objectives were (United Nations, 2015):

- To integrate the principles, values and practices of sustainable development into the all aspects of education and learning; and
- To create a more sustainable future in terms of environmental integrity, economic viability and society for present and future generations.

The UN General Assembly in its 70th Session that was held on 25th September, 2015 with the aim "to secure a sustainable, peaceful, prosperous and equitable life on earth for everyone now and in the future" adopted seventeen (17) Sustainable Development Goals (SDGs) to be achieved by 2030.

Figure-1: Three-dimensional or pillar approaches to sustainability development

(Adopted from Ministry of Statistics and Programme Implementation Progress Report 2021)



The 17 SDGs are:

SDG	Definition	Meaning
1	No Poverty	End poverty in all its forms.
2	Zero Hunger	End hunger, achieving food security and improvement of nutrition and promoting sustainable agriculture.
3	Good Health and Well-Being	Ensure healthy lives and promoting well-being for all at all ages.
4	Quality Education	Ensure inclusive and equitable quality education and promoting lifelong learning opportunities for all.
5	Gender Equality	Achieve gender equality and empower all the women and girls.
6	Clean Water and Sanitation	Ensure availability and sustainable water management and sanitation for all.
7	Affordable and Clean Energy	Ensure access to sustainable, affordable, reliable and modern energy for all.
8	Decent Work and Economic Growth	Promote sustainable economic growth and productive employment and decent work for all.
9	Industry, Innovation and Infrastructure	Build resilient infrastructures, promoting sustainable industrialization and foster innovation.
10	Reduced Inequalities	Reduce inequality within and among the countries.
11	Sustainable Cities and Communities	Make cities inclusive, resilient, safe and sustainable.
12	Responsible Consumption and Production	Ensure sustainable consumption and production patterns.
13	Climate Action	Take prompt action to combat climate change and its impacts.
14	Life below Water	Conserve and sustainably use of oceans, seas and marine resources.
15	Life on Land	Sustainably manage the forests, combat desertification, halt and the reverse land degradation.
16	Peace, Justice and Strong Institutions	Promote peaceful societies for SD. Provide access to justice for all and build accountable, effective, and inclusive institutions at all levels.
17	Partnership for the Goals	Revitalize the global partnership for SD.

(Source: Elaborated from United Nations, 2015)

Government of India initiatives

(Source: Ministry of Statistics and Programme Implementation Progress Report 2021)

The Government of India is committed to implement the SDGs and towards integrating SDGs into country's on-going national and sub-national policies and programs, the NITI Aayog (National Institution for Transforming India) has mapped the SDGs with centrally sponsored programs of different Central Ministries and Departments to ensure "*Sabka Saath, Sabka Vikas, Sabka Vishwas*" in the spirit of the SDGs. The Government of India is strongly committed to achieve the SDGs and to this effort, the Government has initiated a series of nation-wide welfare and developmental programs.

National Indicator Framework (NIF)

NIF is the backbone towards facilitate monitoring of SDGs at the national level and also to provide appropriate direction to the policy makers. The Ministry of Statistics and Programme Implementation (MoSPI), Government of India has developed a National Indicator Framework (NIF) in the year 2018 with consisting of 306 National Indictors along with the identified data sources. Presently, data flow from National Statistical Office and nearly 30 data source Ministries/Departments are involved in the process of providing data on SDGs at national level.

SDG	Definition	Number of Indicators in NIF 3.0
1	No Poverty	22
2	Zero Hunger	18
3	Good Health and Well-Being	41
4	Quality Education	20
5	Gender Equality	29
6	Clean Water and Sanitation	16
7	Affordable and Clean Energy	5
8	Decent Work and Economic Growth	33
9	Industry, Innovation and Infrastructure	16
10	Reduced Inequalities	11
11	Sustainable Cities and Communities	15
12	Responsible Consumption and Production	15
13	Climate Action	6
14	Life below Water	11
15	Life on Land	16
16	Peace, Justice and Strong Institutions	21
17	Partnership for the Goals	13
	Total	**308**

High Level Steering Committee (HLSC)

A High Level Steering Committee (HLSC) has been constituted by the Government of India under the Chairmanship of Chief Statistician of India (CSI) & Secretary, Ministry of Statistics and Programme Implementation (MoSPI) with members from NITI Aayog, Ministry of Home Affairs (MHA), Ministry of Health and Family Welfare (MoHFW), Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Finance to periodically review and refine the NIF.

Role of Jain Vishva Bharati Institute (JVBI) in sustainability development

By inspiration of Gurudev Acharya (His Holiness) Shri Tulsi of Svetambar Terapanth Sect, the Jain Vishva Bharati Institute (Deemed-to-be-University under Section 3 of the UGC Act, 1956) has been established in 1991 at Ladnun city of Rajasthan State of India. Gurudev Shri Tulsi remained its first constitutional Anushasta (moral and spiritual guide) followed by Acharya Shri Mahaprajna as its second Anushasta. Acharya Shri Mahashraman is its present Anushasta.

The JVBI is a research oriented center of higher education and lays greater emphasis on Pease and Human Rights Studies and allied subjects in the area of Ethics, Non-violence, Peace, Comparative Religion and Philosophy, Environmental Ethics, etc. The mission is to integrate modern science with ancient wisdom of the great spiritual practitioners and visionary seers. This institute seeks to intervene moral and spiritual norms and values with the materialistic and economic fibers of mankind to foster and develop universal human relationship for the peaceful co-existence of the individuals, groups, communication, sects, races, religions and nations.

SDG-3: Good Health and Well-Being
Sustainability Practices Related to SDG-3 at JVBI

Dimension	Initiatives/Activities/Programmes
Institutional/ Educational	Graduate, post graduate, doctoral degree and training on Yoga and Science of Living and Meditation. Physiotherapy centre for all.

SDG-4: Quality Education
Sustainability practices related to SDG-4 at JVBI

Dimension	Initiatives/Activities/Programmes
Environmental	Emphasis on allied subjects in the area of Environmental Ethics. Health Advocacy Seminars/ Webinars.
Economic	Annual and semester activities and lifelong learning open for the public, Course on Relative Economics, Skill-based and Vocational Courses.
Social	Individual's holistic development.
Institutional/ Educational	Research oriented center of higher education on Non-Violence and Peace, Comparative Religion and Philosophy. Promoting the ideals of Non-Violence, Anekanta, World Peace and Human Welfare. Access to the university library's rich collection on learning resources, rare Jain manuscripts and rare books.

SDG-10: Reduced Inequalities Sustainability practices related to SDG-10 at JVBI

Dimension	Initiatives/Activities/ Programmes
Social	Declarations and explanations of policies & procedures for quality of life, health and safety of employees.
Institutional/ Educational	Free medical consultation and diagnosis.

SDG-13: Climate Action Sustainability Practices Related to SDG-13 at JVBI

Dimension	Initiatives/Activities/Programmes
Environmental	Eco-friendly environment, rain harvesting system, solar system, plastic free campus, and water safety.

SDG-16: Peace, Justice, and Strong Institutions Sustainability practices related to SDG-16 at JVBI

Dimension	Initiatives/Activities/Programmes
Institutional/ Educational	Inclusive institution for Samani and Mumukshu in Shwetambar Jain Sect at all level. Graduate, post graduate, doctoral degree and training on Non-Violence and Peace.

Plan of Action

To overcome the challenges in achieving SDGs, the institute may formulate the plan of action on the following:

- Strengthen the research programmes aligned with the SDGs.
- Review academic and non-academic activities on regular basis in the light of the SDGs.
- Produce qualitative research articles aligned with any of the SDGs.

Conclusion

The HEIs have major responsibility to form future sustainability leaders with knowledge and support the ambitious SDGs implementation. Sustainability is also an important key aspect in the university's reputation and prestige worldwide. Therefore, HEIs need to be drives of cultural change and also develop a curriculum that should be based on the sustainability principles. Furthermore, the education is the basis for achieving all the SDGs. The JVBI has integrated SDGs in its academic programs and as well as activities. The institute further strengthens the HEIs by its contribution to the achievement of SDGs.

References

1. Aleixo, A.M., Azeiteiro, U. M., and Leal, S. (2018). The Implementation of Sustainability Practices in Portuguese Higher Education Institutions. *International Journal of Sustainability in Higher Education*, 19(1), 146-178. https://doi.org/10.1108/IJSHE-02- 2017-0016 (Retrieved on November 6, 2021).
2. Bantanur, S., Mukherjee, M., Shankar, R. (2015). Emerging Dimensions of Sustainability in Institutes of Higher Education in India. *International Journal of Sustainable Built Environment*, 4(2), 323-329. https://doi.org/10.1016/j.ijsbe.2015.03.004 (Retrieved on November 6, 2021).
3. Brundtland, (1987) Report of the World Commission on Environment and Development: Our Common Future. Retrieved on November 6, 2021 from https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf
4. Government of India, Ministry of Statistics and Programme Implementation, National Statistical Office Sustainable Development Goals. Progress Report 2021 National Indicator Framework Version 3.0. Retrieved on November 11, 2021 from http://mospi.nic.in/sites/default/files/publication_reports/SDG-NIF-Progress2021_March%2031.pdf
5. SDSN Australia/Pacific (2017): Getting Started with SDGs in Universities: A guide for Universities, Higher Education Institutions, and the Academic Sector. Australia, New Zealand and Pacific Edition. Sustainable Development Solutions Network – Australia/Pacific, Melbourne.
6. UNESCO, (2017a). Shaping the Future that we want. UN Decade of Education for Sustainable Development (2005-2014). Final Report. United Nations Educational, Scientific and Cultural Organization, Paris.
7. United Nations (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1. *In United Nations (Issue October)*. New York: United Nations, Vol. 16301. Retrieved on November 11, 2021 from https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf
8. Wals, A.E.J. (2014). Sustainability in Higher Education in the Context of the UN DESD: A Review of Learning and Institutionalization Processes. *Journal of Cleaner Production,* 62, 8–15.
9. Žalėnienė, I., and Pereira, P. (2021). Higher Education for Sustainability: A Global Perspective. *Geography and Sustainability*, 2(2), 99-106. https://doi.org/10.1016/j.geosus.2021.05.001 (Retrieved on November 6, 2021).

❑

Sustainable Development Goals for Higher Education: Cultivating Humanity

Hema Raghavan*

Among the 17 Sustainable Development Goals listed by the United Nations, Higher education is given importance by being ranked fourth-SDG 4. It calls for equal access to tertiary-i.e., post secondary education at the universities. Before we attempt a new formula for university studies in the light of the Millennium Sustainable Development Goals, we must establish the link between higher education and sustainable development and deliberate on how education can contribute to bring about it.

The fundamental aim of sustainable development is towards fulfilling humanity's economic, environmental and social needs, allowing prosperity for now and future generations. Universities have the best potential to achieve this because universities are meant for knowledge creation, knowledge promotion and knowledge dispersal through all sections of society to make humans responsible for actions that will lead to wholesome and sustainable development. It is worth noting what John Rawls said while advocating elitism in society. Elitism, according to Rawls, permits people to possess and cultivate superior talents that can prove beneficial to the most disadvantaged sections of society. The role of universities towards fulfilling economic, environmental, ethical needs of society cannot be overestimated.

Towards achieving these goals, India has constantly attempted to expand and upgrade university education. India enjoys the demographic dividend, having a huge young population that is ready to enter the working age. The youth will have to be properly harnessed for the country to reap a rich demographic dividend through acceleration of economic growth. While tertiary education has the vocational, technical and university streams, I shall limit myself to University education, particularly offered by Central Universities which have been established to serve al India students .

The greatest problem of university education is to accommodate all eligible students who complete their XII the board examinations. It is a humungous task to mesh the number of applicants to university courses with the available number of seats and infrastructure that is already stretched to its maximum. The present process of admission in Delhi University (one of the 41 central universities) has its annual share of hiccup, this time exacerbated by the pandemic propelled inflated marks of students, many of whom from schools all over India were registering a perfect hundred in many courses. I mention Delhi University because it has the largest intake of students among all other Central Universities, has 80 colleges –affiliated and constituent –and eighty academic departments and offers 75 undergraduate courses besides post graduate and research degree courses. Many academics opine that the rush for DU symbolises the lack of opportunities offered by other central and state universities across the country. Hence any discussion on admission process should begin with a focus on Delhi University whose broad spectrum of issues relating to admission can accommodate similar problems in other Central universities. At the same time, all central universities should follow Delhi University and offer a number of undergraduate courses.

This year the cut-off criterion for a few courses in a few Delhi colleges stood at 100% and for other courses between 98.5 and 99.5. DU admission is based solely on marks aggregated in the XIIth examinations conducted by the Central and State Boards for Secondary Education. A good number of students, a majority of them from State Boards outside of Delhi had scored a centum and thus eligible to secure a seat in anyone of the DU colleges, triggering strong protests from students of Delhi and other CBSE affiliated schools.

But being a Central University, DU has the mandate to open its doors to students all over the nation. Despite the high cut-offs, the number of students eligible for admission this year had increased and colleges had to admit more students beyond their infrastructural capacity. Unlike the State universities where the domiciled students have their first claim

* *Former Dean, University of Delhi, Block N, 12 C (Opposite Pushp Vihar) SFS Apartments, Saket, New Delhi-110 017. E-mail: h.raghavan13@gmail.com*

to admission, Central Universities' admission is open to all students of India. The difficulty in open accessibility to the Central Universities is evident in the admission of a very large number of students against the optimal infrastructure that colleges can stretch without bursting at the seams.

The problem stated above is not a one- off problem to be attributed to the pandemic where the inflated marks sans examinations have added to the extant difficulty. It is an annual feature of DU admission process. Delhi University with its affordable fees, its better exposure as a learning centre with its heterogeneous variety of students and teachers from all parts of India, its research and academic strength and its better funding directly from the Central government has a distinct advantage over State universities which are by and large insular through their emphasis on local students. State Universities are in general for, by and of the local students. Delhi University enjoys an added advantage in its location. It is in the National Capital while a majority of Central Universities-especially those established in and after 2009 are in rural areas far removed from the State capitals.

Thus, the core problem of the admission process is to reconcile the numbers admitted with available infrastructure. How to decide the cut-offs to get the best students from the humungous number of applicants with sky rocketing marks? How to preserve the quality of excellence Central Universities are known for, without denting its USP- its unique open accessibility?

Let us analyze the major problems and find plausible solutions:

Delhi University initiated the process of centrally collecting all applications-online and offline- from 2001. This was a change from the earlier system when every college brought out its own prospectus with application form for price ranging from Rs 50+/- to 100 +/-.. The University's move to centralize admissions in 2001 was to create a level playing field so that students do not have to spend large sums to buy individual prospectus from different colleges where they wish to seek admission but from the University centre for a nominal fee of Rs.10/-- where in one form a student can apply for 10 courses in ten colleges. The University opened 16 centres all over Delhi to facilitate students belonging to the East, West, South and North Delhi to get the forms. The filled up forms were submitted either at the DSW's office (Delhi University Students' Welfare office)or in those 16 designated centres and all the collected forms from all the centres were sent to the DSW office everyday till the last date for filling the application. Those who were outside Delhi applied online to the designated *id* given by DSW.

University did the digital entry of all applications and segregated them college-wise, marks-wise, course-wise and category-wise in the order of preference given by the applicant and sent CDs to the colleges with all details two days prior to the start of admission to enable colleges to decide their cut- offs. I am not aware if such data for individual colleges are sent now. If not, it may be worthwhile to return to the system initiated in 2001.Every University can do the same with suitable modifications as per their criteria.

The process to determine the cut offs became easy. If 100 students have a centum score, the colleges wil know from the CD details, how many will go to college X, how many to college Y, depending on the standard and ranking of colleges and the maximum number of seats available in those top colleges. So if five colleges are better than college A and each of those five colleges has an intake of 20, college A pegs the cut-off at the next highest percentage after the first hundred. Since each college in its prospectus gives the number of seats-General, OBC, SC/ST and PWD, this process will enable colleges to fill their seats in sync with their infrastructure. This ensures quality education, autonomy of the colleges with regard to setting their eligibility criteria and a level playing field for the students.

CUCET has been proposed as an entrance examination for admissions to under graduate courses . *This* poses a few problems.

a. Who will be the evaluators for this humungous number of students taking the Entrance examination? With most of the University and college teachers engaged in evaluating their semester papers, will this not be an additional burden on them and leave them no time during summer break to do their own academic work? Who shall be the paper setters? How many courses are to be covered by the entrance examination papers? Is the examination to be conducted in English only? Will this raise

problems that NEET had recently experienced? The main issue is the fact that one size fits all is an impossibility when there is a huge diversity between State Boards and between State Boards and CBSE. The present recommendation of the New Educational Policy is to have CUCET-one common Entrance examination for selection to undergraduate courses. Such central examinations work well for IITs and IIMs as the number of applicants is far less compared to the number who seek undergraduate admission in colleges. As the medium of instruction and even the curriculum in State Boards vary from State to State, the CUCET may discriminate against the State Board students vis-a-vis those from the CBSE. This will create a similar controversy as the present one which shows admissions based on XII th marks are by no means equitable.

The solution lies in letting individual colleges conduct their own entrance test in accordance with the criteria they set for themselves. This will preserve and ensure autonomy of colleges which is a *sine qua non* for sustaining quality in higher education. Let the colleges offer entrance exam in the specific disciplines the student has opted for (subject to scoring the requisite overall percentage in the Board examinations). 50% of Boards marks and 50% of entrance Exams will decide the final selection. This practice was followed some years back in a DU College and the College reached high standards in two years as a result of rigorous and proper selection. Entrance tests for different subjects for the Honours courses and aptitude tests for the pass course subjects at the college levels may be a better option.

Sports and EC categories have also to be finalized only at the college level as colleges of DU in the past have held rigorous practical tests to select the students. Again the need of individual colleges in specific sports and performing arts cannot be met with by the present centralized admission process that simply scans the certificates of excellence and proficiency in any sports/art without a practical demonstration by the aspirant showcasing his/her talent.

The aim of all institutions of higher education is to provide the right platform for deserving students to excel in all fields. There are around 80 colleges in DU. If on an average, each college accommodates 600 -650 students, the total number of admissions will be nearly half a lakh. That is a sizeable number. There are 41 central universities in India. DU is one of them. The all India coverage spans the entire country. Hence the issue to be addressed is not just one of numbers, but one of selecting with fairness students who will contribute to enhancement of quality education, providing the affiliated colleges the autonomy to decide their criteria, based on the primary data of the applicants in respect of their category (SC/ST/Sports ECA/BC/ PWD and their course choice (Pass/Hons), subject preference, aggregate and percentage of marks in the best of four subjects.

This clamour for admissions in the sociological context of ensuring fairness and equity fails to reckon with the fundamental question Higher education confronts- between meritocracy and social justice. Meritocracy is a social system in which advancement in society is based on an individual's capabilities and merits rather than on the basis of family, wealth, or social status. The meritocratic view is at odds with the concept of social justice as insistence on meritocracy seems likely to legitimise a system of inequality where students from well to do families and from the better strata of society are at an advantage over the students from less privileged sections of society as they go to the best schools and avail of the best education and do better than the rest.

Thus the idea of meritocracy in education is coming under attack. But we should not give up on meritocracy in education on grounds it is dangerous to democratic ideals. One of the major challenges facing higher education is to understand the purpose of higher education. One school of thought looks at higher education to prepare the next generation of white-collar workers. As against this, there is the other school that focuses on universities preparing the next generation of scholars and creating cutting-edge knowledge. The third is to make education focus on job worthiness and prepare the students for a career by imparting skills. These three purposes are not necessarily at variance with each other and they are achievable ends if the focus of higher education is primarily on creation of knowledge in keeping with the demands of a changing society. While critics may fear creation of an elite class of intellectuals, the truth is the new brand of educated

class are the ones engaged in creation and invention of knowledge. They gain an all round perspective of the needs and requirements of a just society and thereby address themselves to the problems of the poor sections waiting to be uplifted and help them to manage their own affairs within a context of significant social and economic equality. Rawles writes "The least advantaged are not, if all goes well, the unfortunate and unlucky objects of our charity and compassion, much less our pity—but those to whom reciprocity is owed as a matter of basic justice". In this context, universities and colleges should focus on promoting meritocracy by providing quality education. Admissions are not meant to open the flood gates to all students irrespective of their aptitude and potential for higher learning. Higher education has to set up a higher goal for itself- to usher in a just and fair society. At present this clamour for admissions has diminished universities from being centres of Excellence and in turn, has spread a culture of mediocrity in the name of social equitability and social justice. In this context, we can adapt the French model where students desiring university education and meeting the university criterion for admissions study for a year, at the end of which they sit for an examination. Those who clear the examination are allowed to pursue the full four year degree course while those who fail to do so are admitted to institutions that give vocational, industrial and technical skills to be job worthy. During this period, they study for half a day in the institution and go for job training in small scale industries and others such as the manufacturing, construction, fabricating industries in the second half of the day.

Universities may have to consider new strategies to provide wholesome sustainable tertiary education that reconciles merit with equity and fairness. The problem lies in accommodating both in higher education which means compromising one or the other. In the effort to bring about democratisation of university education, there has been a perceptible decline in the high standards of education that affects both research and innovation of knowledge as well as preserving easy accessibility, opening the portals of the university to all. This has contributed to the crisis in higher education where universities are functioning as multiversities and providing skills without paying attention to develop students into human beings. University administrators have to recognize the importance of education of human being as a human being. As Allan Bloom says " a person cannot be minted into a small coin and still remain human". Universities and all tertiary institutions (which can be called multiversities) should impart knowledge and skills and at the same time focus on developing young students into responsible human beings. The aim of tertiary education is to cultivate Humanity and build future Global citizens to achieve Sustainable Development goals as envisaged in SDG 4 by the United Nations. ❑

Contributions of Higher Education Institutions in Achieving Gender Equality

Kesari Singh* and William Asamoah-Appiah**

In September 2015, the General Assembly of the United Nations (UN) in New York formally adopted 'The 2030 Agenda for Sustainable Development' to replace the Millennium Development Goals (MDGs), of which the primary aim was poverty alleviation. The motive was to have an integrated and comprehensive framework for sustainable development in both developed and developing countries. The fundamental among the 17 Sustainable Development Goals (SDGs) worth of discussion is SDG-5 which focuses on gender equality and empowering all women and girls. Gender equality and women empowerment have caught the attention of academics, feminists, policy makers, and governments across the globe. The essence was to provide a roadmap for the integration of economic, social, and environmental agendas for a comprehensive approach (Sachs et al., 2018).

In recent years, the role of Higher Education Institutions in the attainment of these goals has been the focal point of discussion across the world. SDGs are focused on three dimensions: social, economic, and ecological, therefore to "end poverty, protect the planet, and ensure prosperity for all." One of the United Nation's reports asserts that gender inequality persists worldwide, depriving women and girls of their basic rights and opportunities in higher education.

Gender Equality and Empowerment

Gender equality states equal rights to opportunities and access to resources irrespective of gender without any discrimination. Women empowerment is an integral component of achieving gender equality. The Global Gender Report 2017 stated that women constitute half of the world's population but do not have access to the same level of health assistance, education, economic participation, potential earning, and political decision-making power. Sustainable United Nations' Development Goal-5 addresses the issue of gender equality and women empowerment. It states that" gender equality is not only a fundamental human right but a necessary foundation for a peaceful and sustainable world. Equal access to education, decent work, and representation in political and economic decision-making processes are not only rights women should have, but they also benefit humanity at large". SDG-5 aims at the elimination of all discriminations and violence against women everywhere and encourages undertaking the reforms to provide equal opportunities and access to resources and property ownership to women. Goal 5 also commits to achieve the targets by eliminating violence against trafficking, sexual abuse, harmful practices such as forced early childhood marriages and female genital mutilation, lack of effective participation in decision making, lack of equal opportunities in leadership, and the gender pay gap.

Sustainable Development Goal-5 and Higher Education in India

Higher Education forms an integral part of all Sustainable Development Goals as education is a conduit for the reformation of human capital through knowledge and skill development for the individuals to better equip them with competencies to face the challenges of life. Higher education has a positive relationship with gender equality and women empowerment in terms of reducing economic dependency, boosting self-confidence, self-esteem, self-efficacy, critical thinking, leadership qualities, and ability to make rational decisions. Hence, the institutions are responsible not only to train future world leaders but also to reduce the gender gap, foster women's inclusion in their programs, designing gender-inclusive leadership models, and provide equal career opportunities (Nilsson, 2018).

This puts a great obligation and responsibility on Higher education institutions to contribute towards the attainment of sustainable development goals, including gender equality and women empowerment. Some of the ways of doing so could be:

Firstly, HEIs must revisit their policies to create an enabling environment for girls to continue in higher education. Secondly, the right to education must cover higher education as an important component.

* *Professor of Economics, Shoolini University, Solan- 173229 (Himachal Pradesh)*

** *Faculty, Shoolini University, Solan- 173229 (Himachal Pradesh)*

In other words, the right to free higher education can promote retention and graduation from courses. Third and more importantly, equal access to career and skill opportunities for girls can boost the upcoming youths to consider higher education as a reachable destination despite persisting poverty of all sorts.

Higher Education Institutions are implementing what is termed as "feminist strategic alliances" in order to build gender-blind knowledge, skills, and competencies (Bustelo 2017; Mazur 2017). However, higher education institutions must be mandated by regulations from central governments to implement gender equality action plans (Verge, Ferrer-Fons, and González (2018). Though, the implementation is very poor despite the regulations and policy provisions.

In the Indian context, gender parity at the primary education level is on track to achieve parity at all education levels. Though, higher education at the degree level is the pivot around which gender equality and empowerment revolves because of the role it plays in maximizing critical thinking and research orientation. Higher education institutions in India need to realize their role and responsibility towards the attainment of gender parity in higher education.

Another issue in gender equality revolves around women's leadership. As per the recent Times Higher Education (THE) World University Rankings 2021, only 20 percent of the top 200 higher education institutions the world over are led by women. The statistics on women's leadership in India are also not very encouraging. Fewer than 7 percent of the Vice Chancellors in India are women that too because of the mandate that the post of Vice-Chancellor is to be held by a woman in women-only Universities.

Times Higher Education World University Rankings under SDG-5 also rank the institutions on various parameters such as "research on the study of gender, their policies on gender equality and their commitment to recruiting and promoting women." Low participation of Indian Institutions in this category emulates the prevailing gaps in the society and raises a concern that unless the Indian Higher Education Institutions imbibe the responsibility of contribution towards gender equality, it will increasingly become difficult for India to have gender-inclusive growth.

Initiatives on SDG-5 by Shoolini University

Shoolini University aspires to be a top 200 Global University by 2022 through its high-impact research standards and innovative multi-disciplinary pedagogy. University's vision and mission are aligned with the Sustainable Development Goals. It has already adopted Himalayan sustainability as a central thrust area for its research and has been equally passionate to contribute towards all other SDGs. Under SDG-5, University has taken the following major initiatives:

Non Discrimination Policy

A policy has been formulated to address any form of gender discrimination so that everyone gets the equal opportunity and access to resources for overall growth. Be it the provision of research grants, industry collaborations, faculty development programs, accommodation, campus facilities, and healthcare, equal opportunities are provided to all faculty, staff, and students irrespective of gender. A committee is in place to address the issues on these matters. The University's approach is based on three pillars: 1. Access; 2. Success and 3. The progress. Issues like specific needs of all gender applicants, acceptance, entry, and participation within the University are addressed so as to eliminate any potential gap based on gender.

Internal Complaint Committee

University follows a zero-tolerance policy on gender harassment, which includes any conduct creating an unpleasant or offensive, hostile, or intimidating environment for everyone. Any discrimination faced by any individual is dealt with sternly by the Committee. The Committee has been constituted under UGC (prevention, prohibition, and redressal of sexual harassment of women employees and students in higher education institute) Regulation, 2015. All sexual harassment cases are addressed to ICC. Employees and students can reach out to any member of the ICC in case they see any potential sexual harassment.

Annual Performance Appraisal System

University ensures equal opportunities for professional progression and promotion to higher grades, leadership positions, and senior academic and administrative roles through an annual performance appraisal system. A fully transparent approach based on the 360-degree appraisal is adopted to assess the performance of faculty and staff.

Maternity and Paternity Policy

Endorsement of the rights of its employees to

become parents, regardless of gender, and seek to sustain a strong track record as a diverse, fair, and flexible employer that attracts and retains the high caliber talent and supports the career progression of the University's diverse community during the employment. There is a Maternity and Paternity Leave provision for all employees of the University.

Policy for Working Mothers

University fully addresses the needs of working mothers for the upbringing of the newborn baby beyond maternity benefits through 'Policy for Working Mother.' It provides the flexibility of working hours to the eligible mothers to ensure the interests of working mothers and the University.

Access to Child Care Facility

In-house Creche and Day Care facilities are accessible to all employees and students having children, which is a relief, especially to the women who otherwise would have had no other choice but to leave the job to take care of the children at home.

Policy for Transgender and 'Shades of Love' Club

The policy supports inclusive education opportunities and environment for all gender students,

Fig.1 Children Practicing Yoga in Child Care Centre, Shoolini University

Fig.2 Mx Dhananjay Chauhan (Transgender) Delivering a Talk on Challenges Faced by Transgenders, 19th April, 2017

faculty, and staff, including transgender where their rights are identified and respected. University is committed to providing a system of teaching and learning that is suitably adapted to meet the needs of transgender students. Students at Shooini University have initiated a club- 'Shades of Love' to encourage LGBTQ+ students. The main objective of the club is to break the misconceptions and raise awareness among the people for equal rights to this community. Frequent invited talks are conducted to promote a culture of education accessible to everyone without fear of discrimination, neglect, harassment, or intimidation.

Mentoring System

A very strong and well-structured mentoring system for all faculty and students has been adopted to promote an inclusive approach to cater to the development needs of every member of the Shoolini family. Senior faculty mentor the younger faculty members in all aspects and are responsible for giving the right direction to their careers. Similarly, as per the University policy, each faculty acts as a mentor to not more than 20 students and addresses all academic and non-academic issues of the students.

Gender Equity Communication and Promotion

Awareness-raising activities such as workshops with students and staff, invited talks, and awareness camps are run to sensitize women about their rights and provisions under law to promote gender equity.

Scholarships and Financial Support

An inclusive approach is followed for the provision of scholarship and financial support to the students, especially girls facing financial difficulties. Preference is given to the girl students while awarding scholarships and research grants to promote the participation of girls in academic and research activities.

Course Curriculum

The curriculum is frequently updated to cater to the needs of the industry and also to address the issues of sustainable development and gender-related issues. Courses on gender studies, values& ethics, the law in daily life, etc., have been incorporated into the curricula to promote awareness on gender issues.

Strong Outreach Program-Ideas That Matter

The aim of *Ideas That Matter* is to share knowledge without boundaries, to inspire young India, to transform academia, and to prepare teachers for a new tomorrow. Through events and interactions, *Ideas That Matter* aims to nurture a new generation of innovative problem-solvers who dream big, think deeply, and experiment fearlessly. Some of the Initiatives include-1. The Young Researchers' Programme (YRP) aims to nurture creative problem-solving skills among high school students and guide them to translate their idea into concrete products.2. Q?riosity: One of India's largest Virtual Quiz for High School Students 3. Speech KeSiqandar: AI-based

Fig. 3 Support Staff participating in a Gender Awareness Workshop

Public Speaking Skills Programme for High School Students 4. Masterclass on Ancient Mythology: Valmiki Ramayana 5. Webinar Series: Success Strategies for Schools and many more. Special sessions by renowned scientists and other experts are conducted to encourage the students to adopt Science, Technology, Engineering and Mathematics (STEM) fields for higher education, where the participation of women is generally very low.

Research Policy

Under the policy, scientists are provided financial assistance to pursue research and to attend national and international conferences. Women researchers are given preference while allocating the funds. University also promotes the research on gender issues.

Conclusions and Follow-up Policy Issues

Higher Education Institutions in India have a long way to go in achieving SDG-5. Despite decades of progressive efforts, the issues of gender inequality are still visible everywhere, including higher education and institutions. Though there is significant progress in primary education, higher education still needs a boost. Even though the literacy rate among women is increasing, there is a need for concerted efforts to boost gender equality and women empowerment in higher education institutions through the following policy initiatives:

- **Gender Inequality at Work**- despite all efforts and talks around gender equality at work, hiring and training of employees on a gender basis for some specific role is still visible because it is seen as 'Men's Work vs. Women's Work.'
- **Gender Bias**- preference to male candidates over females at the time of promotion to higher grades, appointments for decision-making positions, and assigning of leadership and managerial role is a concern. The situation in higher education in India is worse than in the corporate world.
- **Gender Pay Gap**-The Equal Remuneration Act, 1976 of India (ERA) prohibits "any discrimination between men and women workers for the same work or work of similar nature on the grounds of recruitment including promotions, training, or transfer." Though a lot of progress has been recorded over the years, much is yet to be accomplished. The issue of unequal pay needs immediate attention as it is an issue of social injustice.
- **Work Culture**-Promotion of a healthy work culture where women feel valued and appreciated is essential. Women are considered to be better managers provided they get support from higher management and recognition for their contributions.
- **Women Leadership**- Women's leadership is still a major issue. The concern is not just the gender bias in the promotion or appointment of women at leadership positions but also the acceptance. The reasons could be the stereotypes that the women are less effective in leadership roles or mindset of the people. Higher education institutions can take the lead in building a culture where women's leadership is not just promoted but accepted wholeheartedly.

Higher Education Institutions need to collaborate to devise strategies for the promotion of all SDGsincluding gender equality. The efforts should be directed towards building a mindset for gender equality and recognition of female participation in the development of society.

References

1. Bustelo, María (2017). Evaluation from A Gender+ Perspective As A Key Element For (Re)Gendering The Policymaking Process. *Journal of Women, Politics and Policy* 38 (1): 84–101. Doi:10.1080/1554477x.2016.1198211.
2. Nilsson, P. (2008). The MBA Gender Pay Gap—Readers' Stories. Financial Times.
3. Sachs, J, D, Schmidt-Traub G, Kroll C, Lafortune G, and Fuller G. (2018). SDG Index and Dashboards Report-2018. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network
4. Verge, Tània, Mariona Ferrer-Fons, and María, J. González. (2018). Resistances to Mainstreaming Gender into The Higher Education Curriculum. *European Journal of Women's Studies,* 25 (1): 86–101. Doi: 10.1177/1350506816688237. ❑

Footprints of Higher Education in Reducing Inequality: Present Status and Way Forward

Kuldeep Chand Rojhe* and Amar Rao**

The term 'sustainable development', which has been frequently used since the 1980s, is particularly pertinent in light of the world's social and environmental problems. (Du Pisani, 2006). The phrase "sustainable development" was coined in 1987 by the World Commission on Environment and Development's Brundtland report "Our Common Future." In September 2015, world leaders at Transforming Our World: The 2030 Agenda for Sustainable Development endorsed the idea of sustainable development, which is considered one of the most ambitious and key agreements on a global level in the history of the world. Sustainable Development Goals (SDGs) were set in 2015 to end poverty, protect the planet, and improve the lives and prospects of everyone by 2030 .The agenda, which took effect on January 1, 2016, aspires to put the world on the road to a better future for everyone by 2030. The 17 Sustainable Development Goals (also known as the Global Goals) and associated 169 goals are at the heart of the agenda (See Table 1).

The Sustainable Development Goals (SDGs) are a set of priorities and aspirations that will guide all countries in addressing the world's most pressing issues, such as ending poverty and hunger, protecting the environment, and addressing climate change, ensuring that all people can live prosperous, healthy, and fulfilling lives, and fostering peaceful, just, and inclusive societies free of fear and violence.

Sustainable Development Goal 10-Reduce Inequality Within and Among Countries

The goal of SDG 10 is to reduce inequalities within, and among the countries based on income, sex, age, disability, sexual orientation, race, class, ethnicity, religion, and opportunity continue to persist across the world. Inequality jeopardizes long-term social and economic growth, impedes poverty reduction, and erodes people's feelings of self-worth. As a result, there may be an increase in crime, sickness, and environmental deterioration. Most importantly, we will not be able to accomplish sustainable development and make the world a better place for all if people are denied access to opportunities, services, and a better life. SDG 10 has further 10 targets which are mentioned below:

This article will briefly review the status of SDG 10 and the role of higher education institutions in the context of SDG 10, as higher education is seen as an essential component given its role in teaching and research. Universities should aim to take use of the various opportunities provided by the SDGs, not just in terms of teaching and research but also in terms of university outreach.

Present Status of SDG 10

Prior to the pandemic, there had been some progress in reducing inequality in some sectors, including as reducing income disparity in some nations and territories, maintaining privileged trade status for low-income countries and territories, and lowering remittance transaction costs. Inequality, whether in terms of income, wealth, opportunity or other factors, continues. The epidemic is increasing existing disparities within and among nations and territories, disproportionately affecting the most vulnerable people and the poorest countries and territories, and is expected to stall progress on the goals by a decade for the poorest countries and territories. In 2020, the number of refugees worldwide hit an all-time high. Thousands of migrants died on their migration journeys despite rigorous COVID-19- related movement restrictions around the world. The COVID-19 pandemic, according to the International Monetary Fund, would raise the average Gini index for emerging market and developing economies by more than 6%, with a greater impact expected for low-income nations and territories. For the period 2014–2020, data from 44 countries and territories revealed that nearly one in every five persons had personally experienced

* *School of Business Management and Liberal Arts, Shoolini University, Solan- 173229 Himachal Pradesh. E-mail: :kuldeeprojhe@shooliniuniversity.com; amarrao@shooliniuniversity.com*

** *School of Business Management and Liberal Arts, Shoolini University, Solan- 173229 Himachal Pradesh. E-mail: kuldeeprojhe@shooliniuniversity.com; amarrao@shooliniuniversity.com*

discrimination on at least one of the grounds prohibited by international human rights legislation.

In 2020, 4,186 deaths and disappearances were reported along migratory routes around the world, with some routes seeing a rise in fatalities. Thousands of individuals left their homes and embarked on risky travels across deserts and seas despite the pandemic and mobility restrictions at borders around the world. The number of people who had fled their nations and territories and became refugees because of war, conflict, persecution, human rights violations, and events substantially disrupting public order had risen to 24 million by mid-2020, the largest figure on record. The number of refugees living outside their home country has climbed to 307 per 100,000 people, more than doubling from the end of 2010.In 2019, 54% of the 111 governments with data reported having put in place a comprehensive set of policies to facilitate orderly, safe, regular, and responsible migration and mobility of people, implying that they had policies in place for at least 80% of the subcategories that make up the six policy domains of this indicator. However, the extent to which policy measures were reported varies greatly across policy domains, with the majority of countries and territories reporting measures for cooperation and partnerships, as well as for safe, orderly, and regular migration, and the fewest reporting measures for migrant rights and socio-economic well-being. Between 2017 and 2020, the percentage of products exported by LDCs and developing nations that enjoy duty-free treatment remained constant at 66 and 52 per cent, respectively.

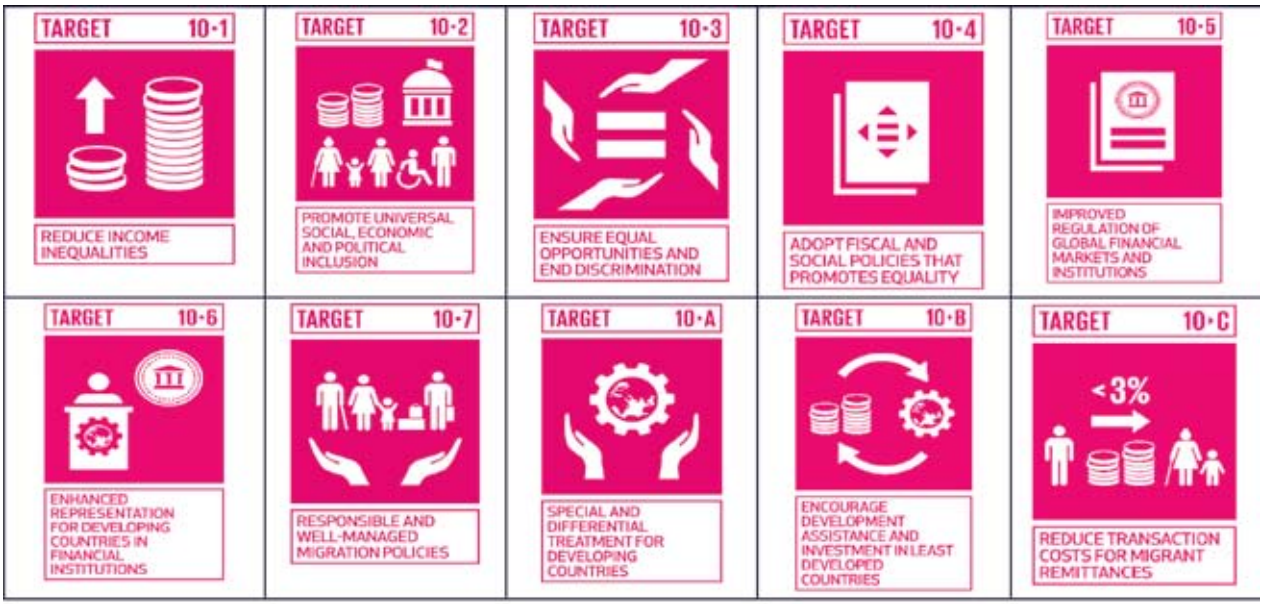
Total development resource flows to developing nations from Development Assistance Committee donors, multilateral organizations, and other important providers totaled $400 billion in 2019, with ODA accounting for $164 billion. The global average cost of sending a $200 transfer fell from 9.3% in 2011 to 6.5 per cent in 2020, bringing it closer to the international aim of 5%. The annual drop was 0.31 percentage points on average.

Table-1: Sustainable Development Goals

Goal	SDGs
1	End poverty in all its forms everywhere
2	End hunger, achieve food security and improve nutrition and promote sustainable agriculture
3	Ensure healthy lives and promote well-being for all at all ages
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5	Achieve gender equality and empower all women and girls
6	Ensure availability and sustainable management of water and sanitation for all
7	Ensure access to affordable, reliable, sustainable, and modern energy for all
8	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
9	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
10	Reduce inequality within and among countries
11	Make cities and human settlements inclusive, safe, resilient, and sustainable
12	Ensure sustainable consumption and production patterns
13	Take urgent action to combat climate change and its impacts
14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development

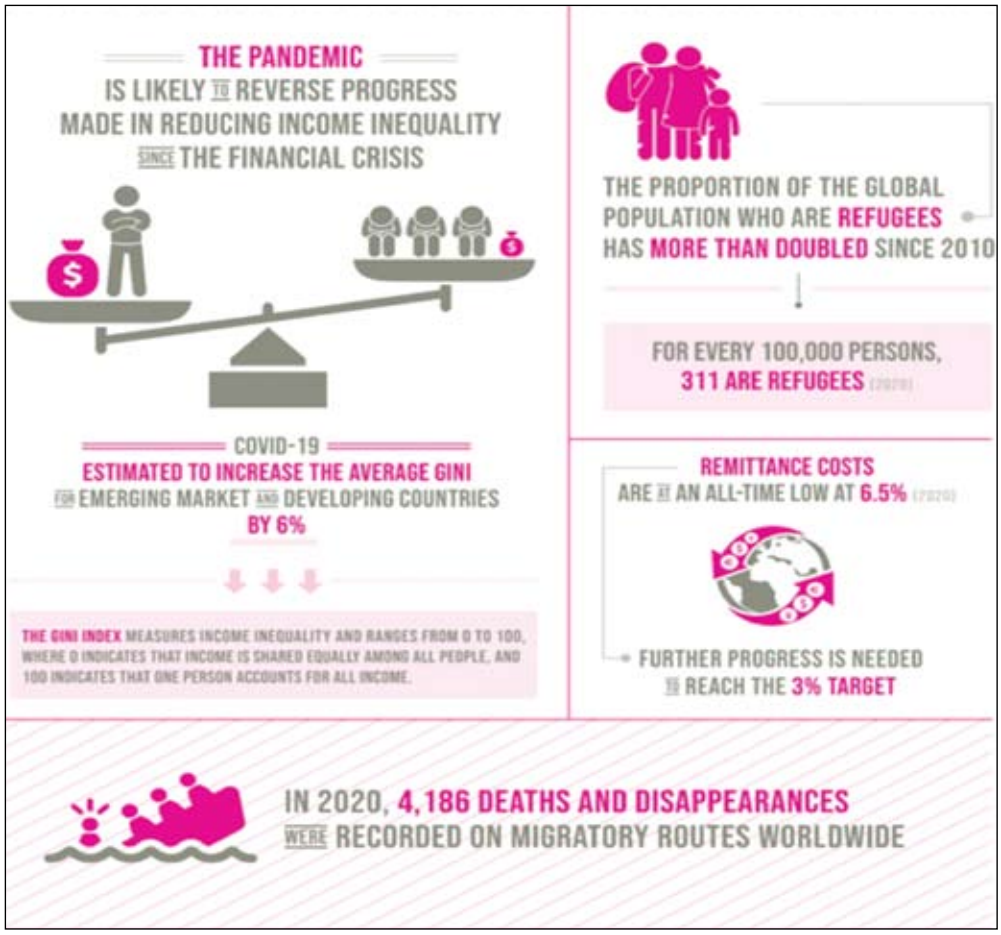
Source: Department of Economic and Social Affairs, United Nations, https://sdgs.un.org/goals

Table-2: Sustainable Development Goal 10 Sub-Targets



Source: Department of Economic and Social Affairs, United Nations, https://sdgs.un.org/goals

Figure-1: Current Status of SDG-10



Source: The Sustainable Development Goals Report 2021: unstats.un.org/sdgs/report/2021/

Role of Higher Education Institutions in SDG 10

Reason for University Engagement in SDGs

Within society, universities are placed at a very unique position with the broad mandate of creation and dissemination of knowledge, since long, universities were and still are the powerful force behind global and national innovations, the drivers for economic development and social. Universities have a key role in the accomplishment of SDGs, and they will also benefit by engaging themselves with the broader vision of SDGs. In a university, the stakeholders ranging from governments to business organizations, civil societies, and the broader communities. These stakeholders demand the graduates who understand the implications of SDGs for themselves and future generations and can implement the SDGs. The strength of SDGs lies in their framework, which is common for varied sectors, and universities provide opportunities to form new collaborations with the policymakers, industry, and society in both education and research. Universities are rethinking their position in the twenty-first century, aiming to be more responsive to society requirements while also acting as change agents to address global concerns. The SDGs give an organizing structure for what this

Figure-2: The Annualized Average Growth rate in per Capita real survey mean Consumption or Income, Bottom 40% of the population, 2014 to 2015

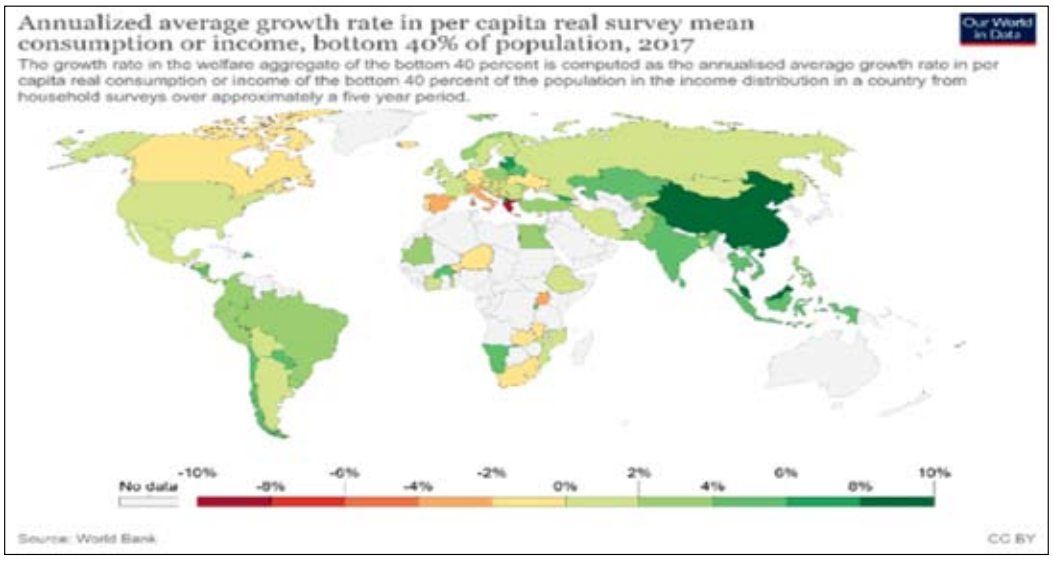
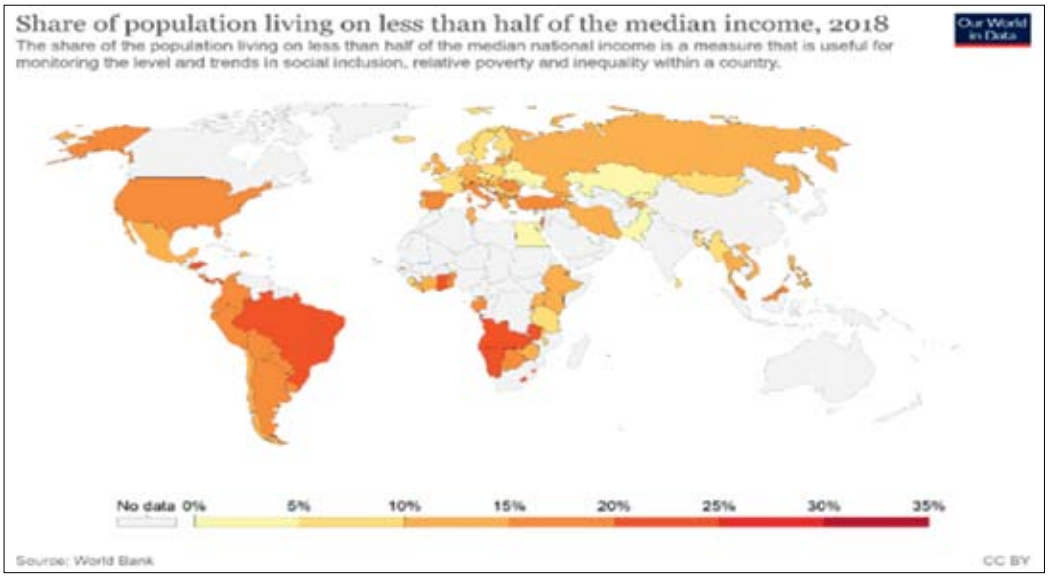


Figure-3: Share of Population living on less than half of the Median Income, 1987 to 2018



looks like for a university because they are a widely recognized framework. Furthermore, universities have a moral obligation to embrace support for the SDGs as part of their social missions and fundamental activities, given their crucial role in supporting the success of the SDGs.

University contribution to the SDGs

The Way Forward

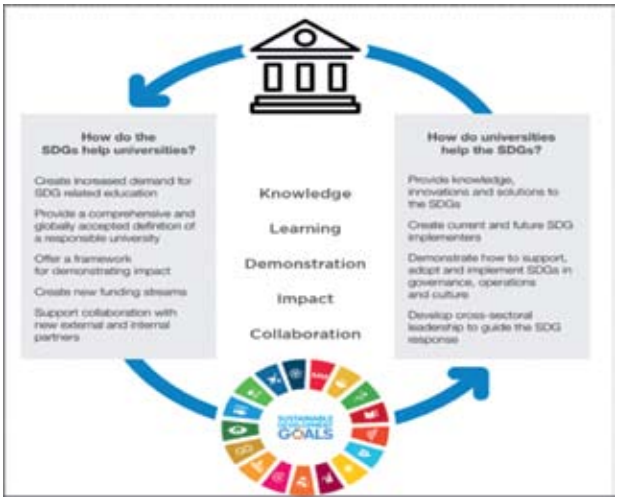
Higher education institutions' role is much beyond the teaching, learning, and evaluation processes and HEIs have a huge responsibility towards the community, society, nation, and the world. Being at the highest levels of learning, they also shoulder the responsibility of being at the highest pedestal towards sustainability and shaping the policy as well as redefining the paradigm.

The HEIs are diverse in their composition and destined to become a benchmark. They acknowledge diversity and provide equal opportunities to people from different cast, creed, religion, ethnicity, religion, gender, sexual orientation, and nationalities, specially-abled monetary capabilities. Although there are immense instances where higher education institutions have proven their footprints towards reducing inequalities, it can still be witnessed across the globe that focus on SDGs and, in particular, attention to SDG 10 is still a dream yet to be realized. This is more evident in the case of institutions in the developing and underdeveloped regions where higher education is at its infant stage and yet to align with the SDGs.

The challenges in the domain of reducing inequalities within and among countries are apparent in several ways; Inequalities in recruitment, enrolment in higher education among different socio-economic classes in democratic South Africa have remained a challenge to solve the population of low-income students is less than 11% increasing concerns on the role of HEI on reducing inter generational inequalities. Gender inequality exists in the form of socially constructed, predefined gender roles firmly anchored in India's socio-cultural fabric that has deep cultural and historical roots there is need to provide equal access for a higher level of education without any discrimination in order to develop female in the rural areas of Pakistan. There is a need to create awareness among parents about the importance of higher education for females; policies must aim to make higher education more accessible for students from disadvantaged backgrounds as well as to support these students and improve their success at this level there is a shortage of degree places available for local students at local universities, and university rankings criteria have a deleterious effect on the commitment to promote mass higher education. In Egypt and Tunisia, higher education is free of charge. However, public spending on higher education is

Figure-4: An Overview of University Contributions to the SDGs

Figure-5: The Case for University Engagement in the SDGs



Source: SDSN Australia/Pacific (2017): Getting started with the SDGs in universities: A guide for universities, higher education institutions, and the academic sector. Australia, New Zealand and Pacific Edition. Sustainable Development Solutions Network – Australia/Pacific, Melbourne.

regressive. As a result, a theoretically meritocratic and equitable system perpetuates inequality, higher education resources have not been equally provided in relation to the size of provincial student populations in China, there has been a privileging of gender over race in terms of addressing inequalities in higher education. Apart from these, the studies have revealed the mental health impact of caste and structural inequalities in higher education in India, institutions are yet to be specially-abled friendly and build a culture of acknowledging diversity and creating a dent on the social fabric that encourages inequality and discrimination on a different basis.

However, the scenario is changing, and HEIs are more conscious about their responsibility towards sustainable development. The bigger question is, what is the way forward? The situation is complex and demands a multi-faced approach concentrating on different aspects with different perspectives.

Some of the initiatives that can be adopted are:

- Creating hubs of HEI with a focus to address specific SDGs will need collaborations between institutions and focus on specific aspects of inequality within and between countries. They might not be able to provide a panacea. However, it will certainly bring an impact on specific areas of inequality
- Weightage in Ranking frameworks for a contribution towards SDG has to be either included in the assessment criteria or increased to encourage HEIs to more actively focus on the attainment of SDG and SGD 10 in particular. Institutions exist to make a positive impact, and climbing the ladders of national and international rankings must include assessment of contribution to the reduction in inequalities.
- Working to reduce and eliminate inequalities have to be brought into the essence of institutions; it should be included in the mission statement and embedded into the visions that institutions of higher education establish for themselves. This should further percolate into the program outcomes of academic programs offered on the campuses.
- HEIs have to adopt the strategy of being globally competent and locally relevant. They have to ensure that community-relevant education in consonance to SDG 10 is imparted and research studies and projects are picked from domains that address inequality in the context of geographical areas where the institutions exist. There is a need to examine local issues using the SDG lens.
- The policymakers and administrators must change their perspectives and work to eliminate discrimination among HEIs. The funding and financial support are highly inclined towards the public sector institutions, however private institutions, inspite of their rankings, accomplishments, and accolades, are neglected. Attainment of SDG 10 needs immense support and funding, but distrust of private institutions is a bottleneck and big challenge in the present scenario.
- Academic freedom and institutional autonomy to highlight gaps and challenge the status quo are strongly needed. It will, of course, also need diligence on the part of institutions. However, there is an immense need for political support to acknowledge the gaps, provide an environment to bring a positive change in redundant beliefs, and acknowledge the outcomes of research studies from academic institutions.
- Inequality, discrimination, biasness is psychological in nature, these emerge from social learnings, and therefore HEIs must develop robust continuous programs to sensitize all the stakeholders. On one side, there is a need to provide mentoring, counseling, or peer support to those who experience discrimination; on the other side, there is a requirement to implement robust mechanisms that abstain people from anything that fuels inequality. Programs to support students, staff, and faculty from underrepresented groups have to be encouraged on the campuses.
- Catering to the specially-abled requires a specific set of knowledge, skills, and methods from higher education staff in order to overcome barriers that students and staff with different types of disabilities encounter. To provide them equal opportunities, institutions have to establish special offices to extend desired support. It is also essential that training programs are organized to equip the stakeholders to better understand the perspective of the specially-abled and to provide training in sign language etc. Creating an environment where everyone can flourish, irrespective of disability, will also require a cultural shift.
- Institutions require a diversity and equality committee, office, or officer to suggest and implement policies, interventions, workshops,

and training to address diversity, equity, inclusion, women's rights, minority rights, and human rights on campus.

- Sensitizing the stakeholders about their responsibility towards reducing inequality is crucial, and these values can also be instilled by celebrating special days like an international day for the disabled, Women's Day, or other relevant days related to minorities, religions, nationalities, gender, sexual orientations, and initiatives to support the economically weaker groups.
- There must be a deep focus on research on exploring the gaps in equality and recommending solutions towards achieving SDGs, a special fund for SDG 10 related research and projects, and creating special research groups Intra and inter institutions and global collaborations can go a long way to achieve SDG 10
- HIEs should aim to make higher education more accessible for students from disadvantaged backgrounds as well as to support these students and improve their success at this level. This will demand guidance for the development and management of Indigenous education. To ensure entry and continuity of education, the problem of lack of financial means has to be tackled through scholarships, funding, earn while you learn, part-time work permits, and other similar initiatives
- Interventions and initiatives to morph the social fabric that creates or encourages inequality are needed. These will be a slow order change but a much-needed approach to transform beliefs, convictions and eradicate taboos.
- SDG 10 also addresses inequalities among countries, including those related to representation, and asks for the enablement of systematic and safe migration and mobility of people across borders. This further stresses on establishment and clarity of the roles and responsibilities of the office of international affairs in the campuses.

References

1. Alon, S. (2014). Continuing to Build a Theory of Inequality in Higher Education. *American Sociological Review*, 79(4). *https://doi.org/10.1177/0003122414534438*
2. Batra, R., and Reio, T. G. (2016). Gender Inequality Issues in India. Advances in Developing Human Resources, 18(1). *https://doi.org/10.1177/1523422316630651*
3. Heckmann, C., and de Moraes, C. (2015). How do differences in social and cultural background influence access to higher education and the completion of studies? Education Indicators in Focus, 35(October).
4. Herbaut, E., and Geven, K. (2020). What works to reduce inequalities in higher education? A systematic review of the (quasi-) experimental literature on outreach and financial aid. *Research in Social Stratification and Mobility*, Vol. 65. *https://doi.org/10.1016/j.rssm.2019.100442*
5. Liu, W. H., and Ma, R. (2018). Regional inequality of higher education resources in China. Frontiers of Education in China, 13(1). *https://doi.org/10.1007/s11516-018-0005-1*
6. Lopez de Romaña, D., Greig, A., Thompson, A., and Arabi, M. (2021). Successful delivery of nutrition programs and the sustainable development goals. *Current Opinion in Biotechnology,* 70, 97–107. *https://doi.org/https://doi.org/10.1016/j.copbio.2021.03.004*
7. Wu, L., Yan, K., and Zhang, Y. (2020). Higher education expansion and inequality in educational opportunities in China. *Higher Education*, 80(3). *https://doi.org/10.1007/s10734-020-00498-2*
8. Zajacova, A., and Lawrence, E. M. (2018). The Relationship between Education and Health: Reducing Disparities Through a Contextual Approach. *Annual Review of Public Health*, Vol. 39. *https://doi.org/10.1146/annurev-publhealth-031816-044628* ❑

Sustainable Cities and Townships : A Strategy for Effective Implementation of Sustainable Development Goal -11 by Higher Education Institutions

Shyam Singh Chandel* and Rahul Chandel**

Cities occupy about 2% of the earth surface but consume 60–80% of global energy. The global urban population has reached 2.8 billion in the 20th century and is projected to reach 6.9 billion by 2050, representing 70% of the world population (Sodiq, et. a.l 2019). The 20th century has witnessed various other social, economic, and environmental issues on a global scale (Yigitcanlar and Lee, 2014). To counter such challenges, efforts have been made leading to the materialization of the concept of intelligent cities (Komninos, 2002). The rapid growth in the urban population and expansion of cities and successive environmental impact have highlighted the importance of formulation of goals and take necessary action for sustainability and improvement of quality of life of citizens in all countries. Consequently in 2015, United Nations identified 17 Sustainable Development Goals (SDGs) and governing roadmaps to be adopted globally by 2030 for better health, quality of life, sustainability and, a better future for all (United Nations SDGs, 2015). The SDGs were built on the foundation of Millennium Development Goals. These goals aim at overall socio-economic development of the human population along with protection of environment with the usage of renewable energy sources for affordable and clean energy. The education and research related to SDGs can play an important role in the sustainable development worldwide. As such the role of Higher Education Institutions (HEIs) worldwide, is of great significance for the effective implementation of these goals by 2030.

In the present study, the main focus is on SDG11 which is defined as *"make cities and human settlements inclusive, safe, resilient and sustainable"*. The article covers the International, and National status of SDG11 followed by initiatives taken by Shoolini University along with a strategy for its effective implementation. Follow up up policy issues which needs to be taken by the Higher Education Institutions are identified.

**Director, Centre of Excellence in Energy Science and Technology, Shoolini University, Solan - 173229 Himachal Pradesh. E-mail:sschandel2013@gmail.com;rahulchandel1@shooliniuniversity.com*

*** Centre of Excellence in Energy Science and Technology, Shoolini University, Solan - 173229 Himachal Pradesh. E-mail:sschandel2013@gmail.com;rahulchandel1@shooliniuniversity.com*

Towards Sustainable Development Goal 11- Planning Sustainable Cities

More than half of the world population lives in the cities, and it is projected that 6 out of 10 persons will be living in cities by 2030. In India 31% of the population lives in cities and around 17% live in slums. 13% of the households do not have access to sanitary toilets in urban areas and 62 million tons per annum waste is generated in cities. India will have level7 mega cities with population over 10 million alone by 2030. Thus, an important parameter for future wellbeing and sustainability is safety, proper planning, management, and development of cities. This is the core of the sustainable goal (SDG-11) which concerns sustainable cities and communities. To achieve SDG-11, ten targets have been defined along with indicators to measure the achievement of these targets. These targets are listed as follows:

- ***Target 11.1:*** By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums
- ***Target 11.2:*** By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
- ***Target 11.3:*** *By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.*
- ***Target 11.4:*** Strengthen efforts to protect and safeguard the world's cultural and natural heritage.

- ***Target 11.5:*** By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.
- ***Target 11.6:*** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.
- ***Target 11.7:*** By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.
- ***Target 11.a:*** Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning.
- ***Target 11.b:*** By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.
- ***Target 11.c:*** Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.

International Scenario

According to the UN's report E/2021/58, the number of people living in slums has been increasing rapidly reaching over 1 billion by 2018. Region wise, slum dwellers are mostly prevalent in three regions of the world, Eastern and South-Eastern Asia (370 million), sub-Saharan Africa (238 million) and Central and Southern Asia (226 million). Data collected in 2019, from 610 cities and 95 countries indicates that about 50% of the population has access to public transport like trams, buses, ferries, railways etc. However, due to the impact of COVID-19 pandemic and consequent lockdowns, access to transport became limited or completely cut-off. Data collected in 2020 from 911 cities of 114 countries indicates a trend of rapid urbanisation from 1990 to 2019 especially in smaller cities. Additionally, the spatial urbanisation rate was higher as compared to population growth highlighting the fact that rural areas are fast disappearing or getting merged in cities at a high rate. The rate of increase in built-up area per capita has been rising steadily across the globe with exception to sub-Saharan Africa and Eastern and South-Eastern Asia. The UN recommended a goal of 30% area reservation for streets and open spaces has not been achieved as is evident from the data collected from 911 cities and 114 countries which shows only 16% area reservation in 2020. As of March 2021, 156 countries have formulated policies related to urban development with 38% being in their starting phases of implementation and 13% at the stage of evaluation of the implemented policies.

Initiatives on SDG-11 in India

India is projected to add 416 million urban dwellers between 2018 and 2050. 68% of the country's total population live in rural areas, while 17% of the country's urban population live in slums. The Government of India's Smart Cities Mission, the Jawaharlal Nehru National Urban Renewal Mission, and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) are working to address the challenge of improving urban spaces. The prime minister's Pradhan Mantri Awas Yojana aims to achieve housing for all by 2022 (Ministry of Housing and Urban Development, 2005-2021). An brief overview of these programmes is presented in the following sections.

Smart Cities Mission

Smart City is a city that aims at connecting the physical, IT, social and business infrastructures to improve the overall efficiency and growth (Hollands, 2008). India launched its smart cities mission in 2015 with a goal to provide high quality infrastructure and facilities for its citizens by a combination of renewable energy and smart energy efficient technologies. A total of 100 cities have been identified to be developed into smart cities which will act as models for other cities to follow gradually. This was planned to be achieved through central government financing with INR 2,05,018 crores to be invested in 5,151 for the same for 5 years with an average of INR 100 crore per city. Additional funds shall also be provided through other mechanisms like municipal bonds, other programs and borrowings. By 9th Nov 2021, 3129 projects worth INR 53,174 have been completed under the programme. The projects encompassed the mission include creation of walkable public spaces, creation

of bicycle pathways, use of bicycles and eco-friendly transportation, creation of health and social welfare centres, efficient water supply, better sanitation and waste management by use of improved technology, use of digital technology like cameras, sensors, early warning systems, weather forecasting systems, GPS and CCTV tracking of buses, distance learning classrooms and campuses for govt. schools and collages etc. Broadly, smart cities are liveable offering better space and environment (quality of life), have strong framework for economic growth of businesses and are sustainable, monitoring and minimizing pollution, protecting its environment. The indicators for measurements of quality of life is the Ease of Living Index (EoLI), for economic performance the City GDP Measurement Framework, and for sustainability the Climate Smart Cities Assessment Framework (CSCF) have been formulated by the govt.

Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

JNNURM was initiated by Ministry of Housing and Urban Affairs (MoH UPA) in 2005 as a plan to modernise the cities. The programme involved investment of 2000 crores for a seven year period. The programme's strategy involved improvement of socio-economic fabric of the cities, through sub-projects of "Basic Services to Urban Poor (BSUP)" that focussed development of slum areas and "Urban Infrastructure and Governance" with a focus on water supply and sanitation, solid waste management, road network, urban transport and redevelopment of old city areas. This scheme was concluded and succeeded by Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in 2014.

Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

The mission of providing basic civic amenities to improve the quality of life for all especially the poor and the disadvantaged was further restructured in form of AMRUT programme. The main objectives of the programme were (i) provision of water supply and sewerage connection to all households (ii) construction of green spaces, parks (iii) pollution control by promotion of public transport usage and cycling. AMRUT covers about 500 cities and towns that have a population of 1 lakh and involved an investment of INR 5000 crores from financial year 2015-16 to 2019-20. The scheme is now extended in form of AMRUT 2.0 as announced by MoHUPA in 1 Oct, 2021 incorporating an investment of INR 4.4 lakh crores.

Initiative of Shoolini University on SDG 11 Compliance

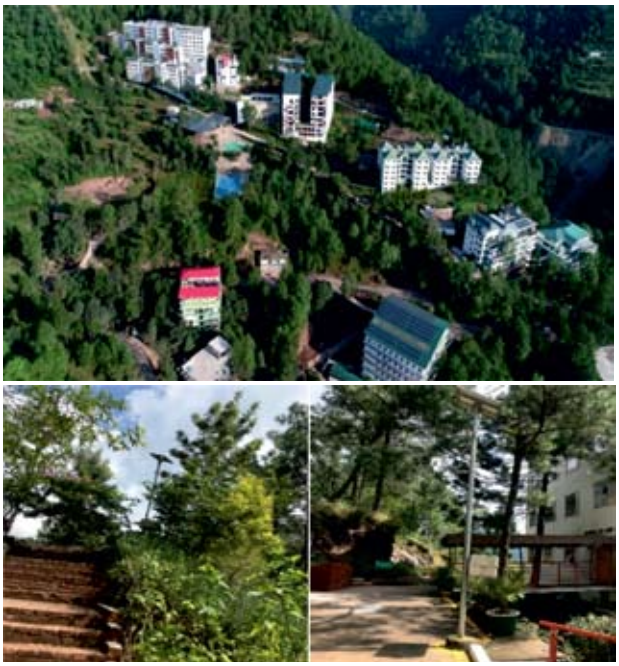
The SDG 11 and related schemes of smart cities, JNNURM and AMRUT are developed in global and country-level development perspective. But the highlighted missions on sustainable buildings, energy efficiency, pollution-control, green spaces, waste management are very well applicable to higher educational institutions which are also small townships. In view of the latter, the Shoolini University has made significant advancements in assimilating SDG 11 and other SDGs into its cultural fabric by taking the following initiatives:

Green Township -Moving towards 100% Renewable Energy Use by 2030

The Shoolini University township provides safe residence to students, teachers and employees. It is a green campus located in the hills of Solan with fragrant flowers, and lush green forest. Green and public spaces are provided within campus for various gatherings. Special facilities have been constructed for persons with disabilities. Trees are planted to improve the eco-system of the campus even further.

The campus utilizes clean solar energy for improving energy efficiency use, of sustainable

Figure 1: Green Campus With Plantations and Solar Street Lights Installed



building materials and lowering the carbon footprint of the University a 400 kWp photovoltaic rooftop power plant (figure-2) has been installed in April, 2018 that lowers the consumption of grid-electricity and also exports the excess electricity to the electric grid.

Figure 2: Green Shoolini University township uses a distributed 400kWp grid-connected solar photovoltaic power plant on the building rooftops and car parking to meet the energy needs & reduces dependence on conventional electricity

Sewage Treatment and Waste Water Recycling Facility

As a measure of maintaining a clean and green campus separate dustbins for biodegradable and non-biodegradable wastes have been fixed in every part of the university campus. The University has been declared as 'zero single use plastic'. A Sewage Treatment Plant of capacity 3,50,000 lpd and Effluent Treatment Plant of 50,000 lpd capacity, are installed in the campus for the treatment of sewage water and waste water coming from the hostels and research laboratories respectively (figure 3). The clean water from the plant is used for the irrigation of gardens / lawns whereas the dried solid waste is used as a manure for the trees and flowers planted in the campus. Rainwater harvesting is also adopted in the vicinity of university campus. Harvested rainwater is used for recharging of the borewell pits.

Figure-3: Sewage and water treatment plant at Shoolini University

Mandatory Policy for the of Energy Efficient and Passive Solar Buildings Technology Construction and SDG Focused Research

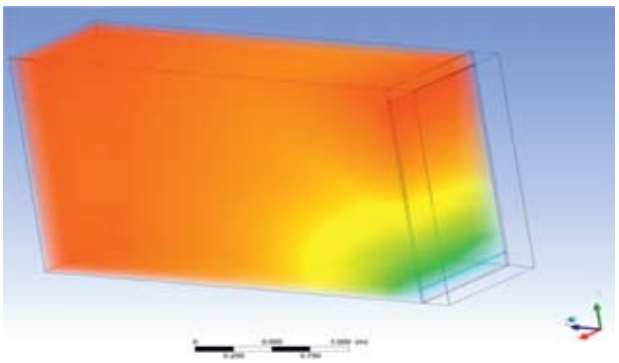
A energy policy has been formulated and adopted by the Shoolini University since 2019 under which all the new residential buildings are being designed incorporating solar passive features for increasing the thermal comfort of the occupants and lowering the energy consumption during summers and winters. Such designs are supported by studies done using energy simulation (example figure 4).

The education, research on renewable energy system applications and implementation in the University township and adjoining villages, are being coordinated by the multidisciplinary Centre of Excellence in Energy Science & Technology is established in 2019 by the University keeping in view the vast potential of renewable technologies in achieving targets of various SDGs. The CEEST which is ranked 12 as per SCIMAGO *World Ranking for Energy Research* in 2021 is already offering UG, Masters & PhD education with SDG focussed research and implementaion.

Lowering Carbon Footprints – Electric Carts for Local Transportation

The University has introduced three electric carts

Figure 4: Solar Collector and Room Temperature Rendering and Simulation Using Energy Simulation



for local transportation inside the university campus. Additionally, the University has restricted movement of personal vehicles inside the campus during office times to keep campus pollution free.

Sustainable Health care through Yoga, Naturopathy, Ayurveda – Yogananda Yoga Centre of well being

A Yogananda Yoga Centre and a dedicated health centre equipped with modern facilities has been established in the University for overall well being of all students, faculty and employees (figure-6) An ambulance facility is also present within the campus for any emergencies. The University is also carrying out research for making natural herbal products through its Pharmacy research laboratories.

The initiatives taken By Shoolini University on the implementation of SDG -11 as per its subgoals are summarized in Table 1.

Role of Higher Educational Institutions in Adoption of SDG 11 and the Way Forward

It has been analyzed in the past, with examples of Montreal, London and Stockholm that smart cities planning, and implementation is a complex process and in depends on the economic needs, culture and social factors (Letaifa, 2015). Moreover, its successful implementation requires the cohesive efforts of governments, businesses, institutions and people in general. However, the research in the recent decades has spun new models like 'Triple Helix' to emerge that highlight the importance of universities as key facilitator for implementation of smart city eco system (Etzkowitz and Leydesdorff, 2000). This

Figure 5: Three Electric Carts for Local Transportation in the University Campus

Figure 6: Students practicing at the Yogananda Yoga Centre (left) and dedicated health centre at university for frequent health checkup camps, vaccinations and emergencies (right).

Table 1: SDG 11 Targets and corresponding initiatives taken by Shoolini University

SDG 11 Target	Shoolni University Initiatives
11.1	The university has quality hostel facility of International standards and provides scholarships and aid to students from weaker sections of the society.
11.2	All university occupants have access to university buses for safe and convenient transportation.
11.3	Installation of 400 kWp solar PV plant and promotion of sustainable solutions like biogas and low carbon building construction with use of traditional materials energy efficient solar passive housing. Use of electric cars for internal transportation is a common practice in the university.
11.4	Shoolini University has established special galleries to honour of world renowned Indian Nobel Laureates to inspire students and faculty.
11.5	Shoolini University maintains a dedicated health centre and ambulance service for emergencies. All students, employees and faculty are 100% vaccinated against COVID-19, reducing the risk of infections and death.
11.6	University operates a waste recycling plant and additional measures for proper segregation of biodegradable and non-biodegradable wastes.
11.7	The university has included green spaces and public spaces sufficient for its occupants.
11.a	Submitted a project to Department of Science and Technology govt. of India, that aims to uplift rural population in nearby region by training and constructing energy efficient homestays.
11.b	University is already in process of expanding the campus in other states. The new campuses shall be governed by existing energy and environment policies and shall pave the path for future sustainability.
11.c	The university through projects intends to disseminate energy efficient construction & Solar Passive building technology practices and business models for rural areas.

model has been further researched (Carayannis and Campbell, 2010) and analyzed as Quadruple Helix (consideration of effects of media-based and culture-based public) and Quintuple Helix (consideration of sustainable development and social ecology). These studies clearly highlight that it is unlikely for a society or a country to progress without leveraging and enhancing knowledge. In fact, economic growth is very well tied to creation of knowledge-based societies. Since universities and educational institutions are the hub of knowledge creation and dissemination their role in development of sustainable economies and societies cannot be neglected. Being part of the Helix model, universities themselves have additional benefits to gain in addition to their standard importance and role by aligning themselves with the govt.'s goals or global SDGs.

Times Higher Education (THE) a UK-based company that ranks and reports various universities on the basis of quality of education has also released rankings based on 11 SDG compliance of various universities in 2019. The SDGs included in the THE ranking are UN's SDG no. 3,4,5,8,9,10,11,12,13,16 and 17. Although many universities have activities in line with various SDGs none of the Indian universities have yet made it in the top 100 of the THE SDG based ranking. It is therefore apparent that in order to further improve the ranking as well as doing its part in helping combat environmental change and for better quality of life, all universities must make the SDGs an integral part of the organisational policy and culture.

A demonstration of SDG compliance at institutional level in University townships will further inspire promotion of nation-wide developmental programmes like Smart Cities Mission and AMRUT. It is also a good idea for the Indian govt. to create a reward system institutions that comply with SDGs and also a national ranking system similar to the THE SDG-based ranking. SDG compliance demonstration at institutional level is important and would have a very strong impact as they involve the young generation of the country who would made aware of the importance of future sustainability, energy

conservation and efficiency, recycling, safety and other indicators defined in the SDGs that aim to make the world a better place.

In order to implement United Nations Sustainable Goals, the higher education and research institutions must orient their education and research to achieve SDG targets and demonstrate in the institution townships. This can be achieved if each institution creates a multidisciplinary SDG division to implement and monitor the SDG targets by 2030 which is not very far away.

References

1. United Nations SDGs. *https://sdgs.un.org/goals*, viewed on 11-09-2021.
2. Sodiq, et al. (2019). Towards Modern Sustainable Cities: Review of Sustainability Principles and Trends. *Journal of Cleaner Production*, doi: 10.1016/j.jclepro.2019.04.106.
3. Yigitcanlar, T., and Lee, S. H. (2014). Korean ubiquitouseco-city: A smart-sustainable urban form or a branding hoax?. *Technological Forecasting and Social Change*, 89, 100–114.
4. Komninos, N. (2002). Intelligent cities: Innovation, knowledge systems, and digital spaces. New York: Taylor & Francis, ISBN 9780415277181.
5. Ministry of Housing and Urban Development, Govt. of India, *https://mohua.gov.in/cms/schemes*-or-*programmes.php*, viewed on 11-09-2021.
6. Robert, G., Hollands (2008): Will the real smart city please stand up?, City: analysis of urban trends, culture, theory, policy, action, 12:3, 303-320.
7. Letaifa (2015): How to strategize smart cities: Revealing the SMART model, Journal of Business Research, 68-7, Pages 1414-1419.
8. Etzkowitz and Leydesdorff (2000): The dynamics of innovation: from National Systems and ''Mode 2'' to a Triple Helix of university–industry–government relations. Research Policy 29 2000 109–123.
9. Carayannis and Campbell (2010): Triple helix, Quadruple helixand Quintuple helix and how do Knowledge, Innovation and the Environment relate To Each other? A Proposed Framework for a Trans-disciplinary analysis of Sustainable development and Social Ecology. *International Journal of Social Ecology and Sustainable Development,* 1(1), 41-69, January-March, 2010. ❑

Responsible Consumption and Production: Potential of E-waste in Sustainable Road Pavement Construction

M S Thakur*, Navsal Kumar*, Arunava Poddar* and K S Nagial*

Sustainable consumption and production refer to "Use of services and goods that respond to basic needs and provide a higher quality of life while minimising the use of environmental assets and hazardous metals, as well as the emission levels of waste and pollutants over the life cycle of the good or service so as not to seriously impact the needs of current and future,". In this term, there are many such items which can be implicit to sustainable consumption and production for example cement, lime, aggregates, forests produce, electrical and electronics devices. In the exponential growth of electrical and electronic devices in consumption and production has led to generation of E-waste scenario around the world.

When electromechanical equipment is no longer fit for its intended use or has beyond its expiry date, it is referred to as electronic rubbish, or e-waste. Computers, servers, mainframe computers, monitors, CDs, printers, scanner, copiers, calculators, fax machines, battery cells, communication devices, transmitters, Televisions, smartphones, medical equipment, washing machines, refrigerators, and air conditioning units are all examples of e-waste. (When unfit for use).Due to rapid technological breakthroughs and the manufacturing of newer electronic equipment, these electronic equipment's are quickly replaced with newer models. As a result, the amount of e-waste produced from electronic waste as shown in Figure 1. People are more likely to upgrade to newer versions, and product lifespans have shortened.

E-waste is made up of metals, polymers, cathode ray tubes (CRTs), printed circuit boards, wires, and other components. Copper, silver, gold, and platinum can be recovered from e-waste if it is handled properly. Once e-waste is disassembled and produced in a basic way using primitive procedures, unsafe compounds such as liquid crystal, lithium, mercury, nickel, hexachlorobenzene biphenyls (PCBs), chromium, toxic chemicals, sulphide, oxidized to form fire retardants, hexavalent chromium, chromium, cobalt, copper, and lead are present. Humans, animals, and the ecosystem are all threatened by e-waste. Heavy metals and extremely poisonous compounds like mercury, lead, beryllium, and cadmium, even in trace amounts, represent a serious hazard to the environment Consumers are the key to effective e-waste management. Reduce, Reuse, Recycle (3Rs), a digital platform for connecting the market and promoting a circular economy, are all geared at encouraging consumers to properly dispose of their e-waste, with increasing reuse and recycling rates, and develop sustainable consumer behaviours. E-waste management is a top concern in affluent nations, but it is aggravated in poor countries by totally adopting or reproducing developed-country e-waste management, as well as numerous linked issues such as a lack of investment and technically qualified people resources. Furthermore, there is a lack of infrastructure and suitable legislation specifically for e-waste. Furthermore, among other things, the roles and responsibilities of parties and institutions involved in e-waste management are not properly defined. In 2016, the Ministry of Environment, Forest and Climate Change (MOEFCC) published new E-waste (Management) Rules, which replaced the previous E-waste legislation in India (GoI, 2016).

Therefore, it is significant to carry forward research work to utilize the E-waste by the engineers and scientist. Many researchers are now incorporating e-waste into road building to improve pavement durability and service life. Vaidevi, *et. al.,* (2020) carried out experimental work using e-waste as a replacement for aggregate in various percentages such as 20%, 25%, and 30%, as well as fly ash as a filler material in the flexible pavement. It has been

Figure-1: E-waste Produced from Electronic Equipment (Manish and Chakraborty, 2019)

** Professor, Department of Civil Engineering, Shoolini University, Solan-173229HP.Email:mohindrasinghthakur@shooliniuniversity.com; Email:ulwantnagial@shooliniuniversity.com*

noted that substituting up to 25% of aggregates with e-wastes improves Marshall stability and flow value, although using fly ash with a filler material combination does not boost strength but does aid to get a value almost equivalent to the control mix. This led to the conclusion that e-waste may be substituted with aggregate and fly ash as a filler ingredient in a bituminous mixture to a certain extent**.** Murugan (2018) determine whether E-waste recycling produces plastic components that can be utilised in pavement constructions. It was determined that a 5.5% binder level is optimal, which is consistent with earlier research findings. In addition, with an increase in the weight of plastic particles employed as replacement material by weight percent of coarse aggregate in bituminous mixes, Marshall stability, flow values, and Marshall quotient rise significantly when compared to the standard bitumen mix. Marshall stability is roughly three times higher with a 12 percent plastic bitumen mix compared with a traditional bitumen mix. Needhidasan and Agarwal (2019) determine whether E-waste plastic in flexible pavement structures, can be utilised as a replacement to traditional materials like as gravel and bitumen. When compared to typical bituminous, it has been shown that e-waste bituminous has a lot of strength. Waste can be used in the form of bituminous asphalt in a limited amount as a replacement technique, resulting in cost savings and environmental and human health safety. Shahane and Bhosale (2019) utilized Viscosity Grade (VG) − E-waste plastic powder modified bitumen is 30 bitumen that has been changed with e-waste plastic powder (EPPMB). When compared to plain bitumen, the EPPMB demonstrated good resistance to rutting, according to the findings (VG-30). EPP adjustment enhanced BC's permanent deformation resistance and adhesive force. The stability value of the unmodified mix was 13.5 kN, however it increased by 1.45 times to 19.6 kN for the revised mix. Furthermore, because E-waste plastic powder may modify bitumen, it could be used successfully as a bitumen modifier. By minimising pollutants, the utilisation of e-waste for bitumen modification will benefit the environment. Kakria and Priya (2019) look at the impact of when used as rigid pavement, e-waste as a filler alternative on the strength characteristics of concrete (M40 grade). 0%, 3%, 6%, 9%, and 12% NMP from waste PCB are combined with 0%, 3%, 6%, 9%, and 12% NMP from waste PCB. Compressive strength, split tensile strength, and flexural strength all improve when the proportion of NMP is increased by up to 9%. According to the study 9 percent of e-waste may be utilised as a filler in bituminous mixtures. Kumar, *et al.,* (2020) focused on bitumen which is partially replaced by E-PCB waste in the form of fine powdered and non-metallic chips in a predetermined ratio. Investigations on bitumen properties (such as penetration value, ductility, softening point, flash & fire point, and industrial viscosity) have been identified as well as Marshall stability of different bituminous mixtures. The use of E-waste instead of bitumen improved the Marshall stability and flow value of the bitumen. Dragomir *et al.,* (2021) present the performance of a new asphalt pavement created by substituting PCB waste for lime filler at a 100 percent ratio. The combination including PCB is softer than the control/witness mixture containing lime filler, according to the findings of the first experimental stage of this study. To discover a means to limit the usage of new raw materials in the road building business, more research into the use of E trash in road asphalt pavements will be done. Ullah *et al.,* (2021) examine the effect of e-wase as a partial replacement for natural coarse aggregates (NCA) on the characteristics of fresh and hardened concrete The compressive and tensile strengths of e-waste concrete decreased by 6.3%–17.1% and 23.5%–32.4%, respectively, according to the findings. For replacement ratios of ten percent to twenty percent. However, as compared to regular concrete, the workability and durability attributes of e-waste aggregate performed better during wetting and drying cycles. Furthermore, e-waste has no long-term influence on the compressive strength of e-waste concrete when exposed to heat. Lokesh *et al.,* (2014) investigated the usage of SDBC Grade-2 Mix, E-Waste Ceramics might be used as an aggregate. To evaluate the probable changes to the physical and mechanical performance of the mixes, the Marshall Method of Mix Design has been used, as well as conclusions have been drawn based on a critical result analysis for the best replacement ratio of aggregates by E-Waste ceramic as suggested for a road surface with such a thickness of 3.75m and a soil CBR of 4%.As a consequence of the analysis, the most likely percent replacement by weight of total mix was offered, as well as an approximate construction cost comparison.

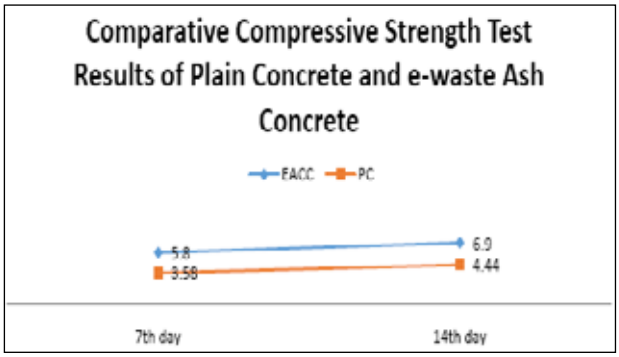
Marshall Stability

Marshall stability test on bitumen was developed by the Mississippi State Highway. The Marshall stability test is used to predict efficiency when using

the Marshall mix design procedure. The maximum load supported by the test specimen at a loading rate of 50.8 mm/minute is measured during the stability section of the test. The specimen is loaded until it fails, and the maximum load is defined as stability. During a stability test, the flow is defined as the difference in deformation between no load and the ultimate force carried by the specimen in units of 0.25 mm (flow value may also be measured by deformation units of 0.1 mm). The objective of this test is to find the optimum binder content for the aggregate mix type and traffic intensity. This is the technique that enables us all to plot Marshall Stability vs. Bitumen Percentage. Although the Marshall test technique is frequently used in the design and management of asphaltic concrete and hot rolled asphalt materials, it cannot be utilized on open textured materials like bitumen macadam. Materials with aggregate sizes more than 20 mm are more likely to provide unpredictable outcomes.

There is a vast potential to construct these village roads by providing aggregate material from the E-waste. Such waste is possible as in one of the research papers (Ravindra et al., 2020)wherein the compressive strength of the concrete by using E-waste ash was encouraging as can be seen in the Figure-2. The total core-net road length potential is 17,39,061 km in which 1126836 km is to be black topped. Therefore, the aggregates requirement for pavement can be fulfilled to the greater extend as about 2200 m^3 per km is required for the subbase and base course of such pavements. According to the literature, E-waste plastic material, has been widely used by researchers, and several experimentations has been done by adding e-waste to road pavement and it shows very significant results in the design of road pavement which improves the strength and stability as well as being cost-effective and environmentally friendly.

Figure-2: E-waste Concrete in Road Construction (Ravindra, et al., 2020)



The stability tests show that there is an increase in its value at 25% of e-waste used in the asphaltic specimens. Both the control and modified bitumen mixes yielded the same results. It can be observed from the Figure-3 that the Marshall value starts decreasing after 25% of e-waste which shows that it has an optimum value for its potential use as substitute material in pavement construction. It is concluded that replacing 25% of the aggregate with e-waste containing 5.5 per cent bitumen raises the stability value while keeping all other parameters within limits.

In Figure-4, the VMA results also show that there is a decrease in its value at 25% of e-waste used in the asphaltic specimens to the extent of about 20 % which is helpful in increasing the durability element of the pavement material.

Santhanam *et al.,* (2019)tested the strength of bituminous grade VG30 at various percentages ranging from 5% to 20% in 10 ml of asphalt, E-waste plastics powder was used as a replacement for conventional bitumen in the flexible pavement layer to see how it behaved according to Indian specifications.

Figure-3: Stability (kilo Newton) Vs E-waste Content (Vaidevi*et al.,* (2020)

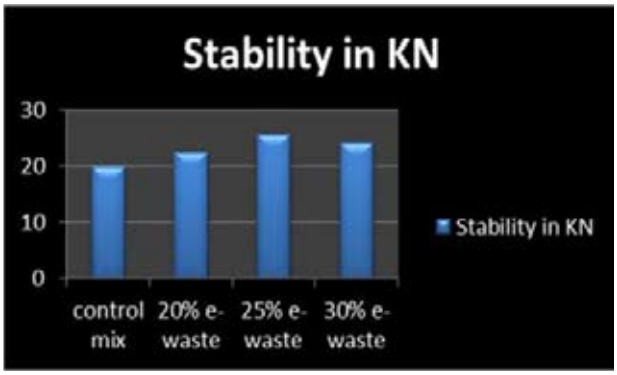
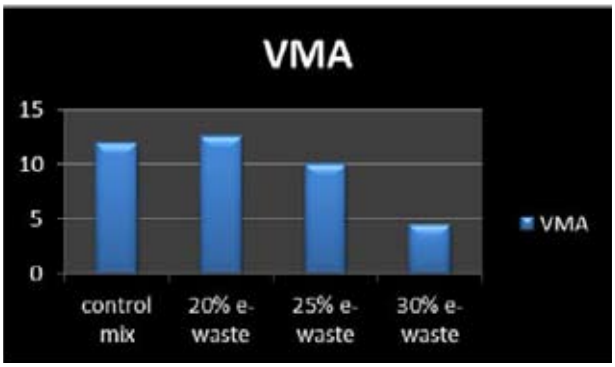


Figure-4: Voids in Mineral Aggregates (VMA) (percent) Vs E-waste Content (Vaidevi*et al.,* (2020)



It is 15 % plastic waste which has the potential to be absorbed in as material for road pavement construction. The results demonstrate that E-waste plastic powder may be utilised in pavements with traditional bitumen to improve strength by using 10% replacement with plastic powder as shown in Figure-5.

According to MORTH specifications, the ideal binder level for desired mixes is 5.5%. The plastic bituminous mix (PB 3) has a 159 percent improvement in Marshall stability when compared to normal bitumen mix, which is a notable finding in the study. With an increase in the weight of plastic particles employed as replacement material by weight percent of coarse aggregate in bituminous mixes, Marshall stability, flow values, and Marshall quotient rise significantly when compared to the standard bitumen mix. Marshall stability is maximized with a 12% plastic bitumen mix as shown in Figure-6.

The Marshall stability value of E-waste Powder bitumen concrete made with e-waste modified with plastic powder may be seen in Figure-7 (EPPMB). EPPMBC (e-waste plastic powder modified bitumen bituminous concrete) was discovered to have a strength of 19.63 kN, which is 45 percent higher than standard bituminous concrete. This could be due to an increase in shear stress and cohesiveness due to the increased bituminous viscosity of e-waste plastic powder (EPPMB). According to the literature, the polymer modified bitumen specimen was much more durable than that of the original bituminous specimen (Cubuk*et al.,* 2014).

According to Figure-8 with the addition of non-metallic powder, compressive strength increases by 9% (M4), which is the highest. As 3% non-metallic powder (NMP) is added, the compressive strength increases by 3.39 percent when compared to 0% NMP. When 9 percent non-metallic powder is added, the compressive strength is at its highest, but when more non-metallic powder is added, the compressive strength declines.

Figure-9, shows E-waste mixes with varying binder concentration have shown variance in Marshall stability (MS) mix. It demonstrates that modified

Figure-5: Various components in Waste Electronic and Electrical Equipment (WEEE) (Mmreki*et, al.,* 2016)

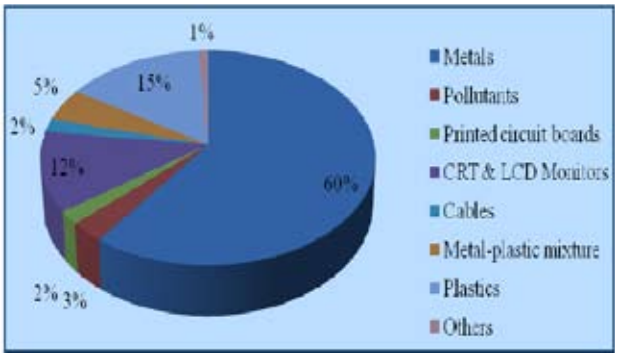


Figure-6: Variation of Marshall Stability Values of Plastic Bitumen Mixes (Murugan, 2018)

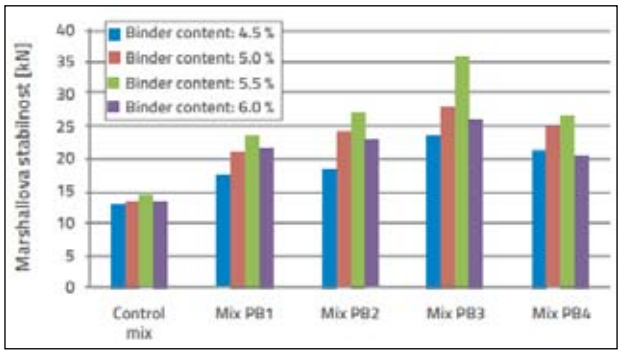


Figure-7: Variation of Stability (kilo Newton) Vs. Bitumen Content (%) with e-waste (Shahane and Bhosale, 2019)

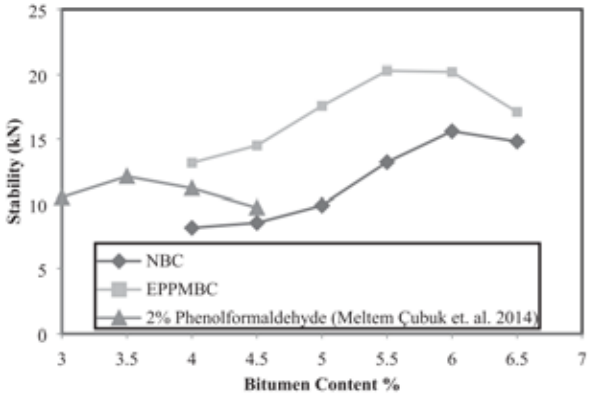
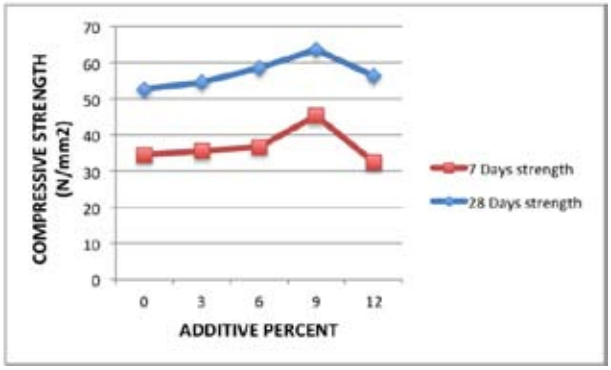


Figure-8: Compressive Strength of Cube for Different Percentage Replacement (Kakria and Priya, 2019)



bitumen, which is composed of 88% and combination of bitumen with 12% E-waste, with 10% E-waste powder as a filler, offers a higher endurance limit than a conventional bituminous mix. The ideal E-waste chipping proportion in the Bituminous mix was found to be 10% by weight of aggregates in 12% Modified Bitumen with a 5% optimum bitumen percentage.

Figure-9: Marshall Stability Value Variation with E-Waste Mixes (Kumar, *et al.,* 2020)

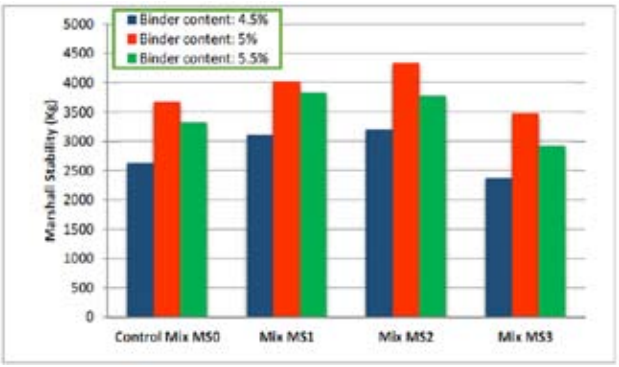


Figure-10: (a) Compressive Strength of Varied Percentages of E-waste (b) E-waste has an Adverse Influence on Compressive Strength (Ullah, *et al.,* 2021)

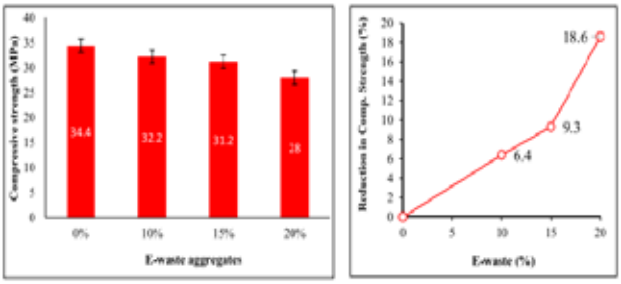
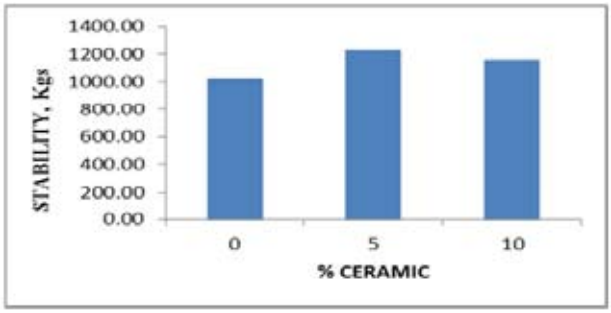


Figure 10, shows the compressive strength of concrete decreased as the percentage of E-waste aggregate in the mix increased. Compressive strength readings dropped by 6-17%. This is due to a weak link forming between the cement and the E-waste aggregate.

In Figure-11, it has been seen that Stability was shown to rise until 5% replacement, after which it steadily reduced. Finally, it can be said that the Marshall flow increased until around 5% of the ceramic was replaced with aggregate and then decreased.

In this investigation, it was also discovered that incorporating E-waste material in bituminous and concrete road pavements lowered costs. According to the (Hake *et al.,* 2020) in comparison to conventional

Figure-11: Ceramic (%) v/s Stability (Lokesh *et al.,* 2014)



bitumen, the overall cost of plastic blends bitumen was reduced by 5.18%. As a result, it is cost-effective and environmentally friendly to produce a plastic blend bituminous road. Based on the study of (Gade*et al.,* 2019) the findings of the laboratory experiment show a significant increase in the strength necessary for road building while saving a significant amount of money. The outcomes produced from (Lokesh *et al.,* 2014) When we consider an actual Amount in Construction of Road using conventional materials of around INR 1340317.125/km and a total Expense in Construction of Road with 10% E-Waste ceramic replacement of around INR 1331933.982/km, we get a net saving of INR 8383.143/km for a 1km roadway of 3.5m width for soil CBR 4 per cent.

Other Researches in Progress

K. Senthil Kumar and K. Baskar published a study in the journal Hazardous Radioactive Waste (2014) titled "Development of Eco-friendly Concrete Incorporating Recycled High-Impact Polystyrene from Hazardous Electronic Waste," in which the effective use of High Impact Poly Styrene (HIPS) as a coarse aggregate substitute in concrete is one of the feasible solutions for the solid waste management problem, reducing environmental pollution and conserving the natural resources from depletion.

Recommendations

1. There is huge potential of utilizing plastic from the e-waste in the flexible road pavement construction as it increases the Marshall stability of the pavement in the range of 25%-74.5% which is quite encouraging scenario for e-waste utilization.
2. The plastic extracted from the e-waste can be utilized as aggregate i.e., coarse or fine as the case may be in the cement concrete mix for which more exploratory work is required to assess the mechanical characteristics of concrete.

3. E-waste material in flexible and concrete road pavement is cost-effective, environmentally beneficial, and saves a significant quantity of waste material.

References

1. Çubuk, M., Gürü, M., Kür¸sat Çubuk, M., and Arslan, D. (2014). Rheological properties and performance evaluation of phenol formaldehyde modified bitumen. *Journal of Materials in Civil Engineering*, *26*(6), 1–6.DoI: 10.5772/61332
2. Dragomir, M. L., Cadar, R. D., and Boitor, R. M. (2021, April). Using E-waste in asphalt mixtures–a laboratory investigation. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1138, No. 1, p. 012022). IOP Publishing.
3. Gade, A., Kulkarni, S., Tapase, A., and Bonde, S. (2018). A Cost-Effective Approach Towards Road Construction—Kondave a Case Study. In *Civil Infrastructures Confronting Severe Weathers and Climate Changes Conference* (pp. 98-106). Springer, Cham.
4. Hake, S. L., Damgir, R. M., and Awsarmal, P. R. (2020). Utilization of Plastic waste in Bitumen Mixes for Flexible Pavement. *Transportation Research Procedia*, *48*, 3779-3785.
5. Ingole, Aniket Ravindra, Gulhane Shweta Kailashrao, Shirbhate Shivani Sanjay, Chavhan Mayur Pandit, Makde Toshini Narendra,(2020). "Use of Electronic Waste Concrete for Road Construction", *International Journal of Engineering and Advanced Technology,* ISSN: 2249 – 8958, Volume-9 Issue-5, June, 2020 974-980. DOI: 10.35940/ijeat.E7028.069520 Use of Electronic Waste Concrete for Road Construction.
6. K. Senthil Kumar and K. Baskar (2014). Development of Ecofriendly Concrete Incorporating Recycled High-Impact Polystyrene from Hazardous Electronic Waste", *Journal of Hazardous Radioactive Waste*, DOI: 10.1061/(ASCE) HZ.2153-5515.0000265. © 2014 American Society of Civil Engineers.
7. Kakria, K., and Priya, S. (2021). Use of Non-Metallic Powder Reclaimed from Waste Printed Circuit Boards in Rigid Concrete Pavement. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1075, No. 1, p. 012032), July, IOP Publishing.
8. Kumar, G. R., Santhosh, K. S., and Bharani, S. (2021). Influence of E-waste on properties of bituminous mixes. *Materials Today: Proceedings*, *37*, 2719-2724.
9. Lokesh, Y., Gopinath, R., Jaiswal, I. P., Singh, A., Banerjee, S., and Dkhar, W. (2014). Study on the effective Management of E-Waste Ceramic by its utilization as a replacement to aggregates in SDBC Grade-2 Mix. *International Journal of Innovation and Applied Studies*, *7*(3), 981.
10. Manish A, and Chakraborty P. (2019). "E-waste Management in India", TerraGreen, Vol. 12(8), Nov. 2019. Pp.22-30. *https://www.teriin.org/article/e-waste-management-india-challenges-and-opportunities*.
11. Mmreki D., Li. B., Baldwin A., and Hong L.,(2016). "The Generation, Composition, Collection, Treatment and Disposal System, and Impact of E-Waste ", Chapter 4.
12. Murugan, L. (2018). Use of e-plastic waste in bituminous pavements. *Građevinar*, *70*(07.), 607-615.
13. Needhidasan, S., and Agarwal, S. G. (2020). A review on properties evaluation of bituminous addition with E-waste plastic powder. *Materials Today: Proceedings*, *22*, 1218-1222.
14. Santhanam, N., Ramesh, B., and Agarwal, S. G. (2020). Experimental investigation of bituminous pavement (VG30) using E-waste plastics for better strength and sustainable environment. *Materials Today: Proceedings*, *22*, 1175-1180.
15. Shahane, H. A., and Bhosale, S. S. (2021). E-Waste plastic powder modified bitumen: rheological properties and performance study of bituminous concrete. *Road Materials and Pavement Design*, *22*(3), 682-702.
16. Ullah, Z., Qureshi, M. I., Ahmad, A., Khan, S. U., and Javaid, M. F. (2021). An experimental study on the mechanical and durability properties assessment of E-waste concrete. *Journal of Building Engineering*, *38*, 102177.
17. Vaidevi, C., Sahana, D., Sripriya, E., Tamilselvi, T., and Vijayan, D. S. (2020). Utilization of e-waste in flexible pavement. In *AIP Conference Proceedings* (Vol. 2271, No. 1, p. 030001), September, AIP Publishing LLC.1. ❑

Challenges in Needo-education for Equality and Sustainable Society

M M Goel*

Being Needonomist, I believe that Needo-education (needed education at all levels particularly higher education in India) is necessary for sustainable society with inter generation equity and gender equality in tune with the Sustainable Development Goals (SDG) 2030, but there are many challenges to be understood and addressed which falls in the domain of this article.

The SDGs are a collection of 17 global goals set by the United Nations General Assembly in 2015 for the year 2030. The SDGs are part of Resolution 70/1 of the United Nations General Assembly, the 2030 Agenda.

The Sustainable Development Goals are: No Poverty, Zero Hunger, Good Health and Well-being, Quality Education, Gender Equality, Clean Water and Sanitation, Affordable and Clean Energy, Decent Work and Economic Growth, Industry, Innovation, and Infrastructure, Reducing Inequality, Sustainable Cities and Communities, Responsible Consumption and Production, Climate Action, Life Below Water, Life On Land, Peace, Justice, and Strong Institutions, Partnerships for the Goals. These 17 goals are depicted in Figure-1 bellow.

It can safely be inferred from figure 1 that SDGs are shared goals and all of us are required to contribute in achieving them and justifies sanskars to be imbibed as a necessary and sufficient condition for ensuring inclusive growth as care for the cared-less and use of the used- less people which falls in the domain of needo-education. It needs to be noted that 5 of the 7 targets of sustainable development goals (SDGs) 2030 on quality education and learning outcomes call for fine-tuning and continuous monitoring.

To improve SDG index ranking of India from 120th rank out of 165 countries in Sustainable Development Report 2021 (SDR 2021) with a score of 60.1, we have to use full potential of schemes under Atamnirbhar Bharat Abhiyan for generating employment by treating business more than money making as social entrepreneurs with moral values. We should do soul searching with introspection about environment in all its dimensions to be considered as a human resource development (HRD) activity in India. The relevance of needs and its education and economics is as old as civilization. The adage 'Necessity is the mother of invention' rightly explains the importance of needs. There is no dearth of literature on Indian economic thought relevant to justify needonomics and needo-education. Maharaja Agrasen, Bhagvad Gita, Mahatma Gandhi, J.K. Mehta (wantlessness).

The principle of needonomics (economics of needs)is based on sloka no 22 of chapter 9 of Gita and used in the logo of LIC of India 'Yogakshemam Vahamyaham' (Your welfare is our responsibility). It believes in common sense approach which is ethical, nonviolent and spiritual in nature and says no to greed authenticating economic thoughts of Mahatma Gandhi Understand benefits and wide scope with SWOC analysis of needonomics for global economy with Glocalization for Vasudhiava Kutumbakam (the world is one family) and SGM Strategy. Let us understand, analyze and interpret Sustainable Development, Sustainable Human Development, Sustainable Development Goals 2030.

The opportunities of needo-education include the use of artificial intelligence (AI), minimax strategy, Maximin strategy, Glocalization with values and ethics.

The major challenges include fear of failure, control of population, employment, converting careless into careful and useless into useful, bridge the gaps, reskilling, reassessing and enhancing, transfer goodness as culture honestly to the next generation. We have to spend money honestly-zero subsidy (fiscal policy), zero rate of interest (monetary policy) for modernizing production for exports (no 2nd hand import) in India to succeed in achieving SDGs. We have to adopt "swan strategy" (means take milk like a swan and leave water in pot) with debate; discussion and mandate of Glocalization (think globally and act locally). We have to develop

* *Vice Chancellor, Starex University, NH-48, Delhi-Jaipur Binola Gurugram-122413. E-mail:vc@starexuniversity.com, mmgoel2001@yahoo.co.in*

Figure-1: Sustainable Development Goals

abilities of head and heart, skills and knowledge (ASK) as consumers, producers, distributors and traders in various sectors of the economy including higher education.

We have to develop ideas to enhance capabilities & capacities for environmental concerns with sustainable development as Inter–generational equity. We need to stop wastage of food and grains to ensure zero hunger as second target of SDGs even if we don't rely the 101st ranking among 116 nations in terms of Global Hunger Index 2021 by questioning the credibility of the data releasing agencies.

For exploring the path ahead for achieving SDGs, we need concrete plan of action for controlling population. SDGs are interconnected and indivisible and balance the economic, social and environmental dimensions of sustainable development which is otherwise given lip service. There is a need for policy implication oriented research and not only t-value significance at 95 percent level of significance with many disconnections between environment, climate change, needo-education and economic development. To ensure quality research, we have to encourage the scholars for making analysis before COVID (BC) and after COVID (AC) for drawing the policy implications. We have to work out the strategies for overcoming the limitations of e-teaching and e-learning for achieving 5 of the 17 goals of SDGs 2030 on quality education. To achieve SDGs, the biggest challenges include flexible curriculum development as planned sequence of instructions in the educational process that leads to desirable human resources for the Indian economy. To compete with the foreign universities, we need to accept the challenge with spiritual training of teachers based on sermons from Gita and Anu-Gita for enlightened global citizenship in Hinglish if not English language. The fraternity of teachers have to be ready for all the challenges by becoming street smart teachers (simple, moral, action oriented, responsive and transparent) with effective leadership qualities. We need to reduce the scarcity of teachers by encouraging shadow teachers out of senior students under earn while you learn scheme of the UGC and implemented in Starex University Gurugram as one of the healthy practices. We have to become the team for searching the solutions to achieve SDGs which is essential for effective teaching and learning for needoeducation. The National Education Policy 2020deserves to be read and reread by the teachers for their understanding of the operational part in totality. To make national education policy sufficient for needoeducation in the global knowledge economy of today, we must have a time frame for the implementation and adopt well

defined Public -Private –Partnership (PPP) model in institutions of higher education. For preparing the students for needo-employment and needo-entrepreneurship, we need to adopt HOTS (Higher Order Thinking Sills) with creativity, innovation and critical thinking along with human values and ethics as Needoeducation and calls for alertness, awareness and awakening with rationality in implementation of SDGs 2030. For efficiency, sufficiency and equity in the system of higher education, we must link fee structure and user charges with inflation rate based on retail prices so that high cost recovery in needo-educationis ensured smoothly. To help the stressed private sector, there is a case for adopting the Public-Private Partnership (PPP) model as education is a merit want (quasi-public good!). The issue of examinations requires reforms by adopting the odd-even formula. The odd examinations can be conducted by the institutions internally by replacing internal assessment. The even semester examination by the universities/boards will reduce the burden and declare the results on time. The online education is complementary to classroom teaching and learning and cannot be ignored in digital India even in examinations. The fraternity of teachers have to become content producers to survive, exist and excel for achieving SDGs 2030. To ensure gender equality, there is a strong case for gender budgeting. We need an empowered educational governance based on the SIMPLE model (SQ development, Intuition development, Mental level development, Physical development, Love oneself attitude, EQ development) developed by the writer in the book 'Economics of Human Resource Development in India' (2012). We have to become street SMART (Simple, Moral, Action-oriented, Responsive, Transparent) for effective leadership in higher education as Vice-Chancellors.

References

1. Goel, M., M., and Garg, Ishu (2021). An Economic Analysis of Public Expenditure in Municipalities and Panchayats of Haryana, *NAGARLOK* ISSN 0027-7584 Vol. LIII, Part 1, January-March 2021 pp 16-37
2. Goel, M.,M.,(2020). New Education Policy- 2020: Perceptions on Higher Education, *Voice of Research*, Vol. 9 Issue. 2, September, 2020, ISSN No. 2277-7733, pp 14-16
3. Goel, M.,M., (2019). Relevance of Mahatma Gandhi as People's Economist, *University News*, Vol. 57 No 39 ISSN -0566-2257, September 30- October 06, 2019.
4. Goel, M.,M., (2019). Challenges of an Indian Teacher, *University News*, Vol. 57 No 35 ISSN -0566-2257 September 02-08,2019.
5. Goel, M.,M., (2019). Perceptions on Draft National Education Policy-2019, *University News*, Vol. 57 No 29 ISSN -0566-2257 July 22-28, 2019.
6. Goel, M.,M., (2019). An Encyclopedic Snapshot on the Issues of Corruption, review article on a book, *University News*, Vol. 57 No 06 ISSN -0566-2257 June 17-23, 2019.
7. Goel, M.,M., (2019). Awareness of Intellectual Property Rights: Need of the Times, *University News*, Vol. 57 No 06 ISSN -0566-2257 February 11-17, 2019.
8. Goel, M.,M., (2018). Private Universities in India: Challenges and Opportunities, *University News*, Vol. 56, No 49, 0566-2257.
9. Goel, M.,M., (2018). Educational Governance, *University News*, Vol.56, No 45, 0566-2257.
10. Goel, M.,M., and Suraj Walia (2018). Higher Education in Haryana: Growth and Present Status, *University News*, Vol.56, No 42, October 15-21, ISSN 05662257
11. Goel, M.,M., (2017). Youth Development Index : A Necessary Innovation for Development of the Country, *University News*, Vol. 55, No 42 October 16-22, ISSN 05662257.
12. Goel, M.,M., (2012). Economics of Human Resource Development in India: VK Global Publications, 978- 93-5058-014-1.
13. Goel, M.,M., (2002). Excellence Models for Teachers in the Changing Economic Scenario, *University News* Vol.40, No 42, 05662257.

❑

Realising Sustainable Development Goals through Life Skills: An Accelerator of Women Empowerment

Poonam Tiwari* and Anjali Bajpai**

Sustainable Development Goals (SDGs) are based on the Millennium Development Goals (MDGs) form a cohesive and integrated package of 17 interlinked global goals designed to be a blueprint to achieve a better and more sustainable future for all. The SDGs were set up in 2015 by the United Nations General Assembly and are intended to be achieved by the year 2030. Building on the accomplishments of their predecessors the MDGs the SDGs address the most pressing global challenges of our time, calling upon collaborative partnerships across and between countries to balance the three dimensions of sustainable development, economic growth, environmental sustainability, and social inclusion (The United Nations, 2015).

The United nations has identified 17 Sustainable Development Goals (SDGs) which have to be realized by 2030.These SDGs are-1) End poverty in all its forms everywhere; 2) End hunger, achieve food security and improved nutrition and promote sustainable agriculture; 3) Ensure healthy lives and promote well-being for all at all ages; 4) Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all; 5) Achieve gender equality and empower all women and girls; 6)Ensure availability and sustainable management of water and sanitation for all; 7) Ensure access to affordable, reliable, sustainable and modern energy for all; 8) Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; 9)Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation; 10) Reduce inequality within and among countries;11) Make cities and human settlements inclusive, safe, resilient and sustainable; 12) Ensure sustainable consumption and production patterns; 13) Take urgent action to combat climate change and its impacts; 14) Conserve and sustainably use the oceans, seas and marine resources for sustainable development; 15) Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss; 16) Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels; 17) Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Women and SDGs

Gender equality and empower all women and girls is one of the identified 17 Sustainable Development Goals which have to be realized by 2030. Gender equality is only possible if our women are competent enough and empowered. It has been long and widely argued that women are the key to sustainable development: 'the achievement of sustainable development is inextricably bound up with the establishment of women's equality' (WRI, 1994).

Gender equality is a goal in its own right enshrined in SDG 5 and it cuts across all 17 SDGs within the Agenda. It is found to have positive effects on promoting economic growth and labour productivity (SDG 8); enhancing human capital through health (SDG 3); accelerating equitable quality education (SDG 4), which has important implications for poverty reduction (SDG 1). Gender equality is also critical for attaining food security (SDG 2) and addressing climate change (SDG 13), while also strengthening resilience to climate-related disasters and managing natural resources. (UNDP, UN Women, 2018).

Women Empowerment

Recently, the World Economic Forum published the Global Gender Report 2017, stating that, despite the fact that women represent half of the world's population, they do not have access to the same level of health assistance, education, economic participation, potential earning and political decision making power.

** Post Doctoral Research Fellow (ICSSR) and Faculty of Education (K), Banaras Hindu University, Varanasi-221005 (Uttar Pradesh). E-mail: punnu.tiwari77@gmail.com*

*** Professor, Faculty of Education (K), Banaras Hindu University, Varanasi-221005 (Uttar Pradesh). E-mail: anjali68bajpai@gmail.com*

Gender discrimination, female infanticide, child marriage, dowry system, patriarchal order and the subordinate status of women, illiteracy, financial constraints, professional inequality, workplace harassment, inequality in sharing the burden of house hold work, lack of health care and safety, violence against women, decreased self esteem and indentifying abilities and potential, lack of proper educational programme are some obstacles that go against the way of women empowerment in India.

Women empowerment is a process to make women progressive, educated, financially independent, having good health and enjoying a good social status. It further refers to increasing and improving the social, economic, political and legal strength of the women, to ensure equal-rights to women, and to make them confident enough to claim their rights, so as to make their own choices and decisions, freely live their life with a sense of self-worth, self-respect and dignity, get safe and comfortable working environment, get equal opportunity for education and employment and have equal social status in the society.

Women Empowerment means to empower women with education, employment, decision making and better health in view of an equal and just society. Women empowerment is a dynamic process that consists of awareness- attainment – actualization cycle. Individual rights, Educational Women Empowerment, Economical women empowerment, Political Women Empowerment; Social Women Empowerment and Legal Women Empowerment are various dimensions of women empowerment.

Indicators of Women Empowerment

The various types of empowerment can be measured by applying the indicators in the study of women's empowerment.

Qualitative Indicators of Empowerment

- Becoming more stronger and self confident
- Increasing positive self-image, self awareness and self esteem
- Having critical thinking power and problem solving ability
- Having access to information and resources for taking proper decision by their own.
- Having a range of options from which they can make choices (not just yes/no, either/or.).
- Maintaining positive relationship with others
- Having good communication skills and negotiation skill
- Developing good coping strategies to handle stress and emotions
- Increase in personal leisure time and time for child care.
- Ability to learn skills for improving one's personal or group power
- Learning different self defense techniques
- Increasing awareness about legal rights
- Changes in the roles and responsibilities in the family and in the society.
- Change in perspective of customs that are against anti-women, e.g. child marriage, dowry, widow marriage etc.
- Ability to change others' perceptions by democratic means.
- Involving in the formation of cohesive group and development of leadership quality
- Able to access information on the internet and becoming tech savvy

Quantitative Indicators of Empowerment

- average age at marriage
- Sex ratio
- Improvement in female literacy rate
- changes in physical health status and nutritional levels
- Reduction in rate of violence against women
- Participation levels of women in political process
- Participation levels of women in different development programmes

Need of Life Skills Education for Women Empowerment

It is important for a country that its women should be productive but it is a fact that most of the women are unable to utilize their potentials and rights in an appropriate way due to lack of proper guidance and motivation. The time has challenged women in exceptional ways to find their identity, status and value. In most part of the world, women are powerless facing threats to their lives, health and well being as a result of being overloaded with work, getting less weightage and respect. Empowerment enables women to realize their full identity, and power in all sphere of life. Power cannot be given away as alms, it has to be acquired which can be possible only through Education. Thus there is need of

effective and immediate educational programmes which would be beneficial in acquiring power. Empowerment requires certain skills such as self-esteem, social ability and tolerance, to take action and generates change and to capabilities to have the freedom to decide what to do and who to be. The ability to acquire certain skills aiming to process of empowerment, in this reference Life Skills Education plays a vital role in creating awareness and provides guidance and direction to women.

Life Skills Education

United Nations International Children's Emergency Fund (UNICEF) defined it as "Life Skills Education is a structured programme of needs- and outcomes-based participatory learning that aims to increase positive and adaptive behaviour by assisting individuals to develop and practice psycho-social skills that minimize risk factors and maximize protective factors. Life Skills Education programmes are theory-and evidenced-based, learner-focused, delivered by competent facilitators, and appropriately evaluated to ensure continuous improvement of documented results". (Definition of Terms, UNICEF).

Life Skills

A skill is a learned ability to do something well. So Life Skills are the abilities that the individuals have to develop to live a fruitful life. Life Skills are psychosocial abilities that enable individuals to translate knowledge, attitudes and values regarding their concerns into well informed and healthy behaviors. World Health Organization (1997) defines Life Skills as "the abilities for adaptive and positive behaviour that enable the individuals to deal effectively with the demands and challenges of everyday life".

Here 'adaptive' means that a person is flexible in approach and is able to adjust in different circumstances and 'positive behavior' implies that a person is forward looking and even in challenging situations, can find a ray of hope.

United Nations International children's Emergency Fund (UNICEF) defines Life Skills as "a behaviour change or behaviour development approach designed to address a balance of three areas: Knowledge, Attitudes and Skill.

To develop healthy human beings in the world, World Health Organization (WHO) in1997 has identified ten skills which help the person to develop into healthy responsible and productive citizen.The ten core Life Skills as are- Self Awareness, Empathy, Critical Thinking, Creative Thinking, Decision Making, Problem Solving, Effective Communication, Interpersonal Relationships, Coping with Stress and Managing Emotions.

Life Skills include psychosocial competencies and interpersonal skills that help people make informed decisions, solve problems, increases self awareness, promoting positive attitudes, think critically and creatively, communicate effectively, build healthy relationships, promoting greater sociability, empathize with others, and manage their lives in a healthy and productive manner by preventing negative and high risk behaviours.

Essential Life Skills Accelerating Women Empowerment

Life skills education plays a vital role in the process of empowerment. It would create awareness and provide guidance and direction to women. With sincere efforts all concerned barriers in the way of empowerment can be eradicated to large extent through Life Skills Education. Life Skills equips women with certain skills needed for life time, value their worth, boost their confidence level, and makes them aware about their rights, able to take wise decision and solve their problems independently and survive in all adverse situations without being exploited

There are six groups of essential Life Skills* that can induce empowerment among women and bring gender equality in the society and will contribute in achieving the SDGs.

Thinking Skills

- Self-awareness
- Critical thinking skills
- Creative thinking skills
- Decision making skills
- Problem Solving skills

Social Skills

- Empathy
- Communication skills
- Interpersonal relationship skills
- Leadership skills

Emotional Skills

- Managing stress
- Managing emotion

Livelihood Skills

- Literary skills
- Vocational skills
- Financial skills
- Technological skills
- Domestic and parenting skills

Safety Skills

- Legal Awareness skills
- Health Awareness skills
- Self defense

Self Management Skills

- Time management Skill
- Resource management Skill
- Work-life management Skill

Strengthening of womens' mental, emotional and social skills are needed for empowerment. Knowing one's strengths and weaknesses is very essential for development of an individual; it would help in deciding their life goals. Thinking skills enable women to think clearly and rationally, to take right decision about their career and to handle problems and conflicts of their life satisfactorily without any stress. Intense stress and emotions can have negative effects on mental health which can be reduced by Emotional skills as these skills inculcate healthy and positive coping strategies to manage stress and emotions of life. Social skills provide them skills to maintain healthy relations with others, effective communication to put their views and to advocate for their rights and stand in the society by their own. Management skills equip them to manage their lives in a healthy and productive manner Livelihood skills make them aware about different sources of livelihood and provides them better opportunities to earn and become independent. Safety skills teach about health care and safety, self defense saves from violence against them. So life skills can uproot the barriers in the way of empowerment by developing certain capabilities and enhancing hidden potential of women. In this way life skills education can be a strong strategy of women empowerment which is needed to get women equal social status in the society and facilitates in achieving SDGs.

*[The above mentioned skills are identified by the authors (Tiwari, P. and Bajpai, A.) on a survey done on 100 women of Varanasi city in the year 2020 to identify the essential Life Skills which can facilitates empowerment among women through online mode. 'A Questionnaire to Assess the Need to Introduce Life Skills Training Among Women' was prepared for the purpose].

Conclusion

The basic need for empowering women is equipping them with basic skills, abilities and power in order to identify and magnifying their potential and therefore raise their status in the society. Education is one of the most important means of empowering women with the knowledge, skills and abilities necessary to uplift their condition in the society. In an effort to induce women empowerment life skills education interventions will be an appropriate mechanism.

Practicing life skills leads to development of such qualities as improved decision making skills, abilities that promote mental well-being and competencies to face the realities of life, enable to articulate issues in life, know their rights, about negotiation and refusal, build their self-esteem and self-confidence, power and bring gender equality. Furthermore, gender equality can be a catalytic policy intervention that triggers positive multiplier effects across the spectrum of development. So by fuelling women empowerment with life skills the successful achievement of SDGs could become more approachable and assertive. In this way not only the much essential gender equality will get established but its direct or indirect impacts will also aid in ensuring a more promising future for our fore coming generations.

Thus it is essential to sensitize women towards achieving life skills for acquiring, sustaining and preserving empowerment through well planned and well designed intervention programme. The intervention of life skills education is suggested both in formal and informal ways to empower our girls and women and bring gender equality in the society and therefore realise the Sustainable Development Goals definitely.

References

1. Behrani, P. (2016). Implementation Aspects of Life Skills Education Program in CBSE Schools. *Research Paper Psychology,*2 (3), 68-71.

2. Central Board of Secondary Education (2010). *Continuous and Comprehensive Manual for Teachers Class VI to VIII*. Retrieved, September 27, 2016, from *http://cbseacademic.in/web_material/Lifeskills/2_Life%20Skills%20Class20VIII.pdf ass%2*

3. Chaudhary (2007). *A Life Skills Intervention Programme for Adolescents: Contextual Approach*. Retrieved on August, 2016, from *www.reserachlifeskills.edu/ado.*

4. Gopikala 92014). "Life Skills for Women Empowerment: An Overview." *International Journal of Humanities, Arts, Medicine and Sciences*. 2 no. 12 (2014):19-34.

5. Ministry of Education and Child Development (2016). *SABLA Scheme. Retrieved on* August, 2016, from *http://wcd.nic.in/sites/default/files/1-SABLAscheme_0.pdf.*

6. Mishra and Tripathi (2018).Women and Sustainable Development Goals. retrieved from *https://www.researchgate.net/publication/327814277_Women_and_Sustainable_Development_Goals1905240*

7. Meenai, Z.(2003). *Empowering Rural Women*.New Delhi: Akar Books.

8. National Council of Educational Research and Training, NCF (2005). *A Document of NCERT .National Curriculum Framework-2005* .Retrieved from *http://www.ncert.nic.in/rightside/links/pdf/framework/english/nf2005.pdf on March 2016.*

9. NIMHANS (2007). *LifeSkills Education for adolescents.* Retrieved on August, 2016, from *www.nimhans.ac.in/Ise/ado/2007.*

10. Pathak, S.P. (2017) *Life Skill Oriented Teacher Education. (*First Ed.) Vadodara: CASE, The Maharaja Sayajirao University of Baroda.

11. Pillai, R. (2005), Empowerment of Women through Education, *University News, Vol. 43*(*03)*, Jan. 17-23.

12. The Global Gender Gap Report (2017). World Economic Forum. Geneva, Switzerland, 2017 retrived from *https://www3.weforum.org/docs/WEF_GGGR_2017.pdf*

13. Tiwari, P. (2018). *Practices Followed at Upper Primary Level for Life skills Education in CBSE Schools of Varanasi* (Unpublished Ph.D.Thesis). Banaras Hindu University, Varanasi, India.

14. Tiwari,P. and Bajpai, A. (2018).Strategies for inculcating Life Skills in Classroom Settings. *AED Journal of Educational Studies, 7*(2), 58-68.

15. Tripathy, A. (2016). *A Beautiful Life: Life Skills Education.* New Delhi: Global Publication.

16. UN (2015). *Transforming Our World: the 2030 Agenda for Sustainable Development.* retrieved from *https://sustainabledevelopment.un.org/post2015/transformingourworld*

17. UNDP, UN Women (2018). Gender_equality_as_an_accelerator_for_achieving_the_SDGs retrieved from *https://www.undp.org/publications/gender-equality-accelerator-achieving-sdgs on 23 October 2021*

18. UN Women(2015). "Position paper on Monitoring Gender Equality and the Empowerment of Women and Girls in the 2030 Agenda for Sustainable Development: Opportunities and Challenges", retrieved from *http://www.unwomen.org/en/digital-library/publications/2015/9/indicators-position-paper*

19. UNESCO (2001). Life Skills in Non - Formal Education: A Review. *New Delhi: Indian National Commission and UNESCO.*

20. UNICEF (2002). *Adolescence- A Time that Matters.* NY: Author. Retrieved, September,2016,from *http://www.unicef.org/publications/files/pub_adolescenceen.pdf*

21. UNICEF (n.d.)(2016). *Definition of Terms, Life Skills.* Retrieved, September 8, from *https://www.unicef.org/lifeskills/index_7308.html*

22. United Nations (1989).*Convention on the Rights of the Child*. Retrieved, October 27, 2016, from *https://www.ohchr.org/en/professionalinterest/pages/crc.aspx*

23. United Nations (1990). *World Declaration on Education For All.* Meeting Basic Learning Needs. Jomtein, Thailand. Retrived, August, 2016, from *http://www.un-documents.net/jomtien.htm*

24. Vranda, M.N. and Rao, M.C. (2011). Life-Skills Education for Young Adolescent-Indian Experience'. *Journal of the Indian Academy of Applied Psychology,* 37, 9-15.

25. WHO (1986). *The Ottawa Charter for Health Promotion*, Retrieved, October, 2016, from *http://www.who.int/healthpromotion/conferences/previous/ottawa/en/*

26. WHO (1997). *Life Skills Education for Children and Adolescents in Schools*. Retrieved, 6 September, 2016, from *http://whqlibdoc.who.int/hq/1994/ WHO_MNH_ 93.7A_ Rev.2.pdf*

27. WHO (1997). *Meaning of Life Skills*. Retrieved, September, 2016, from *www.who.org/ls.*

28. WHO (1997). *Programme on Mental Health: Life Skills in Schools*. Division of Mental Health and Prevention of Substance Abuse. Geneva. Retrieved, September, 2016, from *WHO/MNH/PSF/93.7A*

29. WHO (1997). *Promoting Health through Schools. Report of a WHO Expert Committee on Comprehensive School Health Education and Promotion*. Geneva. Retrieved, 6 September, 2016, From *http://www.who.int/neglected_diseases/resources/WHO_TRS_870/en/*

30. WHO (1999). *Partners in Life Skills Education- Conclusions from a United Nations Inter-agency Meeting*. Department of Mental Health. Geneva. Retrieved, October, 2016, from *http://www.who.int/mental_health/media/en/30.pdf on 12.*

31. World Education Forum (2000). *Education for All* -The Darker Framework for Action. UNESCO, Paris.

32. WRI (1994). World Resources, 1994-1995, Oxford University Press, Oxford. Retrieved from *https://www.wri.org/research/world-resources-1994-95*

❑

Inclusive Education: Policy Provisions and Challenges Ahead

Sunita K Sharma* and Eisha Kannadi**

The present paper is part of a research study conducted in the field of elementary education with its focus on the education of Children with Special Needs (CWSN) getting education in inclusive settings in general mainstream schools. The study was exploratory with one of the objectives as studying policies & provisions supporting the education of CWSN in general mainstream schools. The data was collected using primary and secondary sources through field visits to govt. offices and schools, observations, semi-structured interviews and electronic mode.

The concept of inclusion is based on the idea of providing equal opportunities to 'all' children**.** Regarding equalisation of opportunities, the Framework for Action on Salamanca Statement says 'inclusion and participation are essential to human dignity and to the enjoyment and exercise of human rights.' In the field of education this is reflected in bringing about a 'genuine equalisation of opportunity.' Special needs education incorporates proven methods of teaching from which all children can benefit; it assumes human differences are normal and that learning must be adapted to the needs of the child, rather than the child fitted to the process. The fundamental principle of the inclusive school, it adds, is that all children should learn together, where possible, and that ordinary schools must recognise and respond to the diverse needs of their students, while also having a continuum of support and services to match these needs. (UNESCO, 1994)

Conceptualizing Inclusive Education

Inclusion in education is an approach which takes into account the needs of all the learners in classroom irrespective of any differences in their abilities. Inclusive Education, as an approach, seeks to address the learning needs of all children, youth and adults with a specific focus on those who are vulnerable to marginalization and exclusion. In Inclusive Education, all children, regardless of their ability level, are taught as equals in the least restrictive environment (LRE), the teachers are expected to adjust their curriculum and teaching methodologies so that all students get benefitted. It envisions a continuum of support and services to match the continuum of special needs encountered in every school. In this sense it is about reforming schools and many of the principles that underpin school reform are identical to those that provide the foundation for inclusion (Fisher et al., 2002).

Thus, an inclusive classroom is one in which all students, regardless of ability, are welcomed, and their diverse learning needs are addressed in a meaningful and responsive learning environment. Beyond enrolment ensuring full participation of children with disabilities, requires a paradigm shift in teachers' beliefs and attitudes towards students with disabilities. Further, many teachers report being under-skilled to meet the demands of an increasingly diverse classroom especially with respect to children with disabilities and special needs. They feel lack of specialised training and skills which they believe a special teacher would have.

The Inclusive school system is the most effective system of education as it embraces diversity and promotes cooperative learning and many other humane values like empathy, sense of belongingness and helping attitude among the learners. The importance of regular mainstream schools for inclusion has been highlighted in the Salamanca Statement as "Regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system." (Article 2, Salamanca Statement)

In the past, for over a century, only the special schools offered education to children with disabilities and special needs because of the widespread belief that children with special needs could not be educated alongside other normal children. Consequently, only a small number of children had access to education but did not help these children to enter the mainstream community even after completing their education. Several initiatives by governments at the international and national level have helped to some extent in

** Teacher Educator and Research Scholar, Indira Gandhi National Open University, Maidan Garhi, New Delhi-110068. E-mail Id: sks_jmu@yahoo.co.in*

***Associate Professor, School of Education, Indira Gandhi National Open University, Maidan Garhi, New Delhi-110068*

improving the plight of CWSN by bringing them into the schools but this could impact only a small percentage of out of school children.

However, the Sixth All-India Educational Survey (NCERT, 1998) reported that of India's 200 million school-aged children (6-14 years), 20 million required special needs education. UNICEF's Report on the Status of Disability in India (2000) stated that there are around 30 million children in India suffering from some form of disability. While the national average for gross enrolment in schools is over 90 per cent but less than five per cent of children with disabilities are in schools. The majority of these children remain outside mainstream education. (UNICEF, 2003)

The govt. of India, in line with the UN Declaration of Human Rights (1948) and other international mandates supporting the cause 'education for all' and also to fulfil its own constitutional commitments, amended the Constitution of India under 86th Amendment Act in 2002, to make education a fundamental right. Consequently, the right to education commonly known as RTE (The Right to Free and Compulsory Education Act, 2009) was passed by the Indian Parliament on 26th August 2009 and came into force with effect from 1st April, 2010. The right to education is a universal and fundamental right of every individual. Therefore, no one can be denied this right on the basis of any discrimination of caste, creed, sex, ethnicity, capabilities, physical or mental make-up or any handicap. India is committed to protect this right of its citizens, partly because of its constitutional provisions and partly because of its being part and signatory to many International mandates. The landmark International mandates that helped India and provided impetus to shaping inclusive policy on education for children with disabilities and special needs were - United Nations Rights of the Child, United Nations Standard Rules on the Equalization of Opportunities, the Jomtein Declaration on Education for all and the Salamanca Statement and Framework for Action. These International mandates strongly support the inclusion and education of children with special needs and disabilities in mainstream schools and had impacted the other countries of the world as well. India also ratified landmark mandates to support education of all children, including children with special needs.

Inclusive education as a strategy for facilitating inclusion rejects the idea of segregated education. It believes in the principles of diversity and richness of experiences, sense of belongingness, team-teaching and collaboration. Therefore, in the twenty-first century, inclusive education is the only way out to provide equitable education to all in terms of access and quality and non-discriminatory ways, which the entire world has been striving for. Nevertheless teachers do have concerns about inclusion and many surveys have found that teachers' attitudes towards inclusion are not particularly positive (Ellins & Porter, 2005). Further, they express concerns about their lack of preparation for inclusion and for teaching all learners (Forlin, 2001). Therefore, for inclusive education to succeed, it is vitally important that teachers, principals and other education stakeholders maintain a positive attitude towards inclusion. They must be firmly convinced of the benefits that inclusive practices bring to all children. Even if inclusive education is mandated by law, it will never succeed without the enthusiastic support of its practitioners. Obtaining such support involves behaviour and attitudinal change which can be effected only through professional development of teachers. The teacher training programmes need to focus on sensitising teachers towards inclusive policies and inclusive strategies keeping in with the various legislations and other mandates passed by the govt. of India.

Policy Provisions and Legislative Framework Supporting Education of Children with Disabilities and Special Needs

The concern for the 'right of education for all' originated from the Universal Declaration of Human rights 1948, adopted by the United Nations general Assembly. The right of every child to education is proclaimed in this declaration and the same was strongly reaffirmed by the Jomtein World Declaration of Education for all (1990). Furthermore, the Standard Rules on the Equalisation of Opportunities for Persons with Disabilities (1993) was an important initiative to improve the educational interests of persons with disabilities. All these international mandates had great implications for Indian scenario, as well. Infact an analysis of various International Mandates and Policy frameworks clearly suggests that these had a great impact on the policy framework and legislation of the other signatory nations of the World, including India. Thus India, being a signatory to many international mandates, ratified the following three landmark Acts, besides CRPD:

– The Rehabilitation Council of India Act, 1992 (RCI Act, 1992),

– The Persons Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 (PWD Act, 1995) and
– The National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities Act, 1999.

The above three legislations along with RTE (2009) Act and the Rights of Persons with Disabilities Act, 2016, are the great landmarks in the evolution of a well defined policy and legislative framework for the education of CWSN in India.

The review of literature, policies and legislations shows that educational landscape for children with disabilities in India as well as overseas has seen a shift from segregation in terms of special education, towards integration and more recently to inclusion. The education of children with 'disabilities' has in fact developed from 'Residential schools' in segregation to 'Inclusive Education' in 'Regular schools', gradually over the time. Foremost in the development were the 'Residential schools' followed by integration of students into 'mainstream schools'. The movement of 'Inclusion' had gained popularity and impetus about three decades ago after the adoption of Salamanca Statement and Framework for Action in 1994 by the member nations. This initiative further provided impetus to equitable access of learning opportunities to all students to pursue their educational goals. Although, in India, the first school for the visually impaired was established by a missionary, Miss Annie Sharp in 1887 in Amritsar, which was later shifted to Dehradun during 1903 and is now called the Sharp Memorial School for the Blind. This was followed by setting up of number of schools being opened in different parts of the country.

The Indian Education Commission Report (1964-66) recommended placement of children with disabilities as far as possible in ordinary schools. The commission emphasised that the education of children with disabilities should be 'an inseparable part of the general education system and has to be organised not merely on humanitarian grounds but also on the grounds of utility'. This was followed by many itinerant models of integration.

The Central Scheme of Integrated Education for the Disabled Children was evolved in 1974 and was revised in 1987.This was followed by the National Policy of Education 1982. NPE, 1986 and POA in 1992 (NPE (1986-92). The contributions of NCERT with launching of Integrated Education of the Disabled under the UNESCO "Project Integrated Education for the Disabled (PIED: 1987) led to the realization that integrated education was a cost effective approach, and with this the enrolment rate of children went up to 91 percent. The retention rate of such children was higher than their non-disabled counterparts. The achievement of the children with disabilities was at par with the non- disabled children. Since then, the general education system has started accepting children with disabilities in the general schools. The scheme after final revision in 1992 (POA of NPE 1986) made provisions for educating children with disabilities in general schools and facilitating their retention. The scheme further emphasised on mobilizing the special schools for providing 'resource support', so that the children with disability or special needs could be integrated into the mainstream.

The legislative framework for education of children with disabilities and special needs actually emerged from UN Declaration of Human Rights (1948). At International level, the UN Convention on the Rights of the Child (UNCR) in 1989 offered a reaffirmation of the above. In Article 2, it makes it obligatory for the state to protect children from any form of discrimination and also urges to take positive action to promote their rights. Article 23 talks about the rights of disabled children, achieving the greatest degree of self-reliance as well as social integration. The movement towards inclusive schooling gained momentum with the World Declaration of Education for All (1990) at Jomtein, Thailand, wherein it was emphasised that the learning needs of the disabled demand special attention within the Framework of Education for All. Thus, the Jomtein Declaration on Education with its slogan of 'Education For All' by the year2000 marked the beginning of a global movement for the provision of basic education to all.

The Salamanca Statement and Framework for Action on Special Needs Education (1994), was a landmark in the journey of evolution of Inclusive education. In 1994 at the World Conference at Salamanca, a Framework for Action was adopted to promote integration and participation of persons with disabilities in general education and to combat exclusion. It further established inclusion as a strategy for achieving education for all in the international community and endorsed the importance of inclusive education firmly. The Articles '2 and 8' are relevant in this case to substantiate the said claim.

Furthering the agenda of the Jomtein Declaration, the Dakar Framework for Action (2000), set 2015 as

the goal for achieving education for all including marginalised groups within the mainstream. But the goal has not been hit. As still the goal of education for all, has not been achieved. It must be noted that India is a signatory to above said international mandates and therefore, these mandates had a great significance in shaping educational policies for education of CWSN in India. Thus, India ratified the three landmark legislative Acts, besides CRPD: The RCI Act, 1992, The PWD Act, 1995 and The NT Act, 1999. In the Indian context, The PWD (1995) Act, was a comprehensive legislation providing for the prevention and early detection of disabilities, education, employment, non-discrimination, research and manpower development and social security of the persons with disabilities, free education to children with a disability in an appropriate environment till he attains the age of 18 years. There were many other provisions for the children with disabilities like adaptation of curriculum, integration of students with disabilities in mainstream schools etc. This act has been subjected to discussion and criticism and subsequent amendments. A new law was demanded in place of PWD ACT (1995).This has been necessitated by India's ratification of the UN Convention on Rights of Persons with Disabilities (2007), which marked a shift from the medical model to the social model of disability. This perspective is not adequately recognized in this Act and was modified & replaced with a new Act later.

The next major national initiative was the Sarva Shiksha Abhiyan (SSA), 2000. Its goal was providing eight years of elementary education to all children from six to fourteen years of age by 2010. Inclusive education priorities under the SSA included identification, functional and formal assessment, appropriate educational placement, and preparation of Individualised Education Plans, provision of aids, teacher training and removal of architectural barriers. SSA has a zero rejection policy in terms of admission. SSA has now been transformed into a sort of via media for implementing the provisions of RTE (2009) Act.

Thus, there has been much legislation to support the education of CWSN, and the most recent one 'The Rights of Persons with Disabilities (RPWD) Act, (2016), chapter iii, clause 16, impresses that all the educational institutions are bound to provide inclusive education to children with disabilities as far as possible. The Rights of Persons with Disabilities Act, (2016), is an Act to give effect to the United Nations Convention on the Rights of Persons with Disabilities. (RPWD Act, 2016)

Implementation and Evaluation of Inclusive Education Practices

An analysis of the literature on implementation aspect reveals that in India, different models of inclusion are being practiced. The selection of the inclusion model infact is based on the resources available in a particular region. In the want of the resources and proper support in all the schools, full inclusion is rarely practiced in educational institutions. Generally, resource models with variations from residential to itinerant models are being practiced in different parts of the country. The replication of a model in other areas usually depends upon its success and feasibility in a particular geographical region. Generally the success of an Inclusive education programme is determined by the rate of enrolment and retention of students with disabilities in the general schools. It has been reported by the implementing institutions that the dropout rate has been reduced among the children with disabilities. But, to assess the success of an inclusive education programme merely on the basis of the enrolment and retention is not appropriate. Because the target is not physical inclusion but their welfare and education, therefore, the focus must be on learning outcome as well. The feasibility of inclusion varies with degree of disability. Minor adaptations and modifications in the curriculum and teaching strategies might facilitate inclusion of children with physical and mild to moderate sensory impairments. But, the children with intellectual Impairments like mentally retarded, autism, etc. are not benefitted much because their inclusion requires major alterations and adaptations in all the academic programmes. In India, all the schools do not have special individualised programmes and support to promote social inclusion of such children as it has been particularly observed during field visit to majority of the schools in rural areas.

Further, It has been found that the general education system is yet to be fully sensitised to the educational needs of children with disabilities and therefore the general system needs the assistance of specialist teachers for occasional help to make inclusive education work. The concept of dual teaching model' is synonymously used as inclusive education, in many schools today, which does not amount for total inclusion of all children. (Mani, 2000)

A Quick Glance Over the International and National Mandates Policies and Legislative

Framework that Support the Educational Rights of Children with Disabilities and Special Needs:

International Mandates and Policy Framework

- The UN Universal Declaration of Human rights, adopted by the United Nations general Assembly
- 1975: The Declaration of Rights of Disabled Persons adopted by the United Nations general Assembly
- 1981: The UN General Assembly's Declaration of 1981 as the International Year of Disabled Persons.
- 1983-1992:Proclamation of the period 1983-1992 as the Decade of the Disabled by UN followed by the UNESCAP Decade of the disabled Persons from 1993-2002
- 1989: The Adoption of Convention on the Rights of Child
- 1990: World summit for Children/ The World Declaration on Education for All & its Framework for Action to meet Basic Learning Needs (Article 3, clause 5, states "the learning needs of disabled demand special attention; steps need to be taken to provide equal access to education to every category of Disabled Persons as an integral part of the Education System")
- 1993:Standard Rules on the Equalisation of Opportunities for Persons with Disabilities (1993) was an important resolution to improve the educational condition of persons with disabilities
- 1975: The Declaration of Rights of Disabled Persons adopted by the United Nations general Assembly
- 1981: The UN General Assembly's Declaration of 1981 as the International Year of Disabled Persons.
- 1983-1992:Proclamation of the period 1983-1992 as the Decade of the Disabled by UN followed by the UNESCAP Decade of the disabled Persons from 1993-2002
- 1989: The Adoption of Convention on the Rights of Child
- 1990: World Summit for Children/ The World Declaration on Education for All & its Framework for Action to meet Basic Learning Needs (Article 3, clause 5, states "the learning needs of disabled demand special attention; steps need to be taken to provide equal access to education to every category of Disabled Persons as an integral part of the Education System")
- 1993:Standard Rules on the Equalisation of Opportunities for Persons with Disabilities (1993) was an important resolution to improve the educational condition of persons with disabilities
- 1994: The Salamanca Statement and Framework for Action on Special Needs Education adopted by 'the World Conference on Special Needs Education. It upheld the aim of 'Education For All' by suggesting some changes in Programmes & Policies of Nations.
- 1993:Standard Rules on the Equalisation of Opportunities for Persons with Disabilities (1993) was an important resolution to improve the educational condition of persons with disabilities
- 1994: The Salamanca Statement and Framework for Action on Special Needs Education adopted by 'the World Conference on Special Needs Education. It upheld the aim of 'Education for All' by suggesting some changes in Programmes & Policies of Nations.
- 1999: United Nations Economic & Social Commission for Asia Pacific Report, 1999 (UNESCAP Report on Education for Children & Youth with Disabilities into 21st Century, 1999) 2006: United Nations Convention on Rights of Persons with Disabilities, 2006 (UNCRPD, 2006) All these International Mandates & Initiatives have played an important role in bringing the educational concerns for people with disabilities at centre stage of the world.

National Mandates, Policies and Legislative Framework Supporting Education of CWSN

At national level the educational commitments have been reflected through various educational commissions and constitutional Articles, Acts, Amendments, and Policies from time to time as shown below, briefly:

1964-66 Indian Education Commission

Indian Education Commission (IEC, 1964-66) was the first statutory body by the govt. of India to emphasise that the education of children with disabilities should be an inseparable part of the

general education system. It clearly shows that hint is towards inclusive education.

1974–IEDC (Integrated Education for Disabled Children)

Integrated Education for Disabled Children (IEDC, 1974) **:**The Ministry of Social Justice and Employment, govt. of India, initiated IEDC programme to promote the integration of children with mild to moderate disabilities into regular schools.

1986-92 – National Policy of Education, (NPE 1986 & POA 1992)

National Policy of Education (NPE, 1986 & POA 1992) was formulated by the govt. of India for all govt. schools and it reaffirmed the dual approach to education. The section IV of the NPE entitled 'Education for Equality' states that "where feasible children with motor handicaps & other mild handicaps will be educated with others in regular schools, while severely handicapped children will be provided for in special residential schools" (MHRD, 1986: 6). The Policy also emphasised the need to restructure teacher training programmes to deal with the difficulties of children with disabilities.

1987 –Project Integrated Education for the Disabled (PIED, 1987)

In 1987, the Ministry of human Resource Development (MHRD) in association with UNICEF and NCERT undertook the Project Integrated Education for the Disabled (PIED, 1987). The aim of the project was to strengthen implementation of the 'Integrated Education for Disabled Children' (IEDC) Scheme, launched by the Ministry of Social Justice and Employment, govt. of India in 1974.

The Rehabilitation Council of India Act, 1992 (RCI Act)

The Rehabilitation Council of India Act, 1992 (RCI Act, 1992), was mainly concerned with Manpower Development for the Rehabilitation of Persons with Disabilities. The Act also emphasises that the children with disabilities and special needs should be educated by the trained teachers.

1994: District Primary Education Programme (DPEP, 1994)

The centrally sponsored scheme of District Primary Education Programme (DPEP) was launched in 1994 as a major initiative to revitalise the primary education system and to achieve the objective of universalisation of primary education (UEE). The program aimed to reduce the overall dropout rate of all students enrolled in primary classes, to raise their achievements levels and to provide primary education for all children, including children with disabilities. The foremost objective of this project was to provide all children access to primary education through either the formal or non-formal stream. DPEP adopts a holistic approach to universalize access, retention and improve learning achievement and to reduce disparities among social groups.

The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 (PWD Act, 1995)

The PWD Act (1995) also known as 'The Indian 'Equal Opportunities and Rights of Persons with Disabilities ACT' 1995, contains 14 chapters. It is a significant endeavour to empower persons with disabilities and promotes their equality and participation by eliminating discrimination of all kinds. The rule 26 of the Act, speaks about the "education of children with disabilities up to the age of 18 years in an appropriate environment". It also emphasises the need to prepare a comprehensive education scheme that will make various provisions for persons with disabilities including the provisions of facilities such as transport, free books, uniforms, removal of architectural barriers, scholarships, and other support material as well as modification of examination system, restructuring of curriculum, and setting up of appropriate forum for the redressal of grievances.

1999: The National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities Act, 1999 (NT Act, 1999)

The National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities Act, 1999 (NT Act, 1999) is an Act to provide for the constitution of a body at the National level for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities and for matters connected therewith or incidental thereto It aims at providing total care to persons with mental retardation and cerebral palsy and also manages the other duties related to the properties bequeathed to the Trust. The National Trust is a statutory body of the Ministry of Social Justice and Empowerment, Government of India.

2002: 86th Amendment of the Constitution

The Govt. of India made 86th Amendment to Indian constitution in 2002, to make education a

fundamental right. This 86th Amendment Act has made three insertions in the Constitution viz- a) The insertion of Article 21A- which provides that the State shall provide free & compulsory education to all children between 6-14 years of age in such manner as the State may, by law, determine. b) An Amendment to Article 45, that is the provision for early childhood care and education to children below 6 years c) in Article 51-A, after clause j, the following clause 'k' has been inserted: "a parent or Guardian shall provide opportunities for education to his children between the ages of 6-14years (that is, it shall be the obligation of the parents to provide opportunities for education to their children).

2009: RTE, 2009 Act which became operational in 2010

The right to education commonly known as RTE was passed by the Indian Parliament on 26th August 2009 and came into force from 1st April, 2010. This shifted education from Part IV of the Constitution i.e. Directive Principles of State Policy to Part III i.e. Fundamental rights. Besides, making education as a fundamental right, It is the first legislation in the World that puts the responsibility of ensuring enrolment, attendance and completion of Elementary Education on the Government.

2016: Rights of Persons with Disabilities Act, 2016

Rights of Persons with Disabilities Act, 2016, the latest legislation for the persons with disabilities have enhanced the overall empowerment of persons with disability by safeguarding all their rights. The Act, with respect to education, impresses that all the educational institutions are bound to provide inclusive education to children with disabilities as far as possible. The Chapter III of the Act, titled 'Education', Clause 16, states that "The appropriate Government and the local authorities shall endeavour that all educational institutions funded or recognised by them provide inclusive education to the children with disabilities and towards that end shall— i) Admit them without discrimination and provide education and opportunities for sports and recreation activities equally with others; ii) Make building, campus and various facilities accessible; iii) Provide reasonable accommodation according to the individual's requirements; iv) Provide necessary support individualised or otherwise in environments that maximise academic and social development consistent with the goal of full inclusion; v) Ensure that the education to persons who are blind or deaf or both is imparted in the most appropriate languages and modes and means of communication; vi) Detect specific learning disabilities in children at the earliest and take suitable pedagogical and other measures to overcome them; vii) Monitor participation, progress in terms of attainment levels and completion of education for every student with disability; viii) Provide transportation facilities to the children with disabilities and attendants having high support needs.

All these above legislations and policy frameworks have contributed a lot in the evolution of well defined and effective polices and legal framework for the education of the children with special needs in India. Because of all the above initiatives of the govt. to facilitate the inclusive education for CWSN, there has been considerable improvement in the enrolment of CWSN in the schools. The past one decade has seen consistent movement towards adopting an Inclusive Education approach, and moving away from the segregation of children with disabilities in schools across India. This movement was propelled forward by the Sarva Shiksha Abhiyan, a flagship scheme by the HRD Ministry. Govt. of India, aimed to universalize elementary education as envisioned by the RTE (2009) Act. Under above initiative over 21 lakh learners with disabilities have been enrolled in SSA schools. This wide scale inclusion has challenged general teachers to change their perceptions of children with disabilities, their expectations, and their roles in an inclusive classroom, as they learn to teach an increasingly diverse student population. The success of inclusive learning schools largely depends on the school teachers, who are instrumental players in creating inclusive classrooms.

But, inspite of having such strong theoretical and legislative framework in our country, the desired goal has not been achieved so far. This clearly points out to certain barriers/ challenges that need immediate addressal if inclusive education for CWSN is to become a successful system. Research evidence shows that general school teachers' attitude towards education of children with special needs is not always positive and supportive. Most mainstream teachers do not believe that that they have the skills and knowledge to do this kind of work and that there is an army of 'experts' out there to deal with these students on a one-to one basis or in small more manageable groups. Nevertheless teachers do have concerns about inclusion and many surveys have found that teachers' attitudes towards inclusion are not particularly positive (Ellins & Porter, 2005). Further, they express concerns about their lack of preparation for inclusion and for teaching all learners. (Forlin, 2001)

Challenges Ahead / Barriers to Inclusive Education

There are certain challenges to Inclusive Education which need immediate addressal. Because of the initiatives of the govt. to facilitate the inclusive education for the Children with special needs (CWSN), there has been considerable improvement in the enrolment of CWSN in the schools during last one decade. This wide scale inclusion has challenged general teachers to change their perceptions of children with disabilities, their expectations, and their roles in an inclusive classroom, as they will have to teach an increasingly diverse student population. This has put the teachers under pressure and everything related to schools in a state of reconstruction. Some of the challenges are discussed below:

Poor Infrastructure

This is also one of the challenge and barrier to successful inclusive education, during visits of the investigator to various govt. schools in rural areas and also in general, many surveys and reports have shown that there are several issues in the elementary education in the rural areas of some of the states in India. Most of the schools in rural villages lack proper infrastructural facilities and in some schools even students are made to sit on the floor due to non-availability of furniture. Majority of the govt schools lack basic infrastructure like proper toilets, washrooms, playgrounds, furniture, libraries etc. it has been found that at some places, the school buildings lacked proper doors and boundary walls and even had no safe drinking water. Lack of provisions like electricity and power back-up system further worsen the situation especially in unfavourable weather conditions. Although govt. through SSA, RMSA, etc. has been trying to overcome these short comings and barriers by constructing buildings and toilets, yet there are many limitations that need to be properly addressed.

Ineffective Teaching Strategies

As teachers feel unprepared to teach CWSN and such huge diversity, their claim and excuse is that they do not have requisite knowledge, skills and suitable strategies to deal effectively with children with severe disabilities and specific needs. They need to be given orientation and training about suitable teaching skills and various accommodation needed in the inclusive rooms.

Lack of Proper Awareness

Lack of awareness among various stakeholders is also a big barrier to inclusion. Provision of awareness to teachers, parents, community members about the rights and provisions and schemes available for the education and welfare of children with disabilities and special needs will also help. It will help in developing positive attitude and beliefs among them and they will also become aware of rights and duties.

A Cursory Glance at Some Basic Provisions and Medium of Execution

The main channel for implementation of various government policies and provisions; promoting inclusive education was SSA,. Later on from 2017, RMSA and SSA clubbed on certain aspects and jointly worked to facilitate inclusive education for all. On procedural level, promotion of education CWSN in inclusive settings, followed broad procedure/ as stated below:

- Screening of children to establish their disability, done through camps which are school based and can also be Home-bound.
- Identification of nature and magnitude of disability for proper redressal & support.
- Need Assessment is done in collaboration with Medical Department and Artificial Limbs Manufacturing Corporation of India (ALIMCO).
- Distribution of Aids & Appliances and Parental Counselling
- Teacher –Training Programmes are held by specialized Resource Teachers.
- Visits to schools & neighbouring areas are also held by the Resource Teachers.
- Scholarships by the District Social Welfare Department as well.
- Access to Primary School within 1Km Radius & an Upper-Primary School within 3 Km radius .
- Provisions for out of School children such as Bridge Courses of Level-1, Level-2, Level-3 etc for at the most 3 years before mainstreaming.
- Season Centres for Migrant Population, who migrated from militancy, hit areas to other safer areas.
- Courses of 4-6 months for children belonging to upper reaches of the States as in case of J&K.
- Provision of feasible Infrastructure, upgradation of old as well as provision for new where ever required.
- Yearly grant for Primary Rs 5000/- & Upper Primary Rs 7000/- and Maintenance of this grant on regular basis.

- Grant of Rs 500/Annum to every Teacher for Teaching-Learning Material (TLM) and Teacher training Programme for all teachers in phase wise manner.
- Provision of Resource Centres for all districts of the State.
- Identification of new & more CWSN & their Need Assessment.
- All Educational Schemes were sponsored by MHRD, Govt. of India as a major funding agency. It provides centre's share through SSA, in the ratio of 65% to 35% i.e., Centre's share is 65% and that of State is 35%. But in case of special status to the state of J&K, the funding for that matter, was in the ratio of 90: 10, i.e. 90% funding was by the Centre Govt. and 10% by the State.

Conclusion

Inclusive education as strategy for facilitating inclusion rejects the idea of segregated education. There are many well defined policies, provisions and legislations that support and facilitate the education of children with special needs. A lot has been achieved but yet more needs to be done in terms of execution of these policies and legislations in sync with the ground realities. The barriers or challenges need to be addressed to make inclusive education more effective .Because, it is in response to the challenges, that inclusive education poses - to the schools structures, teachers, curriculum and pedagogy that the state education authorities will have to find out some effective ways and means to implement strategies of inclusion and other collaborated Schemes in a fruitful manner. The dedicated and whole hearted efforts of the teachers, principals, administrators, well informed & sensitised communities; and their coordinated efforts will further help in making inclusive education more meaningful and effective at the school or micro-level. Because, keeping in view the limited resources and huge number of children who are still out of the ambit of education, (not only CWSN but children from any marginalised or vulnerable sections of society) inclusive education is the only way out to provide equitable education to all in terms of access and quality and non-discriminatory ways, which the entire world has been advocating and striving for since so long.

References

- Ainscow, Mel. (1994). Special Needs in Classroom: *A Teacher Education Guide*. London: Jessica Kingly Publishers Ltd and UNESCO.
- Ainscow, M. (1997). "*Towards inclusive schooling, British Journal of Special Education*, 24, 3-6.
- Inclusive Schools (2011). '*A Training Module for Teachers'*. 2011published by Save the Children, Nehru place, New Delhi, India pp. 1-6.
- Jangira, N.K. (1997). Special Education, *Fifth Survey of Educational Research*, Vol. 1. N.C.E.R.T, New Delhi, pp. 495-508.
- *Julka, Anita. (2016). Confluence: Curricular Adaptations for Children with Special Needs*.Vol.18. 1-5, SSA, IG Printers, Pvt. Ltd. New Delhi.
- Rouse, M., and Florian, L. (1997). Inclusive education in the marketplace. *International Journal of Inclusive Education*, 1 (4), 323-336.
- SSA (2014).*Confluence: Reaching Out To Children with Developmental Disabilities.* Vol. (15), 1-4 IG Printers, Pvt. Ltd. New Delhi.
- The Fifth Survey of Educational Research (1997), Vol.1, NCER.T, New Delhi.
- The Sixth Survey of Educational Research (1998), Vol.1, NCERT, New Delhi.
- Forlin, C. (2001). Inclusion: Identifying potential stressors for regular class teachers. *Educational Research*, 43 (3), 235-245.
- GoI. (2007). Department of Higher Education: Status of Education in India; National Report, prepared by National University of Education Planning and Administration, 2007, p. 18.
- UNESCO (2005) Children out of school: Measuring exclusion from primary education. Montreal: UNESCO Institute for Statistics.
- UNICEF (2000). Dakar Framework for Action: Education for all: Meeting our collective commitments. *http://unesdoc.unesco.org/images/0012/001211/121147e.pdf*
- Singal, Nidhi. (2009). "Paper commissioned for the EFA Global Monitoring Report 2010, Reaching the marginalized" Education of children with disabilities in India A background paper for GMR 2010
- "Provisions of the Constitution of India having a bearing on education" retrieved from *http://www.education.nic.in/constitutional.asp.*
- "Right to Education Bill 2009"(PDF). *http://www.education.nic.in/Elementary/free%20and%20compulsory.pdf*
- *http://mhrd.gov.in/sites/upload_files/mhrd/files/upload_document/RTE_Section_wise_rationale_rev0.pdf*
- *www.iosrjournals.org* (Inclusive Education: Challenges and Prospects in India).
- *https://archive.india.gov.in/sectors/education/index.php?id=14*
- *http://www.yourarticlelibrary.com/dpep/district-primary-education-programme-dpepexplained/66680*
- *http://www.educationengland.org.uk/documents/warnock/* retrieved on 10th Nov. 2017**.** (The 1978 Warnock Report was uploaded on 11 November, 2007 as a pdf file)
- Department of School Education and Literacy, MoE, Govt of India, *http://moe.gov.in/overview-ses, Retrieved on 14 March, 2016.*
- *http://www.unesco.org/education/pdf/SALAMA_E.PDF*
- *www.savethechildren.in*
- *http://www.csie.org.uk/inclusion/unesco-salamanca.shtml*
- *www.unesco.org/ education/educprog/sne/Salamanca/stnteme.html.*

❑

Inequality in India: A Review of Levels and Trends

Himanshu*

The United Nations University World Institute for Development Economics Research (UNU-WIDER) provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. It brings out working Papers on various issues. '*Inequality in India: A Review of Levels and Trends*' is a Working Paper of WIDER authored by Himanshu, Associate Professor at Centre for Economic Studies and Planning, School of Social Sciences, Jawaharlal University, New Delhi. This paper contributes to the literature by reviewing levels, trends, and structure of inequality since the early 1990s in India. It draws extensively on the existing literature, supplemented with analyses of multiple data sources, to paint a picture. It notes where different data sources suggest conflicting conclusions that reflect both data challenges and the complexity of the underlying drivers of inequality changes. While the primary focus is on examining trends based on standard economic indicators of income/consumption and wealth, the paper briefly reviews distributions of selected non-monetary indicators, such as education and health. The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors. AIU duly acknowledges UNU-WIDER for this publication.

Recent years have seen a rise in interest in understanding trends and dimensions of inequality across countries as well as within countries (Atkinson 2015; Milanovic 2016; Piketty 2014; Stiglitz 2012). Multilateral institutions such as the World Bank (2016; Lange et al. 2018), International Monetary Fund (IMF 2017), and Asian Development Bank (Kanbur et al. 2014) have raised flags regarding the nature and consequences of rising inequality across and within countries for growth and poverty reduction. The United Nations has also included inequality reduction as one of the Sustainable Development Goals.[1]

While much of the discussion of inequality has revolved around trends in inequality across nations and within industrialized countries, it has also changed its focus, from inequality as a purely empirical and distributional issue to the changing nature of inequality and its impact on growth and mobility. Some of these questions are also relevant for emerging countries such as India and China, where rapid growth in per-capita incomes has been accompanied not only by rising income inequality, but also by rising disparities between social and economic groups, and between labour and capital. The relationships between labour market outcomes, fiscal policies and tax structures, redistributive transfers, and capital market regulations are not just outcomes of economic policy, but are also driven by existing social and political structures. This is even more so in a society where access to health, education, nutrition, and other public services is not universal but governed by race, caste, religion, gender, and residence.

* *P Associate Professor, Centre for Economic Studies and Planning, School of Social Sciences, Jawaharlal Nehru University, New Delhi-110067. E-mail: himanshu2@gmail.com*

Some of these issues have found resonance in India, with the issue of inequality becoming important in academic and public debates. However, compared with debates on poverty, inequality in India has received less attention from academics as well as policymakers. This is partly because, in a developing country, poverty—particularly extreme poverty—commands more attention than inequality, in policy circles and academic debates alike. But it is also because of a lack of appropriate data on income distribution in the country. Even though India has a long history of data collection on consumption expenditure, which has formed the basis of poverty estimations, inequality has continued to be underestimated, or at least to be seen as less of a problem. However, there is now strong evidence to suggest that inequality in India is not only very high but has also increased during a period of accelerating income growth, particularly since 1991. Despite the limitations on data availability, a number of studies have analysed the trends in inequality.[2]

The literature on inequality has not only looked at various issues related to the measurement of inequality using different data sources, but has also been instrumental in developing an understanding of the nature and causes of inequality in India (Chancel and Piketty 2017; Himanshu 2007, 2015; Mazumdar et al. 2017a, 2017b; Sarkar and Mehta 2010; Sen and Himanshu 2004; Subramaniam and Jayaraj 2006). Based on data available up until 2011–12, the overwhelming consensus is that not only is inequality very high in India compared with other countries at similar levels of economic development, but it has also shown a rising trend over time, particularly since

the early 1990s. While the rate of rise in inequality seems to have slowed down after 2004–05, it continues to show a rising trend. Existing literature has also highlighted the role of caste, gender, region, and religion in perpetuating inequality.

Much of the analysis of inequality in recent years has focused on trends in inequality in recent decades, particularly after 1991, which suggests that the trend break of liberalization in 1991 contributed to a trend of rising inequality. This is further obvious when compared with the trend in inequality in the decade before 1991, which shows not only an acceleration in growth rates but also a decline in inequality and poverty. Unlike the 1980s, which saw growth accelerate in the economy alongside declining inequality, the period after 1991 clearly shows inequalities rising throughout. While there is some moderation in the rise in inequality after 2004–05—which is also the period of fastest decline in poverty in the last three decades—this does not suggest a break in the structure and pattern of growth that contributed to the rise in inequality after 1991.

The purpose of this paper is to analyse the rise in inequality not just in terms of its impact on future economic growth and distribution, but also in terms of social and political stability in a country such as India, which has a high level of horizontal inequalities based on caste, class, religion, race, gender, and location.[3] Horizontal inequalities are embedded in social and political structures and affect citizens' access to basic services. Inequality in India is about education, health, nutrition, sanitation, and opportunities as much as it is about rising income inequality. It is difficult to quantify these aspects of horizontal inequality. Nonetheless, available evidence suggests similar rises in inequality in these dimensions. The burden of these disparities is not borne uniformly across groups or across different generations. Historically marginalized groups such as Dalits (Schedule Castes, SCs[4]), tribal groups (Schedule Tribes, STs[5]), and Muslims are disadvantaged not only as regards access to wealth and employment opportunities, but also regarding access to basic services, which then leads to lower levels of health, nutrition, and education. Even within these disadvantaged groups, patriarchal norms and social structures have led to women being further excluded from access to basic services.

This paper presents an analysis of trends in inequality in several dimensions in India in recent decades. While the focus is on examining trends based on the standard economic indicators of income, consumption, and wealth, we also extend the analysis to examine them by social group, residence, region, religion, and gender. Although we examine these trends in detail for the last three decades, we extend the analysis to earlier decades wherever data permits. Section 2 presents trends in inequality based on the standard indicators. We also provide some evidence on inequality from micro-surveys at the level of villages. While these more or less confirm the trend observed in nationally representative data, we present some aspects of inequality based on stand-alone and longitudinal village surveys. Using tax data from the World Inequality Database, we present the nature and extent of income/wealth concentration at the top of the income distribution.

Section-3 presents trends in inequality in other dimensions, including inequality in human development indicators. We look at different dimensions of access and achievement on indicators of health, education, and nutrition to examine trends in inequality in human development indicators. Most of the analysis in this section is based on large-scale surveys and official statistics. Section 4 presents some preliminary analysis of the changes in inequality measured in the last three decades. Although the attempt in this section is preliminary, we take the opportunity to highlight some of the proximate factors that have contributed to rising inequality in recent decades. Section[5] presents some concluding reflections.

Monetary inequality: consumption, income, and wealth

We begin our analysis of inequality in India using standard indicators of consumption, income, and wealth. While consumption and income measure a flow of resources over time, wealth (generally measured as net worth) refers to a stock of resources at a given point in time. Between consumption and income, consumption is considered a more accurate reflection of living standards, as households tend to smooth consumption flows over time. Consumption data are also easier to collect in economies with very large informal sectors. Throughout this section, data availability and quality call for caution in drawing definitive conclusions on the extent and trend of inequality.

Consumption Inequality

India has a long series of national household surveys suitable for tracking household consumption since the early 1950s. In this paper we rely on the 'thick' rounds (with larger sample sizes) of the Indian National Sample Survey Office's (NSSO) National Sample Surveys (NSS) to examine trends since the early 1980s. Our measures are based on the mixed

recall period (MRP) consumption aggregates that are the basis of India's official poverty estimates.[6]

A commonly used indicator of inequality is the Gini index, which varies from zero (in a context of perfect equality) to one (when one household accounts for all the consumption in the country). By this measure, inequality declined between 1983 and 1993–94 but rose appreciably in the following decade after the onset of reforms in 1991 (Table 1). Post-2005, inequality increased slightly or remained stable, depending on the indicator being considered. Other indicators that emphasize differences between the extremes of the consumption distribution, such as the ratio between the richest and poorest deciles, confirm rising inequality during period between 1993–94 and 2004–05, and smaller increases thereafter. In 2011–12, the richest 20 per cent of the population accounted for nearly 45 per cent of total consumption.

The inequality levels illustrated in Table-1 are likely to be overstated, as they are based on nominal consumption expenditure that does not correct for cost-of-living differences between states, or between rural and urban areas. Table-2, which

Table 1: Recent Trends in Consumption Inequality

	1983	1993–94	2004–05	2009–10	2011–12
Share of groups in total national consumption expenditure					
Bottom 20%	9.0	9.2	8.5	8.2	8.1
Bottom 40%	22.2	22.3	20.3	19.9	19.6
Top 20%	39.1	39.7	43.9	44.8	44.7
Top 10%	24.7	25.4	29.2	30.1	29.9
Ratio of average consumption of groups					
Urban top 10%/rural bottom 10%	9.5	9.4	12.7	13.9	14.0
Urban top 10%/urban bottom 10%	7.0	7.1	9.1	10.1	10.1
Urban top 10%/rural bottom 40%	6.5	6.8	9.4	10.1	10.2
Gini index					
Rural Gini	0.27	0.26	0.28	0.29	0.29
Urban Gini	0.31	0.32	0.36	0.38	0.38
All-India Gini	0.30	0.30	0.35	0.36	0.37

Note: All estimates are based on MRP consumption aggregates. Source: authors' calculations based on NSS data.

Table 2: Inequality Trends in Real Consumption Expenditure

Gini Coefficient of Consumption Expenditure						
	Nominal MPCE				***Real MPCE***	
	Rural	**Urban**	**Total**	**Rural**	**Urban**	**Total**
1993–94	0.26	0.32	0.30	0.25	0.31	0.28
2004–05	0.28	0.36	0.35	0.27	0.36	0.31
2009–10	0.29	0.38	0.36	0.27	0.38	0.32
2011–12	0.29	0.38	0.37	0.27	0.37	0.33
Variance of Log of Consumption Expenditure						
	Nominal MPCE			**Real MPCE**		
	Rural	**Urban**	**Total**	**Rural**	**Urban**	**Total**
1993–94	0.20	0.31	0.26	0.19	0.29	0.23
2004–05	0.22	0.39	0.32	0.21	0.37	0.26
2009–10	0.24	0.42	0.35	0.21	0.40	0.29
2011–12	0.25	0.41	0.36	0.21	0.39	0.29

Note: Real mean per-capita expenditures (MPCE) are MRP consumption estimates corrected for cost-of-living differences across states, rural and urban areas, and over time, using deflators implicit in the official poverty lines.

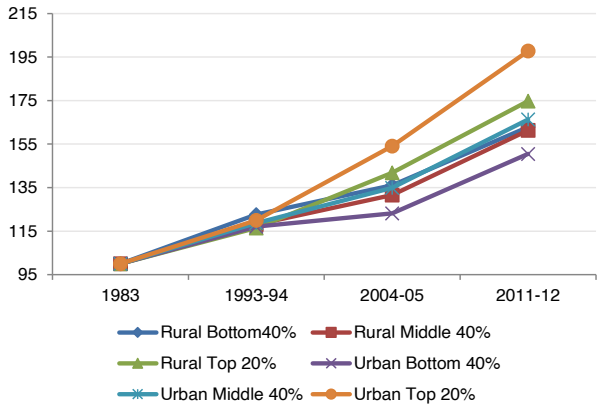
Source: authors' calculations based on NSS data.

reports Gini indices after correcting for cost-of-living differences using the deflators implicit in the official poverty lines, shows indeed that inequality levels are lower. However, trends in inequality are preserved. Estimates based on the variance of log of consumption expenditure—which gives greater weight to inequality at the extremes—produce similar trends.

Examining growth rates of consumption at different points in the consumption distribution through an index of real mean per-capita expenditures (MPCE) further illustrates the emergence of a gap post-1993–94 (Figure-1). Between 1983 and 2011–12, while the urban poorest 40 per cent witnessed an increase of real MPCE by 51 per cent, MPCE for the urban top 20 per cent nearly doubled. Trends of MPCE growth also show that inequality grew faster in urban than in rural areas.

An important note of caution in assessing levels and trends in NSS-based consumption inequality is that household surveys may not capture well the consumption of richer households. One indication of this is the large and growing gap over time between aggregate consumption in surveys and private consumption in the Government of India's National Accounts Statistics (NAS). There are good reasons why the two aggregates should differ (for instance, due to differences in definitions of consumption), but the gap in India is large.[7] It is difficult to know how much of the gap is due to errors in NAS versus NSS survey methods, with evidence of errors on both sides. To the extent that under-reporting of consumption or non-compliance is likely to be greater among the rich, inequality would be underestimated. Evidence from tax data (discussed later in this section) is consistent with this expectation.

Figure 1: Index of real MPCE by groups (1983=100)



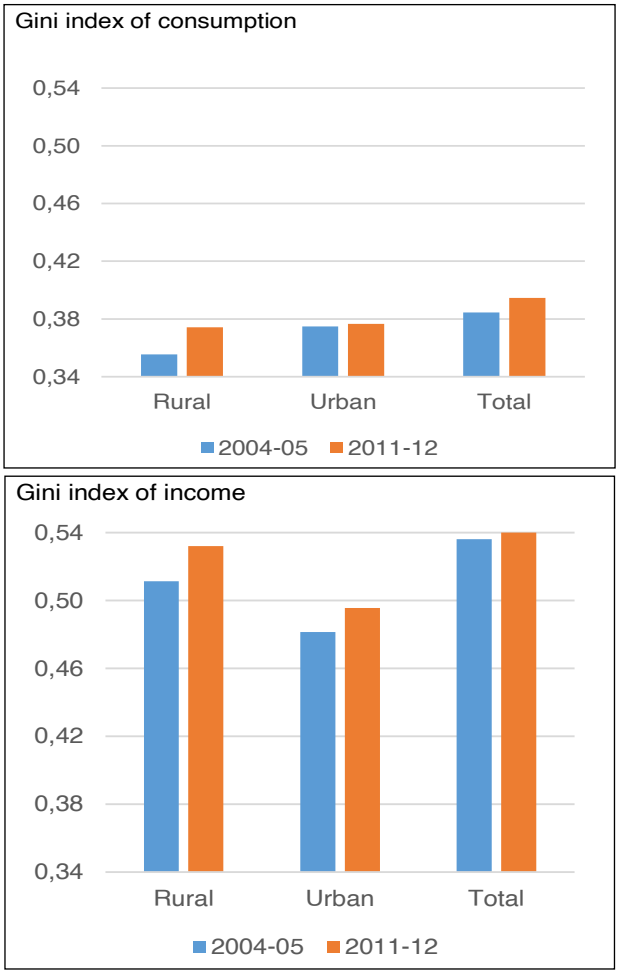
Note: Real MPCE are MRP consumption estimates corrected for cost-of-living differences across states, rural and urban areas, and over time, using deflators implicit in the official poverty lines.

Source: authors' calculations based on NSS data

Income Inequality

Measuring inequality based on income yields a very different picture. Figure-2 reports Gini indices of consumption and income inequality from the 2004–05 and 2011–12 India Human Development Surveys (IHDS). The IHDS is a nationally representative household panel survey that collects comprehensive information on both consumption and income. Estimates based on this survey indicate that income inequality in India was about 0.54 in both 2004–05 and 2011–12, with a marginal increase during this period.[8] As in the NSS, consumption inequality increased over time but is significantly lower than income inequality.

Figure-2: Inequality of Consumption Versus Income



Source: authors' calculations based on IHDS data.

If India has modest levels of inequality based on its consumption Gini index, the income Gini of 0.54 in 2011–12 places it alongside the most unequal countries in the world.[9] Across countries, income-based Gini indices tend to be higher than those based on consumption. Why the gap between India's consumption and income Gini measures of inequality is so large remains to be explained,[10] but this finding at minimum casts doubt on the often-rehearsed notion that inequality is low in India. It also serves as a useful reminder of the difficulty of making international inequality comparisons, a difficulty too often overlooked when cross-country comparisons and regressions are undertaken.

Earnings Inequality

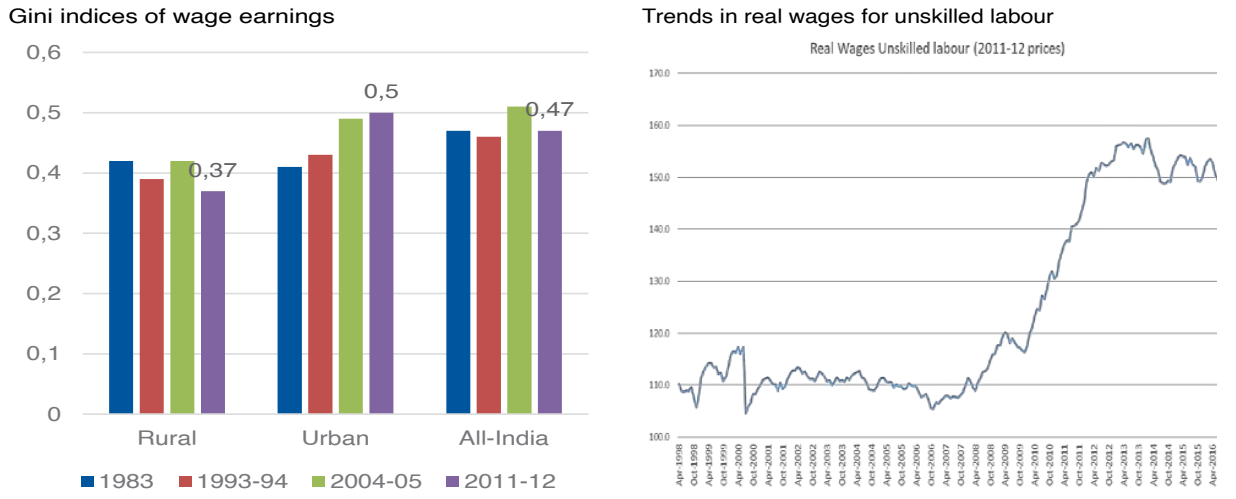
The NSSO conducts specialized surveys that provide estimates of income for some categories of workers. One such series is the NSS Employment-Unemployment Surveys (EUS), which collect information on weekly earnings of waged workers. The EUS data do not include information on the earnings of the self-employed—who comprise nearly half of all workers. Thus, wage inequality measures are only a partial reflection of the level of inequality in incomes.

Consistent with trends in consumption inequality, estimates of the Gini coefficient of wage earnings by Rodgers and Soundararajan (2015) show a marked increase between 1993–94 and 2004–05 (Figure-3). However, unlike consumption, between 2004–05 and 2011–12 wage inequality fell back to 1993–94 levels, likely due to the sharp rise in wages for rural unskilled labour during this period. Between 2008 and 2013, real wages for casual labour increased by more than six per cent per annum, faster than the growth of per-capita incomes (Himanshu 2018).

A second source of data are the NSSO's Situation Assessment Surveys (SAS) of farmers, which are available for 2002 and 2012. Using these data, Chakravorty et al. (2016) report high levels of income inequality (a Gini index of 0.58 in 2012) among farmers. This is similar to the level (0.60 Gini points) estimated in the IHDS, and significantly higher than earnings inequality in most other occupational groups. It is also interesting to note that, similarly to results on wage inequality, the SAS data suggest that earnings inequality within the group of cultivators declined from 0.63 to 0.58 in the decade 2002–2012.[11]

It is of course possible for the overall income Gini index to remain unchanged or rise even if inequality within particular groups declines. The overall Gini takes into account differences between groups, and would also reflect rising inequality within other occupation groups. One indication of this can be seen in Table 3. Between 2004–05 and 2011–12, a growing share of the population relied on non-agricultural labour for their earnings, and inequality within this group rose markedly. The share of the population dependent on non-agricultural labour grew significantly, from 18 per cent to 24 per cent.

Figure-3: Trends in Wages and Wage Inequality



Source: left-hand panel, authors' estimates based on data from NSSO; right-hand panel, authors' estimates based on Wage Rates in Rural India data from Government of India, Labour Bureau.

Table 3: Income Inequality by Occupational Group

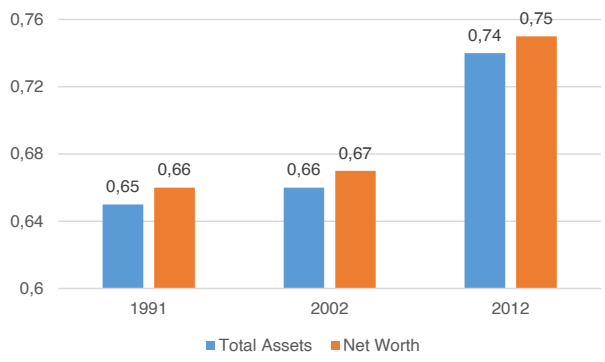
Income source	2004–05			2011–12		
	Pop. share	Income share	Gini	Pop. share	Income share	Gini
Cultivation	0.284	0.207	0.57	0.261	0.200	0.60
Allied ag.	0.010	0.008	0.57	0.010	0.007	0.54
Ag. labour	0.144	0.072	0.36	0.104	0.060	0.41
Non-ag. labour	0.177	0.105	0.37	0.237	0.154	0.41
Artisan	0.057	0.055	0.45	0.017	0.015	0.43
Petty trade	0.042	0.042	0.42	0.115	0.120	0.51
Business	0.058	0.104	0.52	0.013	0.037	0.64
Salaried	0.171	0.327	0.44	0.175	0.318	0.47
Profession	0.009	0.013	0.57	0.005	0.009	0.57
Pension/rent	0.028	0.048	0.48	0.039	0.059	0.48
Others	0.021	0.020	0.53	0.025	0.021	0.49

Note: Inequality estimates are based on nominal income. Income sources are primary income source for the household.
Source: Authors' Calculations Based on IHDS Data.

Rising top incomes not captured in household survey data would also be consistent with rising overall inequality.

It is of course possible for the overall income Gini index to remain unchanged or rise even if inequality within particular groups declines. The overall Gini takes into account differences between groups, and would also reflect rising inequality within other occupation groups. One indication of this can be seen in Table 3. Between 2004–05 and 2011–12, a growing share of the population relied on non-agricultural labour for their earnings, and inequality within this group rose markedly. The share of the population dependent on non-agricultural labour grew significantly, from 18 per cent to 24 per cent. Rising top incomes not captured in household survey data would also be consistent with rising overall inequality.

Figure-4: Gini Coefficient of Wealth (Asset Holdings)



Source: Authors' Calculations Based on AIDIS data

Wealth Inequality

The distribution of wealth provides a complementary perspective on consumption and income inequality. The All-India Debt and Investment Surveys (AIDIS), conducted in 1991, 2002, and 2012 by the NSSO, collected information on asset holdings and debts of households. Information is available in AIDIS on physical quantities of eight broad types of assets (e.g., land, buildings, agricultural machinery, vehicles, financial assets, debt) and their value. These are a useful source of information, with the caveat that values of assets are self-reported and there may be under- reporting, particularly by richer households. To compare trends over time, we exclude durables from the estimation of net worth in the 1991 and 2002 surveys, as these data were not collected in the 2012 round. The analysis is based on nominal values, due to the lack of a suitable deflator. This information suggests much higher levels of inequality than in either consumption or income. The Gini coefficient based on AIDIS data for wealth (asset holdings) is 0.75 for 2012, rising from 0.66 in 1991 to 0.67 in 2002 (Figure 4) (see also Jayadev et al. 2007; Subramanian and Jayraj 2006; Vaidyanathan 1993). Trends and levels of inequality in net worth are similar.

The share of wealth held by different groups of the population (defined by asset-holding deciles) provides an alternative lens on wealth inequality (Table 4). The bottom 50 per cent of the population held nine per cent of total assets in the country in 1991, but saw their share decline by one third to only 5.3 per cent by 2012. Against this, the share of wealth held by the top one per cent increased from 17 per cent in 1991 to 28 per cent by 2012. The top 10

Table 4: Decile-wise Share of Wealth

Wealth Decile	Percentage share of total wealth		
	1991	2002	2012
Poorest 10%	0.2	0.1	0.03
2nd	0.9	0.6	0.4
3rd	1.7	1.3	0.9
4th	2.6	2.2	1.6
5th	3.8	3.2	2.4
6th	5.2	4.7	3.6
7th	7.3	6.8	5.3
8th	10.4	10.2	8.3
9th	16.5	17.2	15.0
Richest 10%	51.6	53.9	62.5
Top 1 %	16.9	17.1	27.6

Source: Authors' Calculations Based on AIDIS data.

per cent held more than 50 per cent of wealth in all the survey years reported here, with the share rising from 51 per cent in 1991 to 63 per cent in 2012. Since estimates from AIDIS exclude information on bullion and durables, the share of wealth held by the top one per cent and top 10 per cent is likely to be higher once these are included. Also, since AIDIS does not include corporate wealth, in all likelihood the share of the top one per cent is an underestimate.

The fact that wealth distribution is more concentrated than income or consumption is not surprising and is seen across countries. But international comparisons based on the AIDIS data and standardized for comparability, reported in Credit Suisse's annual Global Wealth Reports (GWR), suggest that India is an outlier (Credit Suisse 2016).12 The GWR estimates that the bottom 50 per cent of the Indian population held 8.1 per cent of total wealth in 2002, which declined to 4.2 per cent by 2012. In contrast, the top one per cent of the population held 15.7 per cent of total wealth in 2002, which increased to 25.7 per cent of total wealth by 2012. Among the countries for which the GWR gives the share of wealth held by the top one per cent, only those in Indonesia and the United States have a higher share of wealth than India.

Further Evidence on Top Incomes

Other studies have used income tax data, in combination with household survey-based income or consumption data, to examine the changing shares of income accruing to rich households across a range of countries. For India, Chancel and Piketty (2017) have extended an earlier analysis by Banerjee and Piketty (2005) to develop a time series from 1922 to the present.

Similarly to trends in the United States, United Kingdom, and France, their results suggest that income inequality in India declined sharply between the 1950s and 1980s but increased thereafter (Figure-5). The share of income of the top one per cent reached a high of 21 per cent in the pre- independence period, but declined subsequently until the early 1980s to reach six per cent. During this period, the bottom 50 per cent and top 10 per cent received nearly equal shares of income, at 28 per cent and 24 per cent respectively. Income shares of individuals in the middle of the distribution (50th–90th percentiles) were also on the rise.

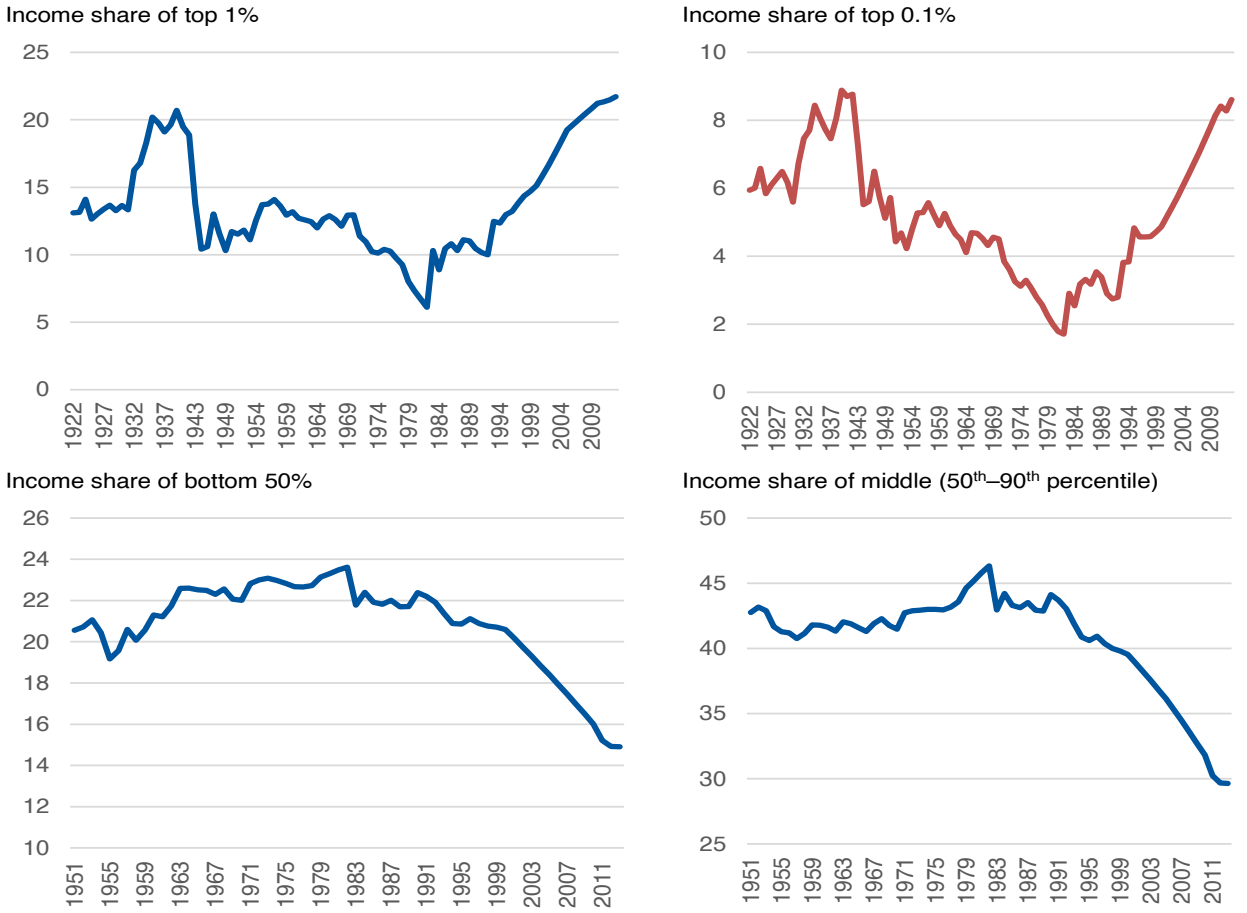
These trends reversed in the 1980s. The income share of the top one per cent increased, reaching 22 per cent in the most recent year for which estimates are available. The share of the top 0.1 per cent in national incomes is now at the highest level of nine per cent. While the bottom 50 per cent of earners experienced a growth of 97 per cent between 1980 and 2014, the top 10 per cent saw a 376 per cent increase in their incomes. During the same period, the very richest Indians, in the top 0.01 per cent and top 0.001 per cent, did extraordinarily well, with incomes rising by 1,834 per cent and 2,776 per cent respectively.

The World Inequality Lab (2018) also points out that the rise in share among top incomes in India has been faster than most countries. By 2016, India was second only to the Middle Eastern countries in the high-income share of the top 10 per cent. It was also the country with the highest increase in the share among top incomes in the last 30 years, with the share of the top 10 per cent increasing from 31 per cent in 1980 to 56 per cent in 2016.

While there has been some debate over the reliability of inequality estimates based on combining household survey and tax data,13 focusing only on the distribution of taxpayers and their share of reported income shows that the concentration of top incomes is very high. In 2015–16, one third of total income accrued to taxpayers with annual incomes of INR 50 million or higher. This group together accounted for only 0.04 per cent of all taxpayers that year. Figure 6 compares the distribution of the number of taxpayers and share of taxable income by income class in 2011–12 and 2015–16.

Direct information on the wealth of billionaires produces similar insights. Gandhi and Walton (2012) use data from Forbes to estimate that the wealth of

Figure-5: Income Shares of Different Groups



Source: Authors' Estimates Based on data from World Inequality Database.

Indian billionaires was less than five per cent of gross domestic product (GDP) until 2005 but increased sharply to 10 per cent by 2012. By the latest estimates for 2017, the total wealth of Indian billionaires was 15 per cent of GDP. Paradoxically, India is home to the fourth-largest number of billionaires and the largest number of poor people in the world.

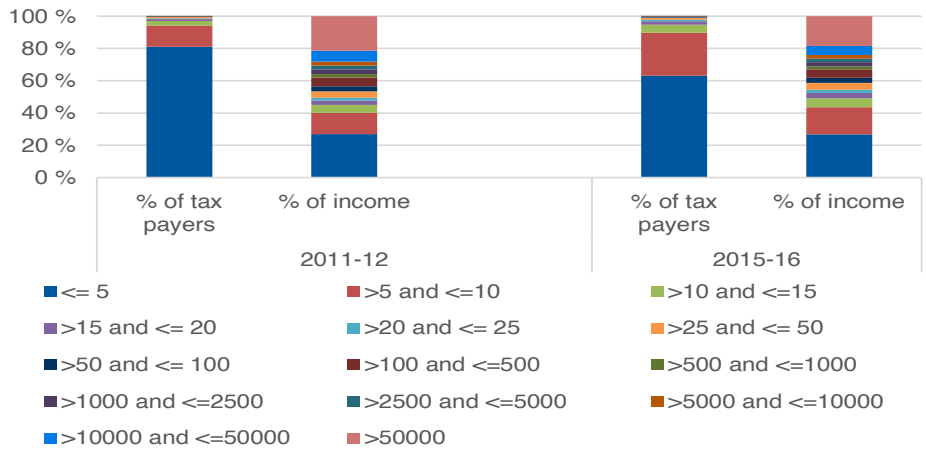
Non-monetary Inequality: Health and Education

India has made substantial gains in health and education outcomes in the past few decades. From 1991 to 2013, life expectancy at birth increased by more than seven years, the infant mortality rate fell by half, the share of births in health facilities more than tripled, the maternal mortality ratio fell by about 60 per cent, and the total fertility rate fell to almost replacement level. The education system also expanded rapidly, leading to gross enrolment ratios of 100 and 95 in primary and upper-primary classes respectively (NUEPA 2015).

On other dimensions, there is mixed progress. While India has outpaced the world in reductions in consumption poverty, progress on nutrition outcomes has been less remarkable. Child stunting (which is associated with poorer socio-economic outcomes in later life), which affected nearly half (48 per cent) of children under five in 2005–06, has reduced, but it still affected 38 per cent of children in 2015–16. Under-five child wasting (weight-for-height) has shown no improvement, stagnating at one fifth of the population. India ranks poorly in global indices such as the Global Hunger Index and the Human Capital Index, reflecting the challenges that remain and the need for sustained progress.[14]

National averages mask disparities across social groups, states, and rural-urban areas, reflecting inequalities in opportunity to access basic services. Figure-7 shows differences in selected health and education outcomes by social group. Although there

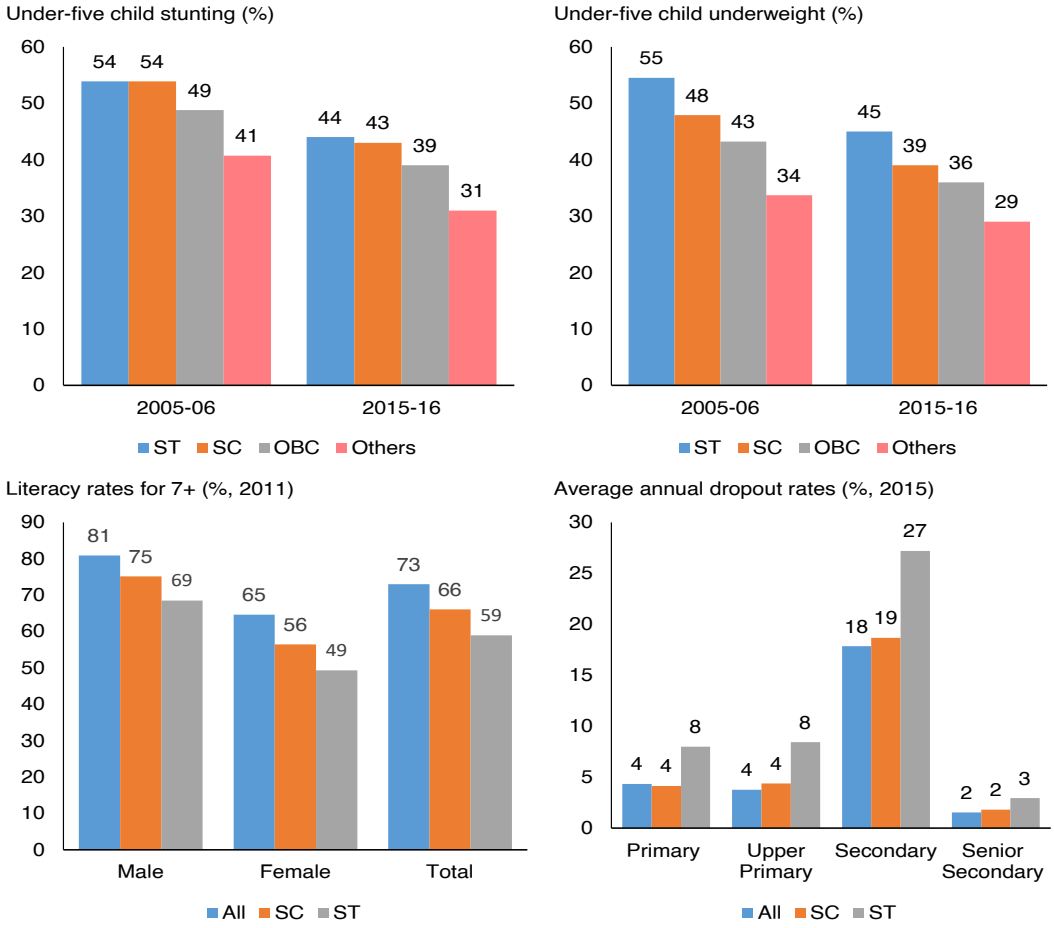
Figure-6: Distribution of Number of Taxpayers and Income by Income Class



Note: Income Classes are in INR 100,000.

Source: Authors' Calculations based on Income Tax Return Data from Government of India, Ministry of Finance.

Figure-7: Disparities in Human Capital Outcomes by Social Group



Note: OBC: Other backward castes.

Source: authors' illustration, based on nutrition outcomes from the 2005–06 and 2015–16 National Family Health Surveys (IIPS and Macro International 2007; Ministry of Health and Family Welfare and IIPS 2017), literacy outcomes from the 2011 Indian population census, and dropout rates from NUEPA (2015).

have been improvements across all social groups, STs and SCs have persistently worse outcomes.15 In 2015–16, 44 per cent of ST children under five were stunted, compared with 31 per cent of children from general caste households. Even larger disparities are evident in the rates of underweight children, and those gaps are not closing.

Gaps between social groups are also evident in education outcomes, although outcomes are better in education than in health, and gaps in enrolment rates among school-age children have been closing. Literacy rates have improved for all groups, but in 2011 the literacy rates among SCs and STs were 66 per cent and 59 per cent respectively, compared with a national average of 73 per cent. The disparity between social groups can also be seen in the average annual dropout rates at all levels of school education (Figure 7). Except in primary education, the dropout rates were higher than average for SC children. The rates were much higher for ST children at all levels of school education.

The intersection of gender, location, and social group exacerbates these gaps. In 2011, more than 80 per cent of men were literate, while the rate was only 65 per cent for women. Female literacy among STs is even lower, at below 50 per cent. The literacy rate of rural women is 62 per cent, while the rate is much higher among urban women at 81 per cent. The corresponding rates for men are 83 per cent and 91 per cent respectively.

Opportunities in education are better than in health or sanitation, as measured by the Human Opportunity Index (HOI).16 The HOI for access to key services for health and nutrition is below 30 per cent for full immunization or institutional births, and below 40 per cent for improved sanitation (Rama et al. 2015). Access to primary education is far better (the HOI for primary school completion is 80 per cent), reflecting the drive towards universal enrolment and the rising demand for education. The picture is less encouraging for access to secondary school, where the HOI for completion is below 50 per cent. Overall, decompositions of the HOI suggest that parents' education, location, and caste are important circumstances behind inequality in access to health, education, and infrastructure.

Structure of inequality

Where does this review of the evidence leave us? Clearly there was an increase in consumption inequality in the 1990s. But whether that trend continued after the mid-2000s is much less clear. Studies that focus on top incomes suggest large increases; others that rely only on survey data suggest that inequality changes may only have been marginal. All pieces of evidence, by contrast, point to high levels of income, asset, and wealth inequality.

If establishing trends is difficult, explaining them is even more complicated. While causal factors are difficult to establish, in this section we explore the structure of inequality to hint at potential (proximate) factors in changes in inequality over time.

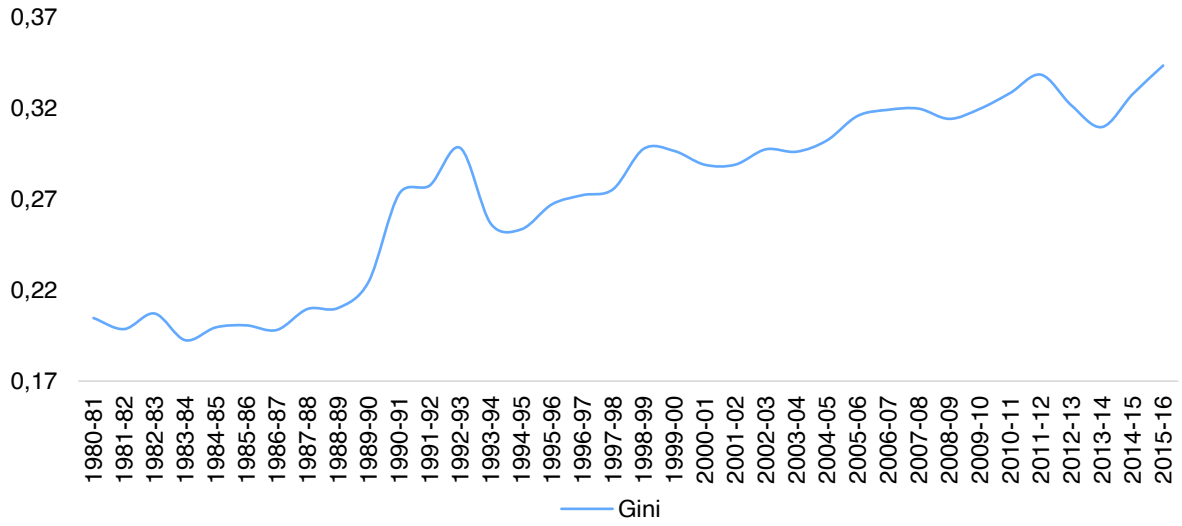
Differences Across Locations

Differences across states are often pointed to as an important source of rising inequality, given large interstate variations in outcomes. According to 2016–17 economic survey data from the Department of Economic Affairs, eight low-income states (Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, and Uttar Pradesh) account for 50 per cent of India's population but 71 per cent of infant deaths, 72 per cent of under-five mortality, and 60 per cent of stunting. Child stunting ranges from two in 10 children in Kerala to about five in 10 in Uttar Pradesh and Bihar.17 On several of these dimensions (e.g., life expectancy and infant mortality rates) there was convergence across states during the 2000s, with greater improvements in states that started out worse.

On monetary outcomes the trend is the opposite, with growing regional inequality across Indian states. One way of looking at inequality across states is to estimate the inequality that arises because a person is born in a state, assuming zero inequality within the state. Figure 8 presents interstate inequality, using NAS data on state domestic product. The state domestic product has been divided by the population assuming equal per-capita income within the state, i.e. zero inequality within the state. The resulting Gini coefficient for per-capita income weighted by state population confirms the trend of stable inequality in the 1980s followed by rising inequality since the 1990s.

This result is consistent with Chakravarty and Dehejia (2016), who examine the issue of inequality across 12 major states using NAS data and compare India with regional inequality estimates for other large economies such as the United States, China, and the European Union. They conclude that income disparity across the largest states of India is the widest among similarly large federal economic zones;

Figure-8: Per-capita Interstate Inequality



Source: Authors' Calculations using NAS Data.

contrary to global experience of income convergence across and within nations, India shows continuing trends of divergence among its large states; and 1990 seems to be the seminal year of a structural break in income disparity between the richer and poorer large states. In extending the analysis to the district level using night-time light data, Chakravarty and Dehejia (2017) find similar results.

India's rich tradition of detailed village studies shows that state-level estimates mask considerable heterogeneity. Estimates of inequality in a set of village studies by the Foundation for Agrarian Studies in 2005–08 show Gini coefficients ranging between 0.5 and 0.7 (Swaminathan and Rawal 2011). These eight villages (three in Andhra Pradesh, two each in Uttar Pradesh and Maharashtra, and one in Rajasthan) are drawn from different agro-climatic zones. Their results also show a high concentration of wealth in the richest 10 per cent of households. A study in Palanpur village (also in Uttar Pradesh) finds much lower levels of income inequality (0.38 in 2008–09). Overall, comparisons hint that inequality is higher in richer villages, but generalizations should be treated with extreme caution because of differences in methods, time periods, and contexts.

Relatively few studies include comprehensive household consumption or income data over time; the few that exist show rising inequality in recent decades. Swaminathan (1988) reports a rise in inequality in Gokilapuram (Tamil Nadu), from 0.77 in 1977 to 0.81 in 1985. In Palanpur, which has been surveyed once every decade starting in 1957–58, the Gini index of income has risen steadily since the mid-1970s, from 0.27 in 1974–85 to 0.36 in 2008–09 (Himanshu et al. 2016).

Differences Across Social Groups

A natural aspect to consider is differences across social groups—distinguishing, for example, SCs, STs, other backward castes (OBCs), and a residual category of 'others'. This breakdown is far from ideal, as it does not permit any detailed assessments of differences across subgroups within these broad categories. However, no more detailed breakdown of the population is available from the NSS data.

The real MPCE for social groups indicates a higher rate of growth of consumption expenditure for the 'others' category during the period between 1993–94 and 2004–05 than for the ST/SC/OBCs. During the next period (between 2004–05 and 2011–12), however, the growth rates of ST/SC/OBCs increased and caught up with the 'others' category. Despite this increase in growth rates, the ratio of the means of the different categories to the overall mean, which indicates the relative positions of the groups, did not show any significant change.

One way to understand inequality across social and religious groups is to compare their share of income and consumption with that of the overall population. In an equal world, their share of income and consumption and the share of the population will be the same. The ratio of their share of income and

consumption over the share of the population then represents the level of inequality. A share of less than one represents disadvantage, whereas a share greater than one would place a group in an advantageous position. Table-5 presents the shares of consumption, income, and asset ownership over the survey years for which such disaggregation is available.

SCs and STs have lower shares of income and consumption compared with the population shares. The OBC group has relatively higher shares of consumption and income, but still less than the population share. Meanwhile, the forward castes have higher shares of income and consumption relative to the population shares. The consumption data also report a decline in income shares for the ST group, with a corresponding increase in the share of 'others'.

Consistent with the evidence presented earlier regarding high levels of asset inequality, shares of asset ownership relative to the population are particularly poor for SCs and STs. Further, the urban-rural divide is an important factor in understanding the wealth advantage within social groups. The wealth positions of the SC and ST groups in rural areas are similar, but are very different from the wealth positions of the same groups in urban areas. Wealth inequality within each social group increased between 1991 and 2002. For the ST category, it was strong enough to indicate the emergence of a 'creamy layer' within this group (Zacharias and Vakulabharanam 2011), although it remains well below the creamy layer of the forward caste groups.

Table 6 presents a similar analysis for groups defined by religion. Minorities such as Christians have a larger share of income and consumption than the population share, but this is not the case with Muslims. The situation of Muslims is relatively better in rural areas, but they fare worse than SC or ST households in urban areas. Muslims have also seen their share of national income, relative to the population share, decline over time in both rural and urban areas.

Table-7 reports the asset-share-to-population-share ratio for religious groups.18 Similarly to the trend seen in the case of consumption expenditure, minority religious groups such as Christians, Sikhs, and Jains report higher asset shares compared with the population shares. However, Muslims and Buddhists have lower asset-to-population-share ratios compared with any other religious group. For Buddhists, the low asset share is a reflection of a large percentage of SCs who have converted to Buddhism.

Another dimension where India stands out is gender-based inequality. On the positive side, gender gaps in education and nutrition outcomes have been closing over time. While most economic dimensions are household-based and therefore mask the intra-household dimension of inequality, the disadvantaged position of women is most evident in

Table 5: Relative Shares of consumption, income, and assets, by social group

Consumption share/pop. share				Income share/ pop. share		Asset share/pop. share		
	1993–94	2004–05	2011–12	2004–05	2011–12	1991	2002	2012
All India								
ST	0.76	0.69	0.69	0.68	0.67	0.48	0.49	0.40
SC	0.79	0.78	0.80	0.71	0.79	0.46	0.45	0.40
OBC	–	0.92	0.93	0.89	0.92	–	0.90	0.83
Others	1.09	1.33	1.34	1.45	1.39	1.20	1.59	1.86
Rural								
ST	0.83	0.76	0.77	0.75	0.72	0.51	0.54	0.50
SC	0.85	0.85	0.88	0.75	0.83	0.49	0.49	0.50
OBC	–	1	1	0.95	0.96	–	0.98	1.01
Others	1.07	1.23	1.21	1.42	1.38	1.22	1.61	1.71
Urban								
ST	0.83	0.81	0.81	1.02	1.08	0.48	0.60	0.54
SC	0.75	0.72	0.76	0.77	0.82	0.40	0.42	0.35
OBC	–	0.83	0.85	0.84	0.87	–	0.78	0.70
Others	1.05	1.24	1.26	1.24	1.24	1.11	1.38	1.59

Note: OBCs are included in the 'others' category in the asset survey. Source: authors' estimates based on NSS and IHDS data.

Table 6: Share of Income and Consumption over Share of Population by Religion

	Consumption share/pop. share			Income share/pop. share	
	1993–94	2004–05	2011–12	2004–05	2011–12
All India					
Hindu	0.99	0.99	1	0.98	0.99
Muslim	0.91	0.91	0.87	0.92	0.91
Christian	1.23	1.41	1.39	1.74	1.52
Others	1.12	1.28	1.29	1.22	1.21
Rural					
Hindu	0.99	0.98	0.98	0.96	0.98
Muslim	0.95	0.98	0.94	1.03	1
Christian	1.18	1.44	1.43	2.07	1.53
Others	0.95	0.98	1.05	1.19	1.24
Urban					
Hindu	1.02	1.03	1.04	1.03	1.03
Muslim	0.76	0.74	0.72	0.72	0.74
Christian	1.22	1.29	1.23	1.28	1.3
Others	1.15	1.33	1.18	1.29	1.33

Source: Authors' Estimates based on NSS and IHDS data.

Table 7: Asset Inequality by Religious Group

	Asset share/pop. share	
Religious group	2002	2012
Hindu	0.99	1.00
Muslim	0.65	0.57
Christian	1.58	1.67
Sikh	3.27	3.32
Jain	3.52	7.09
Buddhist	0.58	0.57
Others	0.81	0.52

Source: Authors' Calculations based on the 59th and 70th Rounds of AIDIS.

the labour market. India continues to be among the countries with the lowest workforce participation of women; this has shown a decline in recent years.

Chaudhary and Verick (2014) analysed the puzzling phenomenon of a declining female labour force participation rate at a time of high economic growth. During 2004–05 and 2011–12, when GDP grew at eight per cent per annum, the female labour force participation rate declined from an already low 35 per cent to 25 per cent. Although part of this can be explained by increasing female participation in education, that cannot fully explain the decline (Chandrasekhar and Ghosh 2014). The displacement of women from agricultural activities due to mechanization and increasing informalization could be another reason. Gender gaps are also manifest in the gender wage gap, which remains high in almost all categories of occupation (Table 8). Overall, female wages are less than two thirds of male wages in rural areas and have not caught up over time. Gender wage gaps are lower among regular salaried workers in urban areas, but women's wages have not caught up with men's in the decades since the early 1990s.

Differences by Occupation and factor Ownership

Inequality in the labour market also arises from the skewed distribution of workers across sectors, and the differential returns to capital and labour. A large share of the workforce is employed in agriculture (nearly 50 per cent in 2011–12) and the unorganized sector (93 per cent). These are sectors whose share of GDP has been falling, as they have grown more slowly than the national average. Employment in the agricultural sector has been falling less rapidly than its share of income; employment in the unorganized

Table 8: Female/male wage ratio for Regular and Casual Workers

	Regular	Casual		
	Rural	Urban	Rural	Urban
1993–94	0.60	0.80	0.65	0.57
2004–05	0.59	0.75	0.63	0.58
2007–08	0.62	0.77	0.67	0.57
2009–10	0.63	0.82	0.68	0.58
2011–12	0.63	0.78	0.69	0.61

Source: Author's Estimates based on EUS Data.

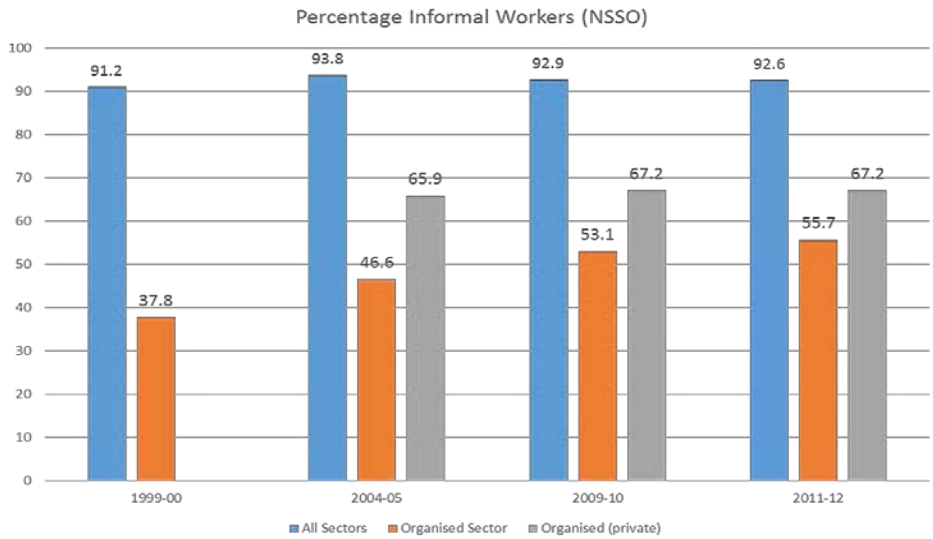
sector has been growing relative to the organized sector. On the other hand, the well-paying sectors that have grown the fastest—such as the finance, insurance, and real-estate sectors, and IT-related services and telecommunications—employ less than two per cent of the workforce. This has led to an increasing divergence between per-worker productivity in sectors such as agriculture and construction and per-worker productivity in the fast-growing sectors. The ratio of labour productivity in the non-agricultural sector to labour productivity in the agricultural sector increased from 4.5 in 1993–94 to 5.5 in 2011–12 (Dev 2017).

Another feature of the labour market is vast differences in the quality of employment. While a large majority of workers are employed in the informal sector, with no social security, the organized sector has also seen a decline in employment quality over the years. Figure-9 gives the distribution of workers by type of employment. At the national level, 93 per cent of all workers are employed as informal workers. These are concentrated in the unorganized sector, but a striking trend in recent decades has been the rise in informal workers in the organized sector. While only 38 per cent of workers were employed as informal workers in the organized sector in 1999–2000, 56 per cent were employed as informal workers in the organized sector by 2011–12. Further disaggregation by public and private sectors suggests that the private organized sector contributes a significant proportion of informal workers. The share of informal workers in the organized private sector is almost two thirds.

Combining information on the distribution of factor incomes (from NAS data) and workers (from EUS data) provides a rough summary depiction of trends in worker incomes by type of occupation. Figure-10, which reports the distribution of factor incomes by broad categories, shows that the highest increase has been in the share of private surplus (profits), which more than doubled from seven per cent in 1993–94 to 15 per cent in 2011–12. On the other hand, the share of income accruing to cultivators fell from 25 per cent to 14.6 per cent over the same period.

Figure-11, which gives the corresponding employment distributions, shows that the employment structure has changed more slowly than value-added. The workforce has been moving out of agricultural labour and cultivation, into non-farm casual work or self-employment. Regular salaried workers (in either the private or public sector) have maintained roughly the same shares over time.

Figure-9: Percentage of Informal Workers by Type of Employment

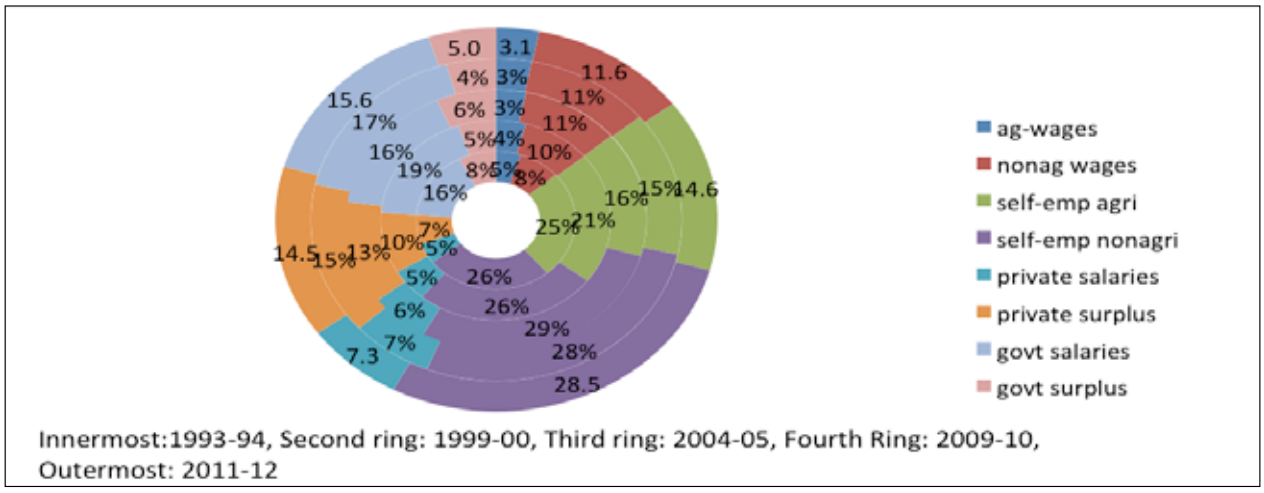


Source: Authors' Estimates based on NSSO Data.

Combining these two sources of information to compute indices of per-worker income, as in Figure -12, provides some indications of the changing structure of inequality. Between 1993–94 and 2011–12, the highest growth in per-worker incomes is observed among private salaried workers and government salaried workers. Since 1999–2000, the growth of per-worker incomes among private salaried workers and government salaried workers has been almost double that of other workers. There has been some increase and catch-up as far as workers in agriculture are concerned since 2004–05 (reflected in declining wage inequality post-2004–05, as discussed earlier), but over a longer period their incomes have increased by less than half of those of private and government salaried workers. Vakulabharanam (2010) also confirms the unequal gains to different classes of workers, gains to the urban and rural elite being much more than to rural workers and farmers.

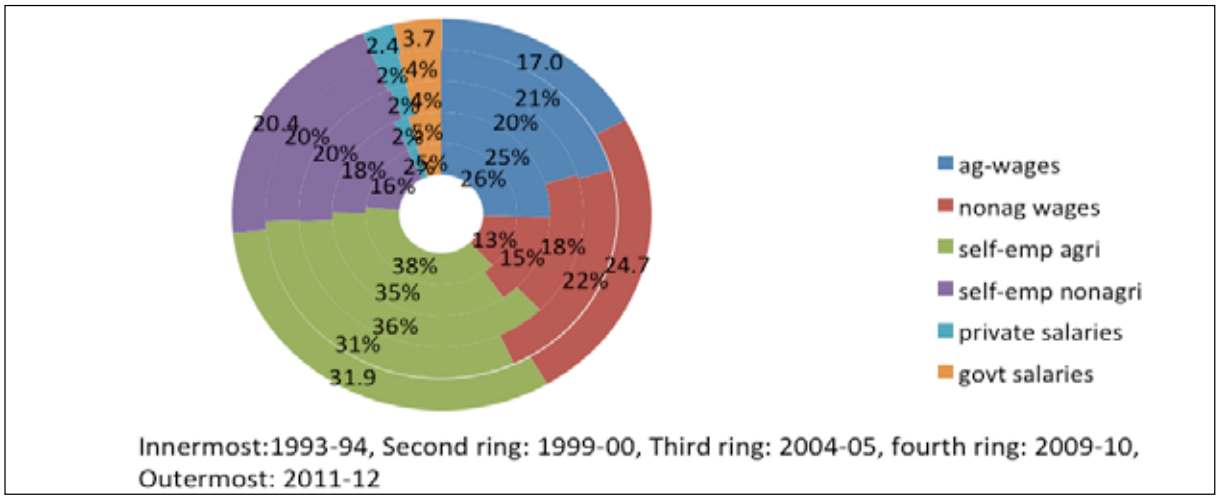
Supporting evidence in this regard is also available from another source of data. The Government of India's Annual Survey of Industries (ASI) collects information on the emoluments received by various categories of workers in the organized manufacturing sector. While workers' wages and the emoluments of managerial staff moved in tandem until the 1980s, they started to diverge in the early 1990s (Figure 13). By 2012, managerial emoluments had increased tenfold, but workers' wages had increased by less than four times.

Figure-10: Breakdown of Factor Incomes



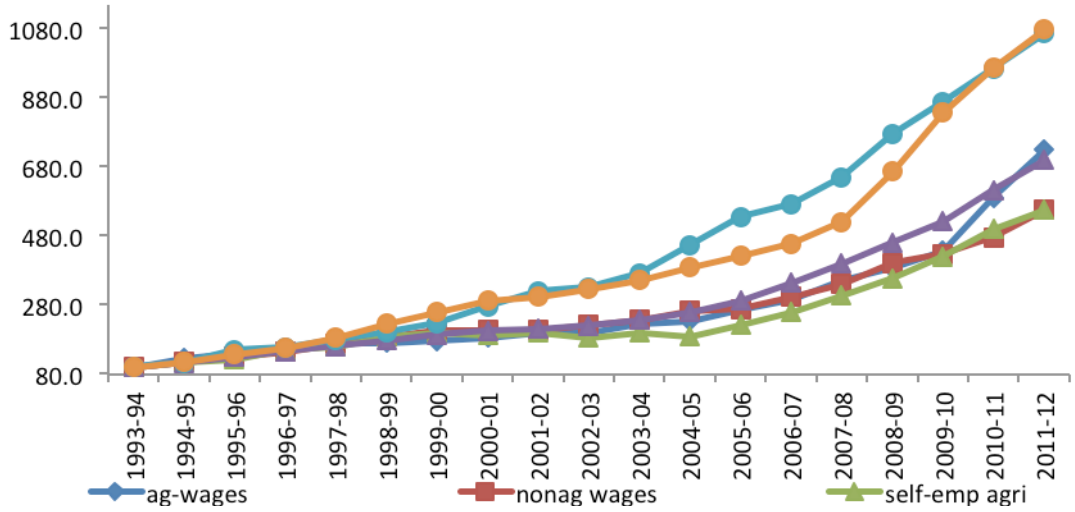
Source: Authors' Estimates Based on NAS Data.

Figure-11: Breakdown of Employment by Various Groups



Source: Authors' Estimates Based on EUS Data.

Figure-12: Indices of per-worker Incomes of Selected Occupational Groups

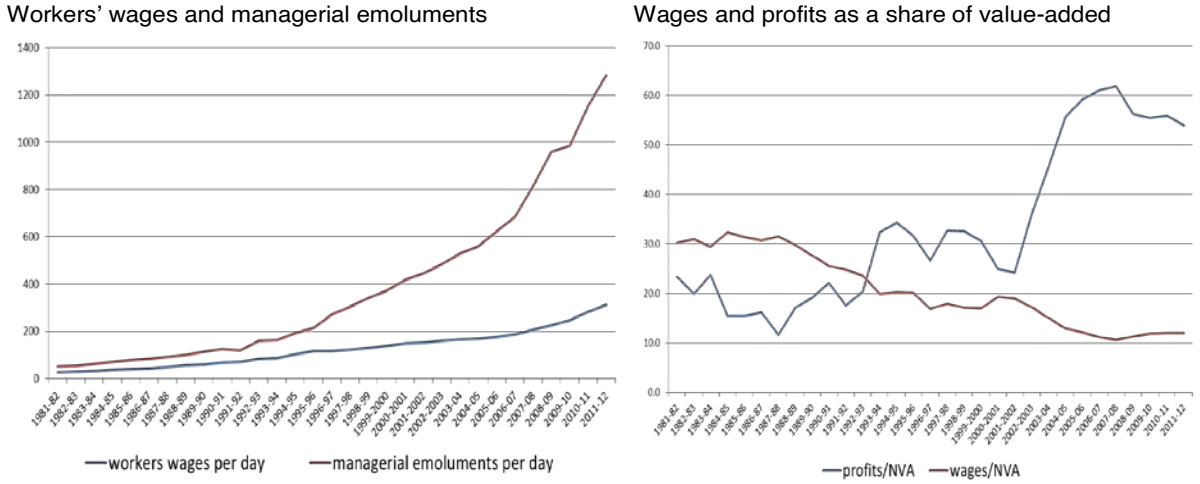


Source: Authors' Estimates based on NSS and NAS Data.

The ASI data also shed light on the declining share of value-added that accrued to workers (Figure 13, right-hand panel). While the wage share was higher at around 30 per cent in the early 1980s, with the profit share at only 20 per cent, the shares changed after the 1990s. In recent years, the share of profits in net value-added has increased to more than 50 per cent, reaching a peak of more than 60 per cent in 2007–08. While it declined after the financial crisis, it continues to be above 50 per cent of net value-added in organized manufacturing. During the same period the share of wages in value-added declined to 10 per cent, and it has remained thereabout in recent years. The compression in wage share was accompanied by the casualization of the workforce in organized manufacturing. The share of contract workers was less than 20 per cent at the beginning of this century, but had increased to more than one third of the workforce by 2011–12. Contract workers not only suffer from insecurity of tenure but are also paid less, with no social security benefits. This is further confirmed by the data from the EUS.

The increase in inequality among workers in the organized sector is only a small component of overall inequality. But it does emphasize the changing nature of production in the organized sector, with rising profit shares and declining gains to workers.

Figure-13: Wages and profits in organized manufacturing



Source: Authors' Estimates Based on ASI Data

Concluding reflections

The last three decades have seen an acceleration in the growth rate of national income and a subsequent decline in poverty. However, evidence also shows that the growth has been accompanied by an increase in inequality, possibly in all dimensions. Measures of household inequality, such as the Gini coefficients of consumption expenditure, income, and assets across households, have also shown an increasing trend since 1991. Although there is some moderation in the rate of increase in inequality after 2004–05, current levels of inequality in India put the country among the high-inequality countries.

The inequality has largely been driven by changes in the labour market, with an increasing share of capital at the cost of labour. The rise in profit rate has accompanied a decline in wage share. But it has also been accompanied by rising inequality in access to public services such as health and education. This has led to concerns about crony capitalism. But whether the process of growth will be sustained or not depends not just on economic policies, but also on policies regarding human development and inclusion.

While rising inequality may have consequences for political stability and the sustainability of economic growth, it also affects the mobility of individuals. Outcomes for growth and human development are not only determined by the existing state of income distribution, but are also determined by where an individual is born and to which caste, community, religion, region, and gender. These affect equal access to opportunities because of the persistence of horizontal inequalities that subject individuals to prejudice, marginalization, discrimination, or disadvantage. Identities such as gender, caste, or community affect an individual's participation in the labour market, in isolation from but also in conjunction with other identities. These are also affected by political and economic forces, and result in access to or denial of opportunities.

References

1. Atkinson, A.B. (2007). 'Measuring Top Incomes: Methodological Issues'. In A.B. Atkinson and T. Piketty (eds), *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford and New York: Oxford University Press.
2. Atkinson, A.B. (2015). *Inequality: What Can Be Done?* Cambridge, MA: Harvard University Press. Banerjee, A., and T. Piketty (2005). 'Top Indian Incomes, 1922–2000'. *World Bank Economic Review*, 19(1): 1–20.
3. Chakravarty, P., and V. Dehejia (2016). 'India's Curious Case of Economic Divergence'. Briefing Paper 3. Mumbai: IDFC Institute.
4. Chakravarty, P., and V. Dehejia (2017). 'Will GST Exacerbate Regional Divergence?' *Economic and Political Weekly*, 52(25–26): 97–101.
5. Chakravorty, S., S. Chandrasekhar, and K. Naraparaju (2016). 'Income Generation and Inequality in India's Agricultural Sector: The Consequences of Land Fragmentation'. Working Paper 2016-028. Mumbai: Indira Gandhi Institute of Development Research.
6. Chancel, L., and T. Piketty (2017). 'Indian Income Inequality, 1922–2014: From British Raj to Billionaire Raj?' Discussion Paper 12409. London: CEPR.
7. Chandrasekhar, C.P., and G. Jayati (2014). 'Growth, Employment Patterns and Inequality in Asia: A Case Study of India'. ILO Asia-Pacific Working Paper Series. Bangkok: ILO Regional Office for Asia and the Pacific.
8. Chaudhary, R., and S. Verick (2014). 'Female Labour Force Participation in India and Beyond'. ILO Asia-Pacific Working Paper Series. Bangkok: ILO Regional Office for Asia and the Pacific.
9. Crabtree, J. (2018). *The Billionaire Raj: A Journey Through India's New Gilded Age*. London: Oneworld Publications.
10. Credit Suisse Research Institute (2016). 'Global Wealth Report 2017'. Zürich: Credit Suisse AG. Datt, G, M. Ravallion, and R. Murgai (2016). 'Growth, Urbanization, and Poverty Reduction in.
11. India'. Policy Research Working Paper 7568. Washington, DC: World Bank.
12. Dev, M. (2017). 'Inequality, Employment and Public Policy'. Presidential address, 59th annual conference of the Indian Society of Labour Economics, 16–18 December, Thiruvananthapuram.
13. Gandhi, A., and M. Walton (2012). 'Where Do India's Billionaires Get Their Wealth?' *Economic and Political Weekly*, 47(40): 10–14.
14. Himanshu (2007). 'Recent Trends in Poverty and Inequality: Some Preliminary Results'. *Economic and Political Weekly*, 42(6): 497–508.
15. Himanshu (2015). 'Inequality in India'. *Seminar*, 672: 30–35.
16. Himanshu (2018). 'Growth, Structural Change and Wages in India: Recent Trends'. *Indian Journal of Labour Economics*, 60(3): 309–31.
17. Himanshu, B. Joshi, and P. Lanjouw (2016). 'Non-Farm Diversification, Inequality and Mobility in Palanpur'. *Economic and Political Weekly*, 51(26–27): 43–51.
18. IIPS and Macro International (2007). 'National Family Health Survey (NFHS-3), 2005–06: India: Volume I'. Mumbai: IIPS.
19. IMF (2017). 'Fiscal Monitor October 2017: Tackling Inequality'. Washington, DC: IMF.

20. Jayadev, A., S. Motiram, and V. Vakulabharanam (2007). 'Patterns of Wealth Disparities in India During the Liberalisation Era'. *Economic and Political Weekly*, 42(38): 3853–63.

21. Kanbur, R., C. Rhee, and J. Zhuang (eds) (2014). *Inequality in Asia and the Pacific: Trends, Drivers, and Policy Implications*. Abingdon and New York: Routledge.

22. Lange, G.-M., Q. Wodon, and K. Carey (eds) (2018). *The Changing Wealth of Nations 2018: Building a Sustainable Future*. Washington, DC: World Bank.

23. Leigh, A. (2007). 'How Closely Do Top Income Shares Track Other Measures of Inequality?' *Economic Journal*, 117(524): 619–33.

24. Leigh, A., and A. Posso (2009). 'Top Incomes and National Savings'. *Review of Income and Wealth*, 55(1): 57–74.

25. Li, H., L. Squire, and H. Zhou (1998). 'Explaining International and Inter-Temporal Variation in Income Inequality'. *Economic Journal*, 108(446): 26–43.

26. Mazumdar, D., S. Sarkar, and B.S. Mehta (2017a). Inequality in India I'. *Economic and Political Weekly*, 52(30): 47–56.

27. Mazumdar, D., S. Sarkar, and B.S. Mehta (2017b). 'Inequality in India II: The Wage Sector'. *Economic and Political Weekly*, 52(32): 58–66.

28. Milanovic, B. (2016). *Global Inequality: A New Approach for the Age of Globalization*. Cambridge, MA: Harvard University Press.

29. Ministry of Health and Family Welfare and IIPS (2017). 'National Family Health Survey (NFHS-4) Fact Sheet'. New Delhi and Mumbai: Ministry of Health and Family Welfare and IIPS. Available at: http://rchiips.org/nfhs/pdf/NFHS4/India.pdf (accessed 19 December 2018).

30. NUEPA (2015). 'School Education in India, U-DISE 2014–15 (Provisional Estimates)'. New Delhi: National University of Educational Planning and Administration. Available at: http://dise.in/Downloads/Publications/Documents/U-DISE-SchoolEducationInIndia- 2014-15.pdf (accessed 19 December 2018).

31. Paes de Barros, R., F. Ferreira, J. Molinas Vega, and J. Saaevdra (2009). *Measuring Inequality of Opportunities in Latin America and the Caribbean*. Washington, DC: World Bank.

32. Piketty, T. (2014). *Capital in the 21st Century*. Cambridge, MA: Belknap Press.

33. Rama, M., T. Béteille, Y. Li, P.K. Mitra, and J.L. Newman (2015). *Addressing Inequality in South Asia*. Washington, DC: World Bank.

34. Rodgers, G., and V. Soundararajan (2015). 'Patterns of Inequality in India, 1983–2011/12: Project Paper D (India)'. Delhi: Institute for Human Development.

35. Sarkar, S., and B.S. Mehta (2010). 'Income Inequality in India: Pre- and Post-Reform Periods'. *Economic and Political Weekly*, 45(37): 45–55.

36. Sen, A., and Himanshu (2004). 'Poverty and Inequality in India II: Widening Disparities During the 1990s'. *Economic and Political Weekly*, 39(39): 4361–75.

37. Stewart, F. (2002). 'Horizontal Inequalities: A Neglected Dimension of Development'. QEH Working Paper Series 81. Oxford: University of Oxford, Department of International Development.

38. Stiglitz, J. (2012). *The Price of Inequality: How Today's Divided Society Endangers Our Future.* W.W. Norton & Co.

39. Subramanian, S., and D. Jayaraj (2006). 'The Distribution of Household Wealth in India'. Research Paper 2006/116. Helsinki: UNU-WIDER.

40. Sutch, R. (2017). 'The One Percent Across Two Centuries: A Replication of Thomas Piketty's Data on the Concentration of Wealth in the United States'. *Social Science History*, 41(4): 587– 613.

41. Swaminathan, M. (1988). 'Growth and Polarisation: Changes in Wealth Inequality in a Tamilnadu Village'. *Economic and Political Weekly*, 23(43): 2229–34.

42. Swaminathan, M., and V. Rawal (2011). 'Is India Really a Country of Low Income-Inequality? Observations from Eight Villages'. *Review of Agrarian Studies*, 1(1). Available at: http://ras.org.in/is_india_really_a_country_of_low_income_inequality_observations_from_eight_villages (accessed 19 December 2018).

43. Thorat, S., and N.S. Sabharwal (2011). 'Addressing the Unequal Burden of Malnutrition'. *India Health Beat*, 5(5). Available at: http://www.bpni.org/Article/Policy-Note-Number-5.pdf (accessed 19 December 2018).

44. Vaidyanathan, A. (1993). 'Asset Holdings and Consumption of Rural Households in India: A Study of Spatial and Temporal Variations'. In Indian Society of Agricultural Economics (ed.), *Agricultural Development Policy: Adjustments and Reorientation*. New Delhi and Oxford: Indian Society of Agricultural Economics.

45. Vakulabharanam, V. (2010). 'Does Class Matter? Class Structure and Worsening Inequality in India'. *Economic and Political Weekly*, 45(29): 67–76.

46. World Bank (2016). 'Poverty and Shared Prosperity 2016: Taking on Inequality'. Washington, DC: World Bank.

47. World Bank (2018). 'Poverty and Inequity Database'. Washington, DC: World Bank. Available at: http://databank.worldbank.org/data/reports.aspx?source=poverty-and-equity-database (accessed 26 November 2018).

48. World Inequality Lab (2018). *World Inequality Report 2018*. World Inequality Database.

49. Zacharias, A., and V. Vakulabharanam (2011). 'Caste Stratification and Wealth Inequality in India'. *World Development*, 39(10): 1820–33.

Footnote

1. The Sustainable Development Goals, adopted by the United Nations General Assembly in September 2015, ask member states to reduce economic inequalities by 2030.

2. For a journalistic account of inequality in India, see Crabtree (2018).
3. Stewart (2002) defines horizontal inequalities as inequalities arising from the social position of an individual in a society based on caste, race, and gender.
4. SCs are the lowest caste group in the caste hierarchy. Previously described as 'untouchables', they have been victims of discrimination over centuries. Apart from untouchability, they have systematically been denied access to education and employment beyond the level at which they have been born. This changed with the introduction of reservation after independence. The reservation system allows SCs representation in public education and employment proportional to their population in the country.
5. STs are tribal groups as notified by the Constitution. These groups have historically been excluded from the mainstream, and have been disadvantaged in terms of access to education and employment. Similarly to the SC groups, they are also beneficiaries of the reservation system in public education and employment, proportional to their population share.
6. Most NSS consumption rounds collect data using a uniform recall period (URP) of 30 days for all consumption items. An MRP aggregate with longer recall (365 days) for some (mainly non-food) items was introduced, alongside URP consumption, in the mid-2000s. For earlier years, we reconstruct a comparable MRP aggregate using the unit record data.
7. The ratio of NSS-to-NAS consumption declined from about 60 per cent in 1991 to 39 per cent in 2011–12 (Datt et al. 2016).
8. Corrected for spatial price differentials, the Gini coefficient of real incomes is 45.3 in 2005 and 45.9 in 2012.
9. The World Bank's (2018) database of Gini indices from 182 countries for 2005–15 shows only five— Botswana, Honduras, Namibia, South Africa, and Zambia—with higher income inequality than India. Of these, all except Zambia show a decline in inequality in the last decade, compared with India, which has reported a marginal increase.
10. Li et al. (1998) find that Gini indices based on consumption are systematically lower than income-based Ginis, with an average gap across countries of 6.6 Gini points.
11. Note, however, that while levels of inequality from these surveys are similar to estimates from the IHDS, the latter suggests that earnings inequality among cultivators increased from 0.57 to 0.60 between 2004–05 and 2011–12. The differences could be due to the different definition of 'farmer' adopted by the NSSO surveys. Unlike the IHDS, which includes everybody who claims to be a farmer, the definition of 'farmer' in NSSO surveys excludes farmers below the income of INR 3,000.
12. The GWR wealth data for India are based on AIDIS, but are further refined using regression techniques to fill the gap for intervening years. The GWR also uses external data to rescale the wealth estimates.
13. While the method adopted by Piketty and others is similar to those adopted in other countries where tax data have been used to estimate income distribution for the entire population, there have been concerns over the appropriateness of the method (for details, see Atkinson 2007; Leigh 2007; Leigh and Posso 2009; Sutch 2017). In particular, it has been pointed out that, given the low tax base in India, it may underestimate the true extent of inequality.
14. The 2017 Global Hunger Index ranks India 100th out of the 119 countries that are included.
15. Thorat and Sabharwal (2011) provide evidence of caste-based disparities in nutrition outcomes throughout the 1990s and early 2000s.
16. The HOI—computed by multiplying the coverage rate of a service by a measure of the dispersion of access across different population groups—is a synthetic measure of the extent of equality of opportunities. The HOI varies from zero, when nobody has access to services or the dispersion is extremely high, to 100, when everybody has access; it increases when coverage expands or becomes more equitable (Paes de Barros et al. 2009).
17. More than two thirds of maternal deaths, and more than half of neonatal deaths, occur in four states: Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh (Ministry of Health and Family Welfare and IIPS 2017).
18. The year 1991 is excluded, as information on religion was not collected in that AIDIS round. ❑

Decade of Action: Taking Sustainable Development Goals from Global to Local

In India, NITI Aayog is the nodal agency to oversee the adoption and monitoring the implementation and progress of Sustainable Development Goals (SDGs) in the country. There is a Vertical in NITI Aayog dedicated for this task. It works in collaboration with Union Ministries and States/UTs. Through the approach of cooperative and competitive federalism, the Vertical works towards accelerated adoption, implementation, and monitoring of the SDG framework and related initiatives at the national and sub-national levels. The Vertical works closely with key stakeholders—including the Government, civil society, private sector, academia, think tanks, research organisations, and multilateral organisations—to fast-track the achievement of SDGs in the country. Time to time the NITI Aayog releases reports indicating the progress in achieving the SDGs. '*Decade of Action taking SDGs from Local to Global'* is the second Voluntary National Review(VNR), presented by NITI Aayog to United Nations High Level Political Forum on Sustainable Development. The VNR Report presents valuable insights which can help all those who are working towards realizing the SDGs. In view of this, and also for wider dissemination of information, the portion of VNR Report relevant to the theme of North Zone Vice Chancellors Meet ie '*Realising SDGs through HEIs for Ensuring Equality and Sustainable Society'* is being reproduced verbatim. AIU duly acknowledges NITI Aayog for the Report.

India occupies a unique place among the nations of the world. It is a young sovereign state built on millennia of wisdom, culture and traditions. The seventh largest and the second most populous country is also the largest democracy. India has always celebrated plurality, a value which is steeped in our tradition and enshrined in our Constitution. India, whose people speak 121 major and 1369 other languages, is the birthplace of four of the world's major religions. Each of the 37 sub-national entities house unique cultural and linguistics traditions. With diversity at its core, India is fast progressing on a journey that seeks prosperity and well-being for everyone from every culture and language, leaving no one behind. This is where India's development philosophy intersects with the fundamental principles of the SDG framework.

India recognises that the 2030 Agenda for Sustainable Development constitutes a fitting framework that calls the attention of every nation, to the challenges of building a sustainable future for the planet and all its life, while offering an opportunity to seek consensus and collaborative action. *Vasudhaiva Kutumbakam*, an ancient Indian phrase, which translates into 'the whole world is my family', pithily, captures this Indian approach towards all aspects of life and development. India, home to one-sixth of all humanity, holds the key to the success of the 2030 Agenda. It has made a conscious paradigm shift to a 'whole of society' approach by engaging all key stakeholders sub-national and local governments, civil society, communities and private sector in collaborative adoption, implementation and evaluation of the SDGs. India's second VNR is a true testament of this shift as it takes into account inputs and insights from multiple levels of the government, as well as from over a thousand civil society organisations, population groups in situations of vulnerability and the private sector.

India's commitment is reflected in the complete convergence of the national development agenda with SDGs, whose core principle, to leave no one behind, perfectly mirrors in our motto of *Sabka Saath Sabka Vikaas* (Collective Effort for Inclusive Growth). India also recognises that in a country with 28 States, 9 Union Territories and over 700 districts, mere national action is not sufficient, given the enormous geographic, demographic and cultural diversities coupled with significant socio-economic developmental variations. Based on the evidence from the SDG India Index - the government-led sub-national measure on SDGs, India has developed a robust SDG localization model. At the sub-national level, States and districts drive the adoption of the Global Goals and targets, determine the local means of implementation, and design the monitoring and evaluation frameworks. Centered on a blended collaborative learning approach, the model epitomizes the ethos of cooperative and competitive federalism.

Note: The report is a publication of NITI Aayog. The excerpt are being reproduced for wider dissemination of the material

India, with 17 per cent of the world's humanity and 2.4 per cent of the land area, is also home to a multitudinous array of development challenges that cut across sectors of health, nutrition, education, urbanisation and climate action. The COVID-19 pandemic has, additionally, thrown open a sea of challenges that are not bound by either geography or the level of development. India is at the forefront in the call for joint global action to address the COVID-19 pandemic. The country has extended medical assistance to several countries and has operationalised the SAARC COVID-19 Emergency Fund with an initial contribution of USD 10 million. Domestically, India's response to the COVID-19 pandemic includes a USD 279 billion economic package, comprehensive health coverage for front-line workers and direct cash transfers for the most vulnerable. The government is leading a multi-faceted effort to revamp the public health infrastructure, protect jobs and livelihoods, ratchet up various economic sectors and break the siege of the pandemic. While the pandemic has given some jolts to the process of achieving the Global Goals, it has also offered an opportunity for forging and strengthening partnerships among the State, civil society organisations and the private sector for creating a unified and robust response system to deal with the public health and economic exigencies. Still grappling with these challenges, India continues to grow as an epicenter of some of the most advanced technological and digital solutions.

The 2030 Agenda embodies an indispensable approach for India to enable its citizens to participate fully and freely in the economy and society. This has emboldened our focus on ensuring faster economic growth with equality and inclusion. In this endeavour, working with States and Union Territories to continuously improve performance on SDG targets would be critical. Further, India remains firmly committed to regional and global cooperation for learning, capacity building and greater progress. As part of South-South Cooperation, for realising the 2030 agenda, India supports developing countries through the USD 150 million India-UN Development Partnership Fund. In this spirit of regional and global partnerships and the country's commitment to 'leave no one behind', India steps into the decade of action (2020–2030), drawing confidence from its vast experience in addressing challenges. The Government of India will continue to work collaboratively with all domestic and global stakeholders to accelerate efforts to build a sustainable planet for future generations.

SDG 5: Achieve Gender Equality and Empower all Women and Girls

The principles of gender equality and justice are embedded in the Constitution of India. Since its initial days as an independent nation state, India has taken bold steps to further gender equality. For instance, India adopted universal and equal suffrage in 1947, well before many world nations, some in advanced stages of development. The various policies, legislation, programmes, and schemes focused on gender equality aim to ensure that women and girls are not excluded from India's growth and prosperity and are able to benefit from and contribute to it. India's focus during the era of SDGs is to carefully look back at the host of initiatives, analyse their performance and achievements, undertake midcourse correction, set new targets to address new and emerging challenges, and meet the aspirations of all generations of women and girls. In the past five years, India has sharpened action on gender equality. While the change has been slow in some areas, other areas have seen positive results. For instance, political participation of women is a key area where there has been commendable progress in the recent past.

Social Protection and Livelihoods

The strategy to improve women's economic participation was based on the sound footing of social protection and financial inclusion and powered by skill development and new technologies. In the area of gainful employment, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), which stipulates women's participation at a minimum of 33 per cent, saw 54.59 and 54.67 per cent participation, in 2018-19 and 2019-20, respectively. Financial support by capital accumulation through savings mobilisation and access to credit and insurance services to women entrepreneurs have grown considerably in recent years. The Deen Dayal Antyodaya Yojana - National Livelihoods Mission aims to mobilise and organise women, build their skills, facilitate access to credit, marketing, and other livelihoods services and organises women into Self Help Groups (SHGs). There are 10 million bank-linked SHGs, with as many as 87.66 per cent being women-exclusive. Their membership is derived from 122.4 million households, with an annual credit uptake of INR 583 billion (USD 7.7 billion) in 2018-19

Skilling and Financial Inclusion

Financial inclusion received a big boost with the Pradhan Mantri Jan Dhan Yojana (PMJDY) widely

expanding access to bank accounts along with access to direct benefits under various welfare schemes, credit and insurance services, and other savings instruments like term deposits, among others. Of the 380 million accounts opened so far under PMJDY, 54 per cent were owned by women. In 2017, women's access to bank accounts rose to 77 per cent from 43 per cent in 2014 and the gender gap slumped to 6.4 per cent from 19.8 per cent during the same period.

During 2014-18, there was a 97 per cent rise in women enrolling in long-term skill development courses. Nearly half of all candidates trained under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) – the flagship programme for short term skill development, are women. There is a focus on developing women entrepreneurs through incentives and enabling credit, ranging up to INR 1 million (USD 13,300), under the MUDRA Yojana - of which 75 per cent of the beneficiaries are women. The National Social Assistance Programme, which provides pension to those over 60 years of age, widows, persons with disabilities and families without an earning member, significantly caters to the financial needs of women. Women constitute 59 and 57 per cent of the beneficiaries, respectively, at Central and State levels.

Political and Economic Participation

Women's political participation and representation remains low but is steadily increasing. Representation of women in the lower house of the national parliament increased from 11.4 per cent in 2014 to 14.4 per cent in 2019. On the other hand, women's turnout for voting is rapidly and consistently increasing. The 2014 general elections saw female voter turnout rising substantially to 65.5 per cent from 55.82 per cent in 2009, and the gender gap stood at 1.8 percentage points. In 2019, women voter turnout rose to 68 per cent, tipping over that of men. Between 2015-16 and 2017-18, number of women engaged in managerial positions declined, from 173 to 167, for every 1000 persons. Female labour force participation, in the age category 15-59 years, declined by 7.8 percentage points from 33.1 per cent in 2011-12 to 25.3 per cent in 2017-18.

Social Empowerment

On the other end of the spectrum, sex ratio has dropped from 898 in 2014-16 to 896 in 2015-17. The *Beti Bachao Beti Padhao* (Save the Girl Child, Enable her Education) scheme aims to reverse this trend, by awareness generation mainly through country-wide campaigns. The registered cases of crime against women saw an uptick from 53.9 per 1, 00,000 female population in 2015 to 58.8 in 2018. Health and nutrition of women and girls is an area of concern. The Poshan Abhiyan (National Nutrition Mission), targets to reduce the level of stunting, under-nutrition, anaemia and low birth weight among babies by reducing malnutrition/ under-nutrition, anaemia among young children, adolescent girls, pregnant women and lactating mothers. The Scheme for Adolescent Girls is also intended at breaking the inter-generational lifecycle of nutritional and gender disadvantage by providing a supportive environment to the girls in the age group of 11 to 14 years, for self-development. The Maternity Benefit Programme, Pradhan Mantri Matru Vandana Yojana, was initiated in 2016 under the umbrella ICDS scheme and aims to provide partial compensation for the wage loss in terms of cash incentives.

Monitoring Progress at the National and Sub-National Levels

While measuring the country's performance on the SDG India Index and Dashboard, for SDG 5 and its disaggregated eight national indicators, the overall Index Score for the country is 42, and ranges between 26 and 52 for the States, and between 27 and 53 for the UTs, on a scale of 0-100. This indicates that the distance to target covered so far by India in Gender Equality remains 42, with a significant variation among the subnational units, also reflecting the need for greater collaborative action across the nation.

Challenges and Way Forward

- **Strengthening gender-disaggregated data systems:** Absence of gender-disaggregated data sets is a major challenge. It is essential to invest in gender-sensitive data and analysis of disaggregated data to identify gaps and challenges, especially for women and transgender persons. The Support for Statistical Strengthening (SSS) scheme by the Ministry of Statistics and Programme Implementation (MoSPI) provides financial support to the State Governments to reinvent their statistical systems, develop SDG dashboards, and design and implement new and more efficient tools for data collection. The States are actively encouraged to use this scheme to improve gender-sensitive disaggregated data systems. In the context, the number of States with a Gender Budget Cell has increased from 14 in 2015-16 to 23 in 2019-20.

This can lead to improved data and evidence-based financial resource allocation.

- **Improving economic participation of women:** Female labour force participation in India, which currently stands at 17.5 per cent for all ages and 25.3 per cent for the 15-59 age group, has shown a declining trend in recent years. Structural transformation of the economy, gender parity in wages and expanded social protection are the strategies pursued through which more women can take part in economic activities
- **Access to resources:** Inequalities continue to exist in women's access to and ownership of land and other assets. In rural India, while 75 per cent of rural women workers are engaged in agriculture, women's operational landholding is only 13.96 per cent. The absence of land ownership limits their access to inputs, such as, seeds, fertilisers, credit, as well as agricultural extension services.
- **Promoting women's entrepreneurship:** Globally, women-owned businesses and enterprises only benefit from approximately one per cent of all public procurement contracts. This situation calls for gender-responsive and inclusive procurement both in public and private sector. As the economy gets increasingly digitised, and women's access to technology improves, women increasingly find a level playing field and welcome the ambiance for innovation. Initiatives like the Atal Innovation Mission and Women's Entrepreneurship Platform of NITI Aayog, aim to create an ecosystem of innovation, research and entrepreneurship across the country to engage young girls and women.

SDG 10: Reduced Inequalities Within and Among Countries

Inequality takes many forms in a large and diverse country like India. Goal 10 calls for progressively reducing not only income inequalities but also inequalities of outcome by ensuring access to equal opportunities and promoting social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, or religion. The Goal also aims to enhance representation and voice for developing countries in decision making in international institutions. India is firmly committed to championing social, economic and political equality through legislations and well-designed multi-sectoral interventions. The Indian Constitution and the wide range of existing laws and statutes provide a sound armoury to reduce inequality in its various forms and meet the challenges with respect to different targets associated with Goal 10.

Promoting Income Growth

While pursuing economic growth, India has adopted a range of measures to increase incomes of people in vulnerable situations. The Mahatma Gandhi National Rural Employment Guarantee Scheme plays a major role in guaranteeing income for at least 100 days in a year for the rural households. A comprehensive strategy to double the farmers' income by 2022 is being implemented across the country. A direct income transfer scheme, *Pradhan Mantri Kisan Samman Nidhi* (PM-KISAN), specifically supports the small and marginal farmers to the tune of INR 6,000 annually. By enacting the Code on Wages, 2019, India has strengthened the minimum wages and equal remuneration entitlement of workers across formal and informal sectors. Infrastructure development, both in rural and urban areas, complements the above-mentioned initiatives by expanding the volume of work and wages. In the wake of the COVID-19 pandemic, India's response includes a USD 279 billion economic package, comprehensive health coverage for front-line workers and direct cash transfers for the most vulnerable, including unemployment protection for job losses, and income support through Pradhan Mantri Garib Kalyan Yojana.

Promoting Equality of Opportunities and Outcomes

The Right to Free and Compulsory Education (RTE) Act, 2002 seeks to ensure equality of access to education, one of the key determinants of human development, by entitling all children aged 6 to 14 years the fundamental right to education. The Samagra Shiksha programme integrates all aspects of education from pre-primary to higher secondary levels and seeks to materialise all children's right to quality education. There has been significant improvement in enrolment and retention at elementary and secondary levels. Gross Enrolment Ratio currently stands at 91.6 and 79.6 per cent, for elementary and secondary levels, respectively. Dropout rates for the same levels have reduced to 2.72 per cent and 9.74 per cent, respectively, in 2018-19. Gender disparity has appreciably abated, with Gender Parity Index rising to 1.06 at elementary and 1.04 at the secondary level. Special attention has been given to improve educational access and attainment for social groups in vulnerable situations such as, Scheduled Caste/Tribe communities, minority communities, and children with disabilities through scholarships,

improved teaching learning processes, aids, appliances and assistive devices, and special educators.

Various initiatives have been taken to improve employability and access to employment opportunities for the disadvantaged communities. Under the Skill India programme, skilling, apprenticeship and placement support have been provided to SC/ST communities, women and social groups in vulnerable situations. Under the Pradhan Mantri MUDRA Yojana, in 2018-19, 22 per cent of the loan accounts belonged to SC/ST entrepreneurs, who accessed 12 per cent of all loans amounting to INR 410 billion (USD 5.5 billion). Entrepreneurs from Other Backward Classes (OBC) had 26 per cent share of all loan accounts and accessed 19 per cent of all loans amounting to INR 606 billion (USD 8 billion). Similarly, 62 per cent of all loan accounts belonged to women who accessed 41 per cent of all loans, amounting to INR 1330 billion (USD 17.7 billion). Equality of opportunities is also promoted through various modes of affirmative action guaranteed in the Indian Constitution. Representation of socio-economically disadvantaged groups in education, employment and politics has been an effective instrument to promote social inclusion and access to opportunities to groups in vulnerable situation including, women, persons with disabilities, Scheduled Castes, Scheduled Tribes, OBCs and some economically weaker sections.

Designing Specialised Development Programmes

Targeted programmes for social groups in vulnerable situations have been designed and implemented in the sectors of education, health, livelihoods, skills, entrepreneurship and financial inclusion among others. Beti Bachao Beti Padhao, Support to Training and Employment Programme for Women (STEP) and Deen Dayal Rehabilitation Scheme (DDRS) for persons with disabilities are some of the initiatives in this category. Other initiatives include educational scholarships, coaching and guidance, livelihood opportunities and credit facilities to promote entrepreneurship.

Expanding Social Protection Measures

Livelihood support and income assistance to the poor and vulnerable individuals are complemented with a cache of interventions to secure them from unforeseen distress. The National Social Assistance Programme (NSAP) provides pension to the elderly, widows and persons with disabilities. The programme aims at universal coverage and accords special priority to vulnerable groups like, transgender persons, persons affected by leprosy, AIDS, Cancer, TB and other serious ailments, and families affected by natural or other disasters. With the aim of universal health protection, the Ayushman Bharat Scheme provides free and quality healthcare services under an annual insurance cover of USD 6,666.7 to 100 million families (500 million people) from the economically weaker sections. The scheme now covers testing and treatment for COVID-19 as well.

Social security support has been greatly supplemented by three major programmes, i.e. Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) for life insurance, Pradhan Mantri Suraksha Bima Yojana (PMSBY) for accident insurance and Atal Pension Yojana (APY) for monthly pension for unorganised sector workers. Life and personal accident insurance schemes (PMJJBY and PMSBY together) have now achieved an outreach of 254.5 million subscribers and APY has more than 22.3 million subscribers. Enrolment percentage of women in the unorganised sector with respect to total enrolment under the Atal Pension Yojana has seen an increase from 37 to 43 per cent in the last three years.

Empowering through Financial Inclusion

There has been a massive mobilisation of 67 million rural women into 6.1 million entrepreneurship-based Self-Help-Groups. By making banking services accessible to the historically unbanked population on a large scale, the Pradhan Mantri Jan Dhan Yojana (PMJDY) has been a potent instrument for financial inclusion. Since its inception, around 382.5 million bank accounts have been opened, with more than half belonging to women. The Pradhan Mantri Mudra Yojana (PMMY) supports entrepreneurs by providing credit to micro and small enterprises. These schemes help break barriers to easy credit and other financial services, thereby empowering the people in vulnerable situations.

Promoting Sustainable Migration and a Migrant-friendly Support System

Migration has always been the result of mismatch between quantitative and qualitative aspects of labour supply and demand. It has often exposed migrants to labour market uncertainties and social security risks. The COVID-19 pandemic-induced lockdown of economic activities has further impacted the situation of migrant labour. Between 2001 and 2011, inter-state labour mobility averaged between 5 and 6 million

persons per year. Railway passenger data analysis suggests an annual inter-state migration flow of close to 9 million persons between 2011 and 2016.

The implementation of the Inter-State Migrant Workmen Act is a big step in the right direction for which improved means of implementation are being explored. A database on migration and labour mobility is important to keep a tab on the current situation and take corrective measures. It is also important for development planning to focus on and include initiatives to reduce distress migration and labour trafficking with effective enforcement, employment and social inclusion. Migration can, in fact, be turned into a strong economic opportunity by overcoming its bottlenecks such as migrants' lack of access to healthcare, social entitlements, education for children, lack of improvement in skill profile and employability.

Monitoring Progress at the National and Sub-National Levels

While measuring the country's performance on the SDG India Index and Dashboard, for SDG 10 and its disaggregated nine national indicators, the overall Index Score for the country is 64, and ranges between 19 and 94 for the States, and between 33 and 94 for the UTs, on a scale of 0-100. This indicates that the distance to target covered so far by India in Reduced Inequalities remains 64, with a significant variation among the sub-national units.

Challenges and Way Forward

- Both the geography and demography of inequality and exclusion in India are diverse, posing challenges for identification, monitoring, and effective resolution. The most obvious one is that relating to regular generation of disaggregated data. While over the past decades, different levels of the Government have improved their statistical capacity, and numerous datasets have emerged at the national level, only a few of them are disaggregated by gender, social category, income levels, religion, and region. Ensuring integrity, coherence, comprehensive coverage, and interoperability of such data sets would facilitate adequate analyses of the overlapping vulnerabilities and will lead to the design of befitting strategic as well as programmatic responses.
- Further, while India remains a young country, the number of elderly people is growing and presently accounts for 8.6 per cent of the total population. This is stepping up demand for a wide variety of social protection and security measures. Besides, addressing this rising demand, there is also a need to explore options for facilitating larger economic participation of the elderly.
- Despite significant improvement, challenges of implementation persist. Public service delivery, especially to the people in situations of vulnerability, gets impeded due to a range of issues including human resource capacity. Interventions are vital in the direction of more intensive use of technology-driven platforms and capacity building at multiple levels of the Government to equip the officials with the right set of skills and tools to reach out to the right people with right solutions.
- Rapid urbanisation, and changing settlement and employment patterns interact with existing vulnerabilities to create complex problems. While migrants have become part of the lifeblood of the urban life, their needs in terms of access to basic services, social security as well as better livelihoods must be adequately met. Better managed urban basic services systems, development of diverse and remunerative livelihoods systems, and wider resource mobilisation are thrust areas of current and upcoming efforts.

SDG 11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

Urbanisation has provided new jobs and opportunities to millions of people and has contributed to poverty reduction and is fast becoming the engine for accelerating economic growth. At the same time, rapid urbanisation has added pressure to the resource base and increased the demand for energy, water and sanitation, public services, education and health care. Urban areas are continually evolving as a result of people's mobility, natural population growth, socio-economic development, environmental changes, and local and national policies. India is a fast urbanising country and is witnessing a steady increase in migration from rural areas to urban centres. There were about 377 million people residing in the urban habitats of India in 2011, comprising about 31 per cent of the total population. India's urban population is expected to rise to around 606 million by 2030. This poses stress on the already overburdened infrastructure of the cities, such as housing, services related to transportation, provision of clean water and sewage treatment.

The Government of India through its various schemes, missions, programmes and initiatives that are in tune with SDG 11 promotes inclusive and

sustainable urbanisation, as well as aims to develop capacities for participatory, integrated and sustainable human settlement planning and management.

Urban Transformation

Under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), in 500 cities including all those with a population over 100,000, basic civic amenities such as water supply, sewerage and urban transport are provided to all, with a focus on the economically disadvantaged. Proper waste management is an essential criterion for sustainable cities. As of 2019-20, 96 per cent wards have 100 per cent door to door waste collection as compared to 41 per cent in 2015-16. Waste processing has significantly increased from 17.97 per cent in 2015-16 to 60 per cent in 2019-20. India has a comprehensive Smart Cities Mission (SCM), which has identified 100 cities across the country for focused development. The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development), plus a pan-city initiative in which Smart Solutions are applied covering larger parts of the city. Since the launch of the Mission, 5,151 projects worth more than INR 2 trillion (USD 26.7 billion) are at various stages of implementation.

SCM has launched several new initiatives that will not only ensure integrated development across various aspects of urban development but also catapult the mission to the next stage of development. The first framework for an Ease of Living Index for cities was launched in June 2017 with the objective of framing an index to enable a shift to data driven approach in urban planning and management and promote healthy competition among cities. The Index, launched in 2019, focuses more on outcomes and aims to assess the ease of living of citizens across three pillars - quality of life, economic ability, and sustainability, which are further divided into 14 categories across 50 indicators.

Housing for All

To ensure adequate, safe and affordable housing and basic services for all and upgrade of slums by 2022, India has launched the Pradhan Mantri Awas Yojana (PMAY) for urban households. PMAY has four components: in-situ slum redevelopment; credit linked subsidy scheme; affordable housing in partnership with public or private sector; and beneficiary-led individual house construction/enhancements. The government has made it necessary to have at least one woman member registered as the house owner, and preference is given to women in house allotment. Assistance is provided through Urban Local Bodies (ULBs) for in-situ rehabilitation of existing slum dwellers using land as a resource through private sector participation and subsidy for beneficiary-led individual house construction/enhancement. By the end of FY 2019-20, out of 11.2 million housing demand, 3.2 million houses have been completed, with the remaining at different levels of progress.

Sustainable Urbanisation and Mobility

The National Urban Transport Policy (NUTP) focuses on environment-friendly sustainable transport along with non-motorised transport innovations. The Sustainable Urban Transport Project (SUTP) is being implemented in select cities to promote effective means of sustainable transport. India is taking crucial steps towards promoting electric mobility. The National Mission on Transformative Mobility and Battery Storage, steered by NITI Aayog, has been set up recently for this purpose. A comprehensive National Policy on Disaster Management (2009) puts in place a proactive approach to disaster resilience driven by strategies for prevention, mitigation and preparedness. The National Disaster Management Plan expressly integrates the Sendai Framework for Disaster Risk Reduction as well as the SDGs. There is a clear stress on preventing and limiting disaster impact on development and protecting the lives and livelihoods of the people in vulnerable situations. Local governments execute their responsibilities at every stage of disaster management in tandem with other levels of government as well as civil society and other stakeholders.

India launched the Energy Conservation Building Code (ECBC) in 2017, which aims at reducing energy consumption and promote low-carbon growth. ECBC 2017 sets parameters for builders, designers, and architects to integrate renewable energy sources in building design with the inclusion of passive design strategies. The Code aims to optimise energy savings with the comfort levels for occupants, and prefers life-cycle cost effectiveness to achieve energy neutrality in commercial buildings. ECBC is estimated to achieve a 50 per cent reduction in energy use by 2030. This will translate to energy savings of about 300 billion units by 2030 and a peak demand reduction of over 15 GW in a year.

Monitoring Progress at the National and Sub-National Levels

While measuring the country's performance on the SDG India Index and Dashboard, for SDG 11 and its disaggregated five national indicators, the overall Index Score for the country is 53, and ranges between 22 and 79 for the States, and between 33 and 83 for the UTs, on a scale of 0-100. This indicates that the distance to target covered so far by India in Sustainable Cities and Communities remains 53, with a significant variation among the sub-national units.

Challenges and Way Forward

- Institutional capacity of Urban Local Bodies (ULBs) remains a persistent challenge. Financial autonomy, taxation powers and fund generation capabilities are the areas of concern. Consequently, development plans most often face financial constraints. Some ULBs are looking at alternate sources of financing such as Hybrid Annuity Models, municipal bonds, Infrastructure Investment Trusts etc.
- Being home to 15 out of the 20 most polluted cities in the world, the challenge of pollution, particularly air pollution, demands immediate attention in the country.
- Some large and wealthy cities may have well-managed resource systems but they also have larger ecological footprints. Climate change impacts increase the vulnerability of cities and put further stress on the adaptive capacities of the poor living in them.
- To reduce congestion and the interlinked problems that come with it, integrated and spatially distributed urbanisation with an emphasis on small and medium cities and towns, along with promotion of linkages with rural areas, are some of the ways that can be envisioned.

Recognising that the cities are fast becoming growth centres, India has put in place a wide array of strategic interventions, both through legislation and executive action, to address the multifarious issues and challenges that accompany rapid urbansation. Gender concerns need to be integrated in housing, transport and design of public spaces to make cities sustainable and inclusive. The endeavour continues to be to work in collaboration with urban local governments, private sector actors and the community, towards making our cities modern, efficient and sustainable for all population groups residing in the urban and peri-urban areas, with unmatched ease of living for all.

SDG 12: Ensure Sustainable Consumption and Production Patterns

At the heart of sustainable consumption and production lie resource use efficiency, green employment and work force, sustainable infrastructure, equitable access to basic services and better quality of life. By setting the targets to reduce the emissions intensity of GDP by 20 to 25 per cent from its 2005 levels by 2020 and by 33 to 35 per cent by 2030, India has reiterated its commitment to SDG 12. India supports the 10-Year Framework of Programmes on Sustainable Consumption and Production (10YFP), which is a global commitment to accelerate the shift towards sustainable consumption and production. The country is particularly active in 10YFP programme areas, such as, sustainable buildings and construction, sustainable tourism, sustainable food systems, consumer information, and sustainable lifestyles and education.

Sustainable Food Systems

Sustainable agriculture is fundamental to a sustainable food system. The National Mission on Sustainable Agriculture (NMSA), in tandem with other missions under the National Action Plan on Climate Change, strives to optimize agricultural productivity and mitigate the environmental impacts. Under the Soil Health Management (SHM) initiative launched in 2015, over 224 million Soil Health Cards (SHCs) have been despatched, with the aim of promoting organic manures, bio-fertilizers and low-input sustainable agriculture, by providing crop-wise recommendations of nutrients and fertilizers to improve productivity. While the estimated ideal ratio of primary micronutrients such as, Nitrogen (N), Phosphorus (P) and Potassium (K) provided by fertilizers is 4:2:1, and implies that the use of Nitrogen fertilizer should not exceed 57 per cent, as of 2018-19, that percentage of nitrogen fertilizer in the country stood at 64.39. Early research has noted important gains from the use of the SHCs in terms of reduction in chemical fertilizer use, rise in use of bio-fertilizers and other micro-nutrients, reduction in costs, increase in crop yields and improvement in income in the range of 30 to 40 per cent.

In terms of land under organic agriculture, India ranks ninth in the world. India is globally sixth in terms of organic wild collection area. The organic market in

the country is growing at the rate of 25 per cent per annum. While agriculture suffers from and contributes to climate change, climate-smart agriculture (CSA) is a part of the solution. Over the last few years, CSA strategies have been developed and promoted with adaptive crop regimes being developed and implemented for various agricultural seasons and agro-climatic zones. Measures for surface and rainwater harvesting are widely practiced across the country with major schemes under the Jal Jeevan Mission to promote water harvesting and conservation measures. There has been continuous improvement in water conservation both for agricultural and other purposes through check dams, open wells, and percolation tanks, among others.

Resource Efficiency

India has emerged as the world's second-largest consumer of materials. The demand for consumption of materials has gone up over the years and reached 7.4 billion tonnes in 2017, with resource extraction per unit area rising to the level of 1,579 tonnes/acre. Augmenting resource efficiency and increasing the use of secondary raw materials is an integral part of the strategy to work towards decoupling growth from adverse environmental impacts. Resource efficiency fetches considerable cost benefits by downsizing extraction of virgin raw materials, import dependency, and energy and process materials.

India strives to control resource extraction rate and improve material productivity. There is an effort to reduce import dependency for the majority of the 'most critical' materials, such as, cobalt, copper and lithium, which are extensively used in the high-end technology industry. Multi-stakeholder efforts are targeted at increasing the extent of recycling in the country, which is currently in the range of 20 to 25 per cent.

Laying down policy in this direction is crucial. NITI Aayog initiated the process with the formulation of the Draft National Resource Efficiency Policy (NREP). The NREP envisions an environmentally sustainable future with resource secure and equitable economic growth as well as bio-diverse ecosystems with a focus on: a) sustainable consumption of virgin resources; b) high material productivity with emphasis on efficient circular approaches; c) minimisation of waste; and d) creation of employment opportunities and business models conducive to environment protection and conservation.

Sustainable Construction and Buildings

Construction and buildings, both commercial and residential, plays an important role in Indian economy and contribute about nine per cent of the GDP. In view of rapid urbanisation, the increasing number of buildings, rising energy consumption and the resultant carbon emissions have been a cause for concern. Rising awareness is leading to an upward trend in the adoption of green building and construction principles and parameters in India. According to the US Green Buildings Council, India is witnessing a dramatic increase in sustainable development practices. It ranks third as of December 31, 2018 in the global listing of the top ten countries for Leadership in Energy and Environmental Design (LEED), with more than 899 LEED-certified projects totaling over 24.81 million gross square meters of space.

India's green building footprint has further multiplied to 7.14 billion sqft. with 0.58 million acres of large developments. With the green building footprint expected to surpass the 10 billion sqft. mark by the year 2022, India's green building space is expanding very fast in the construction industry which is expected to grow in value terms at a CAGR of 15.7 per cent. The pace of sustainable construction is facilitated by several certification systems. The Green Rating for Integrated Habitat Assessment (GRIHA) is a national rating system for green buildings that is adopted while designing and evaluating new buildings. The Indian Bureau of Energy Efficiency (BEE) has established the Energy Conservation Building Code (ECBC) to set energy efficiency standards for design and construction of buildings.

Public Procurement

Public procurement has undergone an overhaul in terms of multi-dimensional consideration of economic, social and environmental aspects. Public sector institutions and government departments are increasingly embedding environmental and energy efficiency criteria in their procurement decisions.

Sustainable Tourism

Tourism accounted for 6.8 per cent of India's GDP in 2019 contributing to 8.1 per cent of all employment. Over the next decade, the sector's direct contribution to GDP is likely to grow by 7.1 per cent per annum. Trends of growth are found in relation to geo-physical and natural attractions, cultural/spiritual heritage, adventure as well as wellness and medical tourism, which are conducive to growth in sustainable

tourism. India has operationalised the Comprehensive Sustainable Tourism Criteria for three major industry segments, namely, tour operators, accommodation and beaches, back-waters, lakes and rivers sectors, which promote various eco-friendly measures like installation of Sewage Treatment Plant (STP), rain water harvesting system, waste management system, pollution control, introduction of non-Chloro-fluorocarbon (CFC) equipment for refrigeration and air conditioning, measures for energy, and water conservation among others. In addition, the Government is taking enduring measures for integrating tourism with local culture and economic development, promoting community participation, and improving governance and security.

Waste Management

Waste management system in India has adopted a 'sustainable development' framework and is based chiefly on the principles of 'precaution' and 'polluter pays'. Therefore, the municipal institutions and commercial establishments are mandated to act in an environmentally accountable and responsible manner. Under the umbrella legislation of the Environment Protection Act, 1986 (EPA), separate sets of rules and compliance mechanisms/procedures address specific forms of waste. With rapid urbanisation, the country is facing massive waste management challenges. Over 377 million urban people live in 7,935 towns and cities and generate 62 million tonnes of municipal solid waste (MSW) per annum. As of August 2017, 91 per cent of MSW generated was collected, of which 23 per cent was treated. There has been major improvement in waste segregation as well as of January 2020, 74.82 per cent of municipal wards in India have 100 percent source segregation in Indian cities.

Generation of plastic waste, estimated in 2015 for 60 major cities, was 6.92 per cent of MSW. Plastic waste generated in the country was estimated in 2017 to be 9.5 million tonnes per annum, and per capita plastic consumption was at a low level of 11 kg, which was only a tenth of that of the US and less than one-third of China. Nevertheless, the country has taken strong actions to reduce plastic waste and has resolved to ban single-use plastic by 2022. It is estimated that India generates nearly 7.17 million tonnes of hazardous waste annually. It has been growing at two to five per cent per annum and constitutes about 10-15 per cent of industrial waste in the country. Of the total, 2.84 million tonnes (39.6 per cent) was disposed and 3.68 million tonnes (51.3 per cent) was recycled. This indicates both the extent of opportunity as well as challenge of managing hazardous waste.

Monitoring Progress at the National and Sub-National Levels

While measuring the country's performance on the SDG India Index and Dashboard, for SDG 12 and its disaggregated seven national indicators, the overall Index Score for the country is 55, and ranges between 30 and 100 for the States, and between 39 and 77 for the UTs, on a scale of 0-100 This indicates that the distance to target covered so far by India in Sustainable Consumption and Production remains 55, with a significant variation among the sub-national units.

Challenges and Way Forward

While the strategies and initiatives discussed above address various dimensions of the Goal, several challenges require attention:

- It is crucial to retain focus on operating a sustainable supply chain, involving everyone - from producers to the final consumer. This would involve improvement of sustainability by strengthening cooperation among all producers and simultaneously raising awareness and consciousness among consumers about sustainable consumption choices.
- There is a simultaneous expansion and crowding of urban spaces. Currently hovering slightly above 30 per cent, the urban population is estimated to surpass the halfway mark by 2050. Among other challenges of fast urban growth, those of solid waste management demand a sustained response.
- According to the FAO, up to 40 per cent of the food produced in India is wasted, virtually frittering away a lot of water, fertilizers, and other resources that go into producing food. Complicating matters, disposal of food in landfills drives climate change by producing methane, a green-house gas 28 times more potent than carbon dioxide. India remains committed to promoting sustainable consumption and production with increasing focus on long-term resource efficiency, which is socially, economically and inter-generationally equitable, and which optimises well-being of all stakeholders. ❑

Discipline, Dedication and Determination for Meeting the Demands of Sustainable Growth

M Venkaiah Naidu, Hon'ble Vice President of India delivered the Convocation Address at the 6th Convocation Ceremony of PES University, Bengaluru on November 15, 2021. He said, "Socially Relevant Research and Technologies are the need of the hour. In their journey towards excellence, universities also need to address nationally relevant and globally sensitive issues. In recent times, two such issues are demanding global attention viz., Climate change and Sustainable Development. Technological Universities and National institutes have an obligation to participate in these globally prioritized issues. We frequently read news reports about increasing pollution in Indian cities; I would urge our educational institutions to come up with technological solutions to such pressing problems faced by society." Excerpts

Sisters and Brothers, I am very pleased to be here with you for the sixth convocation of PES University today. I congratulate all graduating students for achieving an important milestone in their lives. I also compliment all teachers, parents and university administration whose hard work and support have enabled the students to successfully reach this important academic landmark in their careers. I hope the passing out students will remember the words of Mahatma Gandhi ji who said that "the aim of university education should be to turn out true servants of the people.

This 'spirit of service' is what is needed most today. Our ancient sages said - लोकः समसताः सुखिनो भवन्तु – Let the entire world be happy. You should move ahead in life with these great ideals in mind.

Dear Students, India has a glorious past in the field of education. Our ancient universities like Takshashila and Nalanda attracted students from many other countries and it is estimated that more than 10,000 students studied under various disciplines at Nalanda. Yoga and Meditation have been India's valuable contributions to world culture, duly celebrated by the UN as International Yoga Day on June, 21 of every year. Today, the 4th industrial revolution is knocking at our door and it is driven by the knowledge economy and cutting-edge technological innovations. We cannot afford to miss this opportunity and our higher educational institutions must equip our youth with 21st-century skills.

I am happy to note that NEP-2020 aims to transform and reorient the higher educational institutions of the country towards the challenges of the knowledge economy. There is an urgent need to align our university classrooms to the emerging global trends such as 5G based technologies which find applications in a wide range of areas including agriculture, medical, administrative, commerce and industrial management. I am happy to know that PES University is focusing on training the students in modern areas such as artificial intelligence, machine learning, 5G technologies, robotics and biotechnology.

It is commendable that two satellites have been built and launched by the students and staff of PES University in association with DRDO and ISRO. That PES University is the second university in the country after IIT Bombay to achieve this spectacular feat speaks of your prowess in cutting-edge research.

I heartily congratulate Prof. M.R. Doreswamy and all the PES University staff/students for this singular contribution which makes the State and Country proud. The government has brought in far-reaching reforms in the Space sector aimed at boosting private sector participation in space activities. I would urge our private institutions and universities to make the best use of this opportunity and to work towards making India self-reliant and technologically advanced in the space sector.

Friends, Drone technologies are another emerging area that offers tremendous benefits to almost all sectors of the economy including agriculture, surveillance, transportation, defence, and law enforcement. The drone services industry is expected to generate over five lakh jobs in the next three years and India with its traditional strengths in innovation, IT and frugal engineering has the potential of becoming a global drone hub in the coming decade. We must focus our attention on creating skilled manpower for this sector. I am happy

to know that PES University is actively considering starting courses on Drone Technology. In fact, all our higher education institutions and universities should be alive to national needs and they must review and align their existing courses to the emerging global trends or start new courses in tune with them.

In the 21st century, the global economy is dominated by knowledge-related activities. India aims to become a multi-trillion dollar economy by 2050 and NEP-2020 sets a target of at least 50% of this to come from knowledge-related activities and skills. Technological Universities have a special role to play in transforming India into a knowledge power.

I appreciate that PES University has built a robust and vibrant research culture and in a short span of five years, more than 600 research papers have been published and a total of 24 patents have been filed by the university.

I would suggest our universities lay more emphasis on implementable patents under Intellectual Property rights (IPR) rather than academic patents to give a fillip to economy and industry. India urgently needs to adopt a multidisciplinary approach to R&D and we must also strengthen industry-institute linkages for better research outcomes. I find that many technical books used by engineering students in India are published by foreign authors. It would be good if our learned academicians could promote knowledge economy by authoring books of global standards on contemporary themes. I say so because Indian authors can better contextualize the engineering course content with regard to Indian socio-economic conditions. This would be helpful for the young students as they would be able to better understand and find solutions to the many problems faced by rural India, farmers and other underprivileged groups in the society. We must also strive to create study material in Indian languages for the benefit of our students. Similarly, indigenous publication of academic journals is also called for to retain copyright and ownership of knowledge generated in this country, which otherwise is likely to be transferred to the international journals in which our research papers get published.

Dear friends, Socially Relevant Research and Technologies are the need of the hour. In their journey towards excellence, universities also need to address nationally relevant and globally sensitive issues. In recent times, two such issues are demanding global attention viz., Climate change and Sustainable Development. Technological Universities and National institutes have an obligation to participate in these globally prioritized issues. We frequently read news reports about increasing pollution in Indian cities; I would urge our educational institutions to come up with technological solutions to such pressing problems faced by society. I have been told that PES University is actively engaged in various socio-economic developmental projects in the state and country. You have adopted more than 40 government schools for development in Bangalore city and rural districts. I understand that this university is also involved in organizing medical camps, skill training of school dropouts and COVID relief work. I compliment you for this.

My Dear Young Friends, While you move on the path of academic excellence, it is equally important that you take care of your health by undertaking regular physical activity like yoga or cycling. You should adopt a healthy lifestyle and avoid sedentary habits and unhealthy diets like junk food. Our ancestors have prescribed us a rich variety of foods according to our climatic and bodily needs, and we must always try to eat properly cooked traditional food for our physical and mental well-being.

Dear Students, always remember that the qualities of discipline, dedication and determination are very important to progress in life. Dream high, aim high and work hard -- this is my mantra to success.

I am glad that PES University has made significant accomplishments in its journey towards excellence under the enlightening mentorship by Chancellor Prof. M.R. Doreswamy.

I am told that in recognition of his eminence, Karnataka Government invited Prof. Doreswamy to be its Adviser, Education Reforms and his 18 recommendations to the government have laid a robust plan of action for implementing the NEP in the State.

I hope that PES University will scale new heights of academic excellence in the coming years and continue to work towards national development. I take immense pleasure in wishing the very best to all the graduating students in pursuit of excellence in their professional lives ahead.

JAI HIND!"

Book Review

Documenting the Pandemic

Jyotirmoy Dutta*

Zarabi, Dazy and Dutta, Jayanti (2021). ***COVID-19 and Its Impact on Human Society: First Impressions,*** New Delhi, Narendra Publishing House, 209 pages, Rs 895/-

The unprecedented pandemic of COVID-19 has not only been a virulent disease which has turned the world upside down but it has also given rise to opportunities to study, explore and document the ways in which human society has reacted to this crisis.

Recently, a lot of publications have come out on the theme of COVID-19, explaining scientific researches, analyzing the spread of the infection or generating awareness and even literary works with Corona as the backdrop have been published. These can be safely labeled as belonging to the genre of COVID-19 literature. This book also falls in the same genre, exploring different facets of COVID-19 and its impact on different aspects of society.

The initial days of the infection were spent in a haze as all sections of the society were trying to find out ways to carry on somehow, under the lockdown. Most of the papers have been written during those two months from 22nd March-22nd May, 2020 and about the issues that have arisen at that time. Since the authors had no access to institutional resources, most of the papers draw from online references, analyze secondary information and try to create a picture which could help to move towards a solution. A bigger picture thus emerges out of the few pieces of the jigsaw puzzle which are the book chapters. However, it is obvious that due to close temporal proximity to the pandemic, these works do not have the perspective or the rigorous empiricism needed in serious academic deliberations. The editors have been candid enough to acknowledge that the book " …aims to capture the immediate impact and it should be seen as a compilation of preliminary references which may be followed later on by exhaustive empirical research to cover the gaps and fill the lacunae".

Each of the twenty-one papers in the book gives a glimpse of how the pandemic brought sudden changes into the human society in unforeseen ways, its impact on the traditional ways of daily business and the implications of the consequent lockdown. Impact on certain sections of the society such as on specially-abled children, women, the aged population, students, teachers, domestic workers, ASHA workers and migrant workforce, daily wage laborers- who have taken the brunt of the happenings induced by COVID-19 has been touched upon in these papers. Emerging trends in geopolitics, biopolitics, pharmaceuticals, scientific data and cybercrimes too have been discussed.

Reading the papers one can get an idea of the issues which were of serious concern to the human society at that point of history. The volume thus has been successful in capturing the atmosphere of the country in the initial days of the pandemic, aptly claimed in the subtitle, 'First impressions', by covering the broad fields of Sociology, Political science, Laws, Education, Economics, Psychology, Healthetc. The volume can prove to be a reference point for researchers who will subsequently follow the trail of COVID-19 and its indelible impact on humanity. These preliminary ideas appear immature, superficial and even half baked, but still these are significant because these are the foundations of future thoughts and consequent actions.

Both the editors, and most of the contributors are from academic experiences in North Indian institutions and hence a location bias is visible in the studies. A few editing mistakes can be taken care of in the future editions.

* *Project Manager, Centre for Digital Innovation, CHRIST (Deemed to be University) Bengaluru-560029*

CAMPUS NEWS

Faculty Development Programme on Green Technology and Sustainable Development

A five-day Faculty Development Programme on 'Green Technology and Sustainable Development' was organized by the Amity Institute of Biotechnology, Amity University Rajasthan, Jaipur and Amity School of Engineering and Technology, Amity University Rajasthan, Jaipur, recently. The programme was sponsored by ATAL-AICTE. The Chief Patrons of the programme were Dr. Ashok K Chauhan, Founder President, Amity Group and Dr. Aseem Chauhan, Chancellor, Amity University, Rajasthan. The event started with the welcome address of Prof. Vinay Sharma, Dean, Research and Director, Amity Institute of Biotechnology. Briefing on the aims and purpose of the programme, Prof. Sharma said that the FDP will provide a comprehensive forum to enrich knowledge about green technology and sustainable development. Prof. Pankaj K Pandey, Coordinator, Amity School of Engineering and Technology reiterated the need to focus on 5Rs i.e. refuse, reduce, reuse, repurpose and recycle for a clean and green environment.

The event was inaugurated by Prof (Dr.) Rakesh Bhatnagar, Vice Chancellor, Amity University, Rajasthan. Prof. Bhatnagar congratulated the committee and said, "The current programme on 'Green Technology' is a conscious effort to ponder over sustainable development and live a life close to nature."

Addressing the programme, Pro Vice Chancellor, Prof. Amit Jain said, "Green technology describes eco-friendly products, and the consumers need to understand and accept green technology for sustainable development."

The Technical Session started with the keynote address of Prof. B N Mishra, AKTU, Lucknow who talked about the role of 3D Printing Opportunities in Biotechnology and its use for food waste management, wastewater treatment and paper production. The session was followed by the talk of Dr Lalit Kumar Singh, BARC, Mumbai on 'Research Scope in Nuclear Energy' in the field of engineering and basic sciences, along with the workings of nuclear reactor. The next talk was delivered by Dr. Pawan Kumar Rakesh, NIT, Uttarakhand who discussed about the fully and partially biodegradable materials.

Dr. Surajit Das, NIT, Odisha spoke on 'Insights into Bacterial Bioremediation for Degradation and Detoxification of Organic and Inorganic Pollutants'. The participants learned about the use of fungal enzymes for the digestion of algal biomass as a pretreatment process to improve the yield of biogas generation from the talk of Dr. Sanjeev Kumar, IIT, Roorkee who addressed 'Algae for Waste-water Treatment Coupled Bio-energy Generation'.

During the programme, the subject 'Sustainable and Greener Approach in Synthesis of Value-added Chemicals' was explained by Dr. Raj Kumar Joshi, MNIT, Jaipur. On the next day, Prof. P Rajaram, Jiwaji University, Gwalior delineated his speech on 'Thin Film Solar Cells' and its role in harvesting solar energy for sustainable development. The session was followed by the talk of Prof. Vinay Sharma, Amity University who explained 'Green Biotechnology' as renewable energy from biomass as conventional energy sources like fossil fuels. Prof. Manish C Srivastava, Amity University, Noida, Uttar Pradesh explained the need of recycling scrap metals while delivering upon 'Recycling of Scrap metals- an Imperative for Sustainability'.

Dr. Pooja Dubey, BETI spoke on 'Environment Sustainability by Mushroom Technology'. Prof. Indu Shekhar Thakur, Amity University, Haryana talked about 'Capture, Storage and Sequestration of Green House Gases for Production of Bio-fuel Materials'. The detailed insight of 'Nanocomposites for Sustainable Development' was addressed by Dr. Avadesh Kumar Sharma, Rajkiya Engineering College, Uttar Pradesh talked about biomedical application of nanocomposites. In the concluding session, Prof. Balakrishnan, Krea University, Andhra Pradesh threw light on stress management.

National Conference on Business and Management

A two-day Annual National Conference on 'Business and Management' is being organized through blended mode by the Haryana School of Business, Guru Jambheshwar University of Science and Technology, Hisar (Haryana) during February

10-11, 2022. The event is an attempt to encourage communications and collaboration on issues pertaining to 'Business and Management' among the elite academicians, researchers, businessmen, entrepreneurs and students. It also promotes professional interaction and lifelong learning, recognize of individual and organisations. The Broad Themes of the event are:

Finance and Accounting

- Goods and Services Tax.
- Mutual Funds.
- Portfolio Management and Security Analysis.
- Financial and Commodity Derivatives.
- Capital Markets and Assets Pricing Anomalies.
- Banking and Insurance.
- Behavioral Biases and Market Volatility.
- Micro Finance and Financial Inclusion.
- Financial Reporting Standards.
- Governance and Financial Frauds.
- Financial Risk Management.
- Public Finance.
- Corporate Valuation and IPOs.
- Crowd Funding.

Human Resource Management

- Global HRM and Workforce Diversity.
- Work Life Balance.
- Talent Management.
- Performance Management.
- Stress Management.
- Change Management.
- HR Accounting and Audit.
- Employer Branding.
- Human Resource Outsourcing.
- Spirituality and Management.
- Green HRM.
- Labour Laws and Employee Relations.
- Leadership Heterogeneity.
- Human Capital, Creativity and Innovation

Marketing Management

- Consumer Behavior.
- Integrated Marketing Communication.
- Retailing.
- Service Marketing.
- Rural and Agriculture Marketing.
- Branding.
- Consumer Relationship Management.
- Online Marketing.
- Green Marketing and Consumerism.
- Eco- Tourism.
- Logistic and Supply-chain Management.
- Creating Customer Value.

International Business

- Trade Strategies in New World Order.
- FDI and FIIs.
- India's Foreign Trade and Policy.
- WTO Issues and Challenges.
- Foreign Exchange Market.
- Regionalism and Economic Cooperation.
- HR Issues in International Business.
- International Marketing.
- International Logistics.
- International Financial Management.
- Special Economic Zones.

Strategy and Entrepreneurship

- Strategic Issues for Micro Small and Medium Enterprise.
- Globalization and Strategic Management.
- Social Entrepreneurship.
- Trends and Challenges in Family Business.
- Corporate Governance and Sustainability in Business.
- E-Commerce.
- Corporate Restructuring.
- Women Entrepreneurship.

Economic Trends and Issues

- Macroeconomic Environment and Policy.
- Microeconomic Environment and Policy.
- Competitive Policy and Regulation Issues.
- Regional Economic Development Issues.
- Fiscal Policies.
- Role of Digitalization in Economic Growth.
- Labour Economics.
- Welfare Economics.
- Make in India.

- Urban Economics.

For further details, contact, Conference Director, Prof. Karam Pal Narwal, Director, Haryana School of Business, Guru Jambheshwar University of Science and Technology, Hisar-12500 (Haryana). Mobile No: +91-98137-05928, E-mail: *hsbconference@gmail.com*. For updates, log on to*: www.gjust.ac.in/event.*

Online Teachers' Enrichment Workshop on Complex Analysis and Number Theory

A two-week Online Teachers' Enrichment Workshop on 'Complex Analysis and Number Theory' is being organized by the School of Basic Sciences, IIT Bhubaneswar, Odisha in collaboration with the National Centre for Mathematics, Mumbai during December 18-31, 2021.

The objective of the event is to introduce the college and university teachers of mathematics to interesting topics in the basic subjects they teach. The event is conceived to demonstrate the interplay between Complex Analysis and Number Theory through lectures and interactive discussion sessions, which in turn can enhance the novelty of teaching of the participants. It aims to benefit the teachers of different colleges and universities in and around Odisha. The Topics of the event are:

- Division algorithm, GCD, Euclid's algorithm, solution of linear diophantine equations, fundamental theorem of arithmetic, infinitude of primes, finding primes with a given number of digits, arithmetic modulo m, solution of congruences modulom, Fermat's theorem, Euler's theorem and their applications.
- Mobius and other elementary maps, Local properties of analytic functions, Behaviour of analytic functions near singularities-removable, pole and essential, Asymptotic values, Cauchy integral formula and its consequences, Evaluation of certain real integrals, Analytic continuation.

For further details, contact Conveners:

- Prof. Srinivas Kotyada, Institute of Mathematical Sciences, IV Cross Road, CIT Campus, Taramani, Chennai- 600 113 (Tamil Nadu). E-mail: *ksrinivas.imsc@gmail.com.*
- Dr. Tarakanta Nayak, School of Basic Sciences, IIT Bhubaneswar, Odisha-752050. E-mail: *tnayak@iitbbs.ac.in*. For updates, log on to: *www.ncmmath.org*

International Conference on Intelligent Sustainable Systems

A two-day International Conference on 'Intelligent Sustainable Systems' is being organized by the SCAD College of Engineering and Technology, Tirunelveli, Tamil Nadu during February 17-18, 2022.

In today's world, Sustainable Development is becoming a crucial part to meet the increasing demand of future generations. The event is one of the initiatives toward attaining sustainable development and facilitating collaborative forums in international level. It aims to create an interdisciplinary platform to share their research ideas on developing new models and algorithms for sustainable development and provide intelligent paradigm shifts to deal with uncertainties and imprecise problems in real-world. It is an annual event that aims to enhance the intersection of intelligent systems and sustainability. The Conference mainly aims to explore and share cutting-edge research knowledge for future sustainable collaboration. The Tracks of the event are:

Track-1

- Intelligent Systems.
- Artificial Intelligence and Intelligent Systems.
- Agent and Multi Agent Systems.
- Intelligent Business Systems.
- Machine Intelligence.
- Computer Vision.
- Pattern Recognition.
- Web Intelligence.
- Intelligent Software Engineering Models.
- Fuzzy Systems.
- Brain-Computer Interface.
- Computational Intelligence.
- Intelligent Search and Optimization Techniques.
- Mobile Computing and Intelligence.
- Virtual Environments.
- Human-Machine Interaction.
- Wearable Computing Systems.
- Intelligent Communication Systems.
- Intelligent Information and Network Systems.

Track-2

- Sustainable Systems.
- Sustainable Design and Environment.
- Intelligent Energy Efficient Architectures.
- Green Data Centers.
- Sustainable Software Systems.
- Smart Resource Scheduling and Allocation.
- Algorithms for Reduced Power and Energy Utilization.
- Real Time Systems.
- Sustainable Circuit Design.
- Low Power Electronics.
- Sustainable Technologies and Human Factors.
- Green Decision Making and Development.
- Next-generation Sustainability Solutions.
- Sustainability for Industries.
- Sustainable Systems and Smart Cities.
- Security, Trust and Privacy.
- IoT and Big Data based Sustainable Computing Architectures.
- Data Intelligence.

Track-3

- Applications.
- Smart Cities.
- Smart Cyber Physical Systems.
- Sustainable High Performance Systems.
- Sustainable Industries.
- Sustainable Supply Chain and Manufacturing Systems.
- Robotics.
- Power Electronics.
- Healthcare.
- Business Intelligence.
- Transportation and Logistics.
- E-waste Analysis and Solutions.
- Power Aware Networking Applications.

For further details, Contact Dr. R Karthik Ganesh, Associate Professor, Department of Computer Science and Engineering, SCAD College of Engineering and Technology, Tirunelveli, Tamil Nadu-627 414, Mobile No: +91 9600368297, E-mail: *iciss2k20@gmail.com*. For updates, log on to: *http://icoiss.com/2022/*

THESES OF THE MONTH

SOCIAL SCIENCES
A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of September-October, 2021)

Accountancy

1. Trivedi, Krishna Kulinbhai. **A study on financial performance of selected oil companies in India**. (Dr. Jayendrasinh Jadav), Department of Accountancy, Gujarat University, Ahmedabad.

Business Administration

1. Julee. **A study of combining impact of fundamental and technical analysis on investment decision of investors in Indian stock market**. (Dr. Arti Gaur), Department of Business Administration, Chaudhary Devi Lal University, Sirsa.

2. Sharma, Bhavna. **Frauds in Indian banking: An empirical analysis of select issues**. (Prof. Sultan Singh), Department of Business Administration, Chaudhary Devi Lal University, Sirsa.

Commerce

1. Barot, Bhavikray Vinodchandra. **A study on financial performance of selected telecom companies in India**. (Dr. G P Japee), Department of Commerce, Gujarat University, Ahmedabad.

2. Bhagtani, Shilpa Kishorelal. **A study of the prospects and challenges of real estate market: With special reference to Thane District**. (Dr. Dakore B V), Department of Commerce, Swami Ramanand Teerth Marathwada University, Nanded.

3. Darak, Ramnarayan Kishanprasad. **A study of performance of Bancassurance: A case study of State Bank of India**. (Dr. Bora C K), Department of Commerce, Swami Ramanand Teerth Marathwada University, Nanded.

4. Dasari, Siloyam. **A study on customer perception on Indian cellular mobile service providers: A comparative study between selected regions of Andhra and Telangana State**. (Dr. Rajesh C Jampala), Department of Commerce & Management Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

5. Garg, Diksha. **A study of job satisfaction and organisational commitment in relation to job stress in service sector**. (Dr. Jaswinder Kaur Sindhu), Department of Commerce, Kurukshetra University, Kurukshetra.

6. Jain, Nikita. **A study of financial literacy and its role in investment choice decision: A case study of Sagar District**. (Prof.J K Jain), Department of Commerce, Dr Harisingh Gour Vishwavidyalaya, Sagar.

7. Karamata, Viraj Dineshkumar. **An analytical study of productivity among nationalized banks in India**. (Dr. M M Thaker), Department of Commerce, Saurashtra University, Rajkot.

8. Ogirala, Naresh. **Impact of Government financial assistance schemes for the entrepreneurship development in Andhra Pradesh: An analytical and critical study in the Krishna District**. (Dr. J Revathy), Department of Commerce and Business Administration, Acharya Nagarjuna University, Nagarjuna Nagar.

9. Parmar, Hemlattaben Virajibhai. **A study on creativity and financial innovation of selected co-operative banks of Gujarat**. (Dr. G P Japee), Department of Commerce, Gujarat University, Ahmedabad.

10. Pathak, Isha Nileshbhai. **An analysis of green accounting disclosure practices in selected companies of petroleum industry of India: An empirical study on greening the enterprise**. (Dr. Ashvin H Solanki), Department of Commerce, Saurashtra University, Rajkot.

11. Revathi, Lalitha Kumari R. **The impact of behavioural factors on investment decisions with special reference to mutual fund industry at Hyderabad**. (Dr. P C Sai Babu), Department of Commerce and Business Administration, Acharya Nagarjuna University, Nagarjuna Nagar.

Economics

1. Bande, Mohan Venkatrao. **Marathawadyateel nivdak nagari sehkari benkancha chikitsak abhyas (1995-96 te 2009-10)**. (Dr. Choudhary R M and Dr. Mundkar S M), Department of Economics, Swami Ramanand Teerth Marathwada University, Nanded.

2. Malik, Firdous Ahmad. **Impact of recent financial inclusion schemes on financial behaviour of poorest of the poor: A comparative study of slum dwellers and beggars in Lucknow and Kolkata**. (Dr. D K Yadav), Department of Economics, Babasaheb Bhim Rao Ambedkar University, Lucknow.

3. Marti, Sreenivasa Rao. **Economics analysis on rural women empowerment through entrepreneurship: An empirical study**. (Dr. N Nirmala Mani), Department of Economics, Acharya Nagarjuna University, Nagarjuna Nagar.

4. Naik, G G Madhu. **An economic analysis of Banana cultivation with reference to Malnad Region**. (Prof. S N Yogish), Department of Economics, Kuvempu University, Shankaraghatta.

5. Rampal. **Economic inequality in Haryana : A comparative study of scheduled castes and non-scheduled castes**. (Dr. Dara Singh), Department of Economics, Kurukshetra University, Kurukshetra.

6. Rathod, Vitthal Jagannth. **Latur Jilhyateel gharkam karna-ya mahilanchaya (Molkarnichya aarthik va samajik isthitichey adhyayan 2005 pasun 2015 paryat**. (Dr. Balaji Gyanoba Kamble), Department of Economics, Swami Ramanand Teerth Marathwada University, Nanded.

7. Redekar, Amit Pundlik. **An economics analysis of sugarcane farmers and sugarcane industries in Kolhapur District**. (Dr. Sali R P), Department of Economics, Swami Ramanand Teerth Marathwada University, Nanded.

Education

1. Davis, KV. **Information and communication technology in teaching-learning in Meghalaya**. (Dr. Umarani Pappuswamy), Department of Education, Assam Don Bosco University, Guwahati, Assam.

2. Elavarapu, Nagarjuna. **Psycho-social problems and academic achievement of early adolescent children: A study in Guntur District of Andhra Pradesh**. (Dr. G Yashoda), Department of Education, Acharya Nagarjuna University, Nagarjuna Nagar.

3. Gupta, Amit Kumar. **A comparative study of creativity and intelligence of the students of government and private senior secondary schools of Sri Ganganagar and Hanumangarh City**. (Dr. Ram Pratap Jangu), Department of Education, Tantia University, Sri Ganganagar.

4. Namewar, Rupali Jankiram. **Jalana Jilhyaantargat iyatta navvichya vidhyarthachey samaneygyan vadvinyasathi rabvilelya upkramanchi parinamkarakta: Ek abhyas**. (Dr. V K Nilekar and Dr. N S Patil), Department of Education, Swami Ramanand Teerth Marathwada University, Nanded.

5. Sawian, Eligius. **Status of music education in Shillong**. (Dr. Naraginti Amareswaran), Department of Education, North Eastern Hill University, Shillong.

6. Shama. **A comparative study of adjustment, self-concept, social behaviour and values of students of different professional courses**. (Dr. Rajender Kumar Godara), Department of Education, Tantia University, Sri Ganganagar.

7. Sharma, Prahlad Rai. **A study of Hindi and English medium Higher Secondary Schools of Nagpur District in relation to educational environment and educational achievement of students**. (Dr. Rajkumari Parihar), Department of Education, Tantia University, Sri Ganganagar.

8. Singh, Manoj Kumar. **Shiksha snatak prashikshnarthiyaon kee shanti shiksha ke prati abhivriti evam unke pathekaram mein shanti shiksha ka samaveshvan ka adhyayan**. (Dr. Rani Dubey), Department of Education, Dr Harisingh Gour Vishwavidyalaya, Sagar.

9. Subhashini, T S. **Efficacy of Vedic methods mathematics, Polya's heuristic approach and conventional methods of teaching in the acquisition of problem solving ability in mathematics**. (Prof.T Swarupa Rani), Department of Education, Acharya Nagarjuna University, Nagarjuna Nagar.

10. Taj, Tahseen. **Develop and study the effectiveness of web based e-learning course on learning course on learning and teaching process for student teacher of B.Ed programme**. (Dr. Jagannath K Dange), Department of Education, Kuvempu University, Shankaraghatta.

Home Science

1. Bhoyar, Archana Mahavrao. **Comparative study on nutritional status of adolescent girls (16 to 18 yrs) residing at home and hostel**. (Dr. Varsha S Zanvar), Department of Home Science, Swami Ramanand Teerth Marathwada University, Nanded.

Journalism & Mass Communication

1. Goel, Renu. **Evaluation of Central Board of Film Certification guidelines in Hindi cinema**. (Dr. Madhu Deep Singh), Department of Journalism & Mass Communication, Kurukshetra University, Kurukshetra.

2. Hirpara, Sandip Jaysukhbhai. **Social answerability of Gujarati news papers: Special reference to a Menace of Liqueur**. (Dr. Punitabahen Harne), Department of Journalism & Mass Communication, Gujarat Vidyapith, Ahmedabad.

3. Kurra, M M Krishna. **The viewer's perspectives on TV programs and digital transmission: A survey analysis of Amaravathi Region in Andhra Pradesh**. (Dr. J Madhu Babu), Department of Journalism & Mass Communication, Acharya Nagarjuna University, Nagarjuna Nagar.

4. Rajbir Singh. **Parmukh Hindi samacharpatroan mein parkashit gramin**

samacharoan kee vishayvastu, pathkata avam pathniyata ka vishleshan. (Dr. Bindu Sharma), Department of Journalism & Mass Communication, Kurukshetra University, Kurukshetra.

5. Tarke, Shyam Balasaheb. **Hindi va Marathi web vrititpatrancha tulnatamak abhyas**. (Dr. Gavhane Sudhir and Dr. Shinde D M), Department of Mass Communication and Journalism, Swami Ramanand Teerth Marathwada University, Nanded.

Law

1. Jadhav, Sopan Digambar. **Media trial and fair tribal: A study with reference to article-19 of the Indian constitution**. (Dr. R B Deshmukh), Department of Law, Swami Ramanand Teerth Marathwada University, Nanded.

2. Jilova, Nishant Kumar. **A critical analysis of centre - state relations under the Constitution of India**. (Dr. Sunil Yadav), Department of Law, Kurukshetra University, Kurukshetra.

3. Kalani, Suman. **Online dispute resolution mechanism in India: A study of its acceptability, applicability and feasibility**. (Dr. Kiran Sharma), Department of Law, S.N.D.T. Women's University, Mumbai.

4. Khairnar, Mahendra Subhash. **State liability on administrative action with reference to Civil Rights in India**. (Dr. R B Deshmukh), Department of Law, Swami Ramanand Teerth Marathwada University, Nanded.

5. Mangnani, Seema Chanderprakash. **A study on need for Sui-Generis system for regulating utility models protection in India**. (Dr. S P Rathor), Department of Law, Gujarat University, Ahmedabad.

6. Nagpal, Saurabh. **Prohibition of child marriage in India: A socio-legal study**. (Prof.J S Jakhar), Department of Law, Chaudhary Devi Lal University, Sirsa.

7. Parminder Kaur. **Human trafficking: A study of legal issues and challenges**. (Prof.J S Jakhar), Department of Law, Chaudhary Devi Lal University, Sirsa.

8. Shah, Swati Vikramkumar. **A socio legal study on disaster management and its implementation: Issues challenges with special reference to Gujarat**. (Dr. S P Rathor), Department of Law, Gujarat University, Ahmedabad.

9. Sharma, Deepa Kaushik. **Right to health in India: A critique of emerging trends**. (Dr. Anita Taneja), Department of Law, Kurukshetra University, Kurukshetra.

10. Vyas, Khushbu Pareshkumar. **Role of National Green Tribunal and Environmental Justice: Retrospect and prospect**. (Dr. M H Pandya), Department of Law, Gujarat University, Ahmedabad.

Library & Information Science

1. Awasthi, Shikha. **Impact of Information Technology on changing ethos of resource sharing and networking in the libraries of National Institutes of Technology in India: A study**. (Dr. R K Choudhary), Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow.

2. Patel, Daxaben G. **Architecture college libraries in Gujarat Sate: A study**. (Dr. Priyanki Vyas), Department of Library and Information Science, Dr Babasaheb Ambedkar Open University, Ahmedabad.

3. Rajender Kumar. **Redesigning library resources and services for the net - generation: A holistic study of IIT libraries of North India**. (Dr. Dinesh K. Gupta), Department of Library and Information Science, Kurukshetra University, Kurukshetra.

Management

1. Boinwad, Dilipkumar Lalaiah. **Marketing of health and wellness food products: A case study of selected urban cities of Maharashtra State**. (Dr. R S Shinde), Department of Management, Swami Ramanand Teerth Marathwada University, Nanded.

2. Deepa Babu, K G. **Entrepreneurial orientation and business performance of small and medium enterprises in Kerala-role of individual and environmental factors**. (Dr. James Manalel), School of Management Studies, Cochin University of Science & Technology, Kochi.

3. Kiranjyot Kaur. **The impact of competition on brand extensions of parent and family brands**. (Dr. Yogesh Mehta), School of Management Studies, Shree Guru Gobind Singh Tricentenary University, Gurugram.

4. Kumar, Remya R. **Community support for ecotourism development: An analysis with special reference to ethnicity and local governance in the protected areas of Kerala, India**. (Dr. Manoj Edward), School of Management Studies, Cochin University of Science & Technology, Kochi.

5. Latha, Ch Madhavi. **Employee engagement in higher education sector: A comparative analysis of government and private institutions in Bangalore**. (Dr. Anouja Mohanty), School of Management, CMR University, Bangalore.

6. Makda, Sakina Taherali. **Food processing industry in Gujarat: Growth and prospect**. (Dr. B V Pathak), Department of Management, Gujarat University, Ahmedabad.

7. Mishra, Sasanka Sekhar. **Study of waste management issues in Indian health care units**. (Dr. Manoranjan Dash and Dr. Kamalakanta Muduli), Department of Management, Siksha O Anusandhan University, Bhubaneswar.

8. Nath, Namita. **Business to consumer e-commerce in India: Challenges and prospects**. (Prof. Vipin Jain), Department of Management, Teerthanker Mahaveer University, Moradabad.

9. Patel, Nikunjkumar Dasharathbhai. **A study on patient satisfaction of outpatient department in model hospitals under ESIC in India**. (Dr. Hiren J Patel), Department of Management, Ganpat University, Mehsana.

10.Punia, Vinay Kumar. **Urban consumer attitudes towards sustainability and sustainable business: An exploratory study of Lucknow City, Uttar Pradesh**. (Dr. Abhilash Babu and Prof.Kushendra Mishra), Department of Rural Management, Babasaheb Bhimrao Ambedkar University, Lucknow.

11. Sabira,N. **Tourism destination competitiveness and business performance of tourism suppliers**. (Dr. Moli P Koshy), School of Management Studies, Cochin University of Science & Technology, Kochi.

12. Saini, Gurmeet Singh. **Marketing Information System: A study of pharmaceutical sector in India**. (Dr. Sushil Sharma), School of Management Studies, Kurukshetra University, Kurukshetra.

13.Shah, Vidhi Tushar. **A comparative analysis of the factors influencing preference for the selected shopping applications amongst the youth of Gujarat**. (Dr. Rachna Gandhi), Department of Management, Gujarat University, Ahmedabad.

14.Singh, Ruby. **Impact of public relations on student enrollment in Indian higher education: A comparative study of select private universities**. (Dr. Tripti Bisawa), Department of Management, IIS University, Jaipur.

15.Suresh, P. **Impact of HR practices on employee performance in select public and private sector banks on Andhra Pradesh**. (Dr. T Narayana Reddy), Department of Management, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

16.Tenneti, Nageswara Rao. **A study on the role of trade unions in determining the industrial relations climate and the organisational performance with special reference to selected cement units in Andhra Pradesh**. (Dr. Nagaraju Battu), Department of Human Resource Management, Acharya Nagarjuna University, Nagarjuna Nagar.

17. Thacker, Swati Jiten. **Risk Management in Indian banks with special reference to Basel norms**. (Dr. B V Pathak), Department of Management, Gujarat University, Ahmedabad.

18.Tiwari, Swarnima. **Relationship between emotional intelligence and occupational stress among health care professionals in West Garo Hills District on Meghalaya**. (Dr. Deepak Bhagat), Department of Management, North Eastern Hill University, Shillong.

Physical Education & Sports

1. Rai, Ashish. **Effect of isotonic and isometric exercises on physical fitness and physiological variables**. (Dr. Rakam Singh Sindhu), Department of Physical Education, Kurukshetra University, Kurukshetra.

2. Ranga, Venkatrama Rao. **Proprioceptive training and core training play significant role in physical rehabilation**. (Dr. P P S Paul Kumar), Department of Physical Education, Yoga and Sports, Acharya Nagarjuna University, Nagarjuna Nagar.

3. Rao, Palepu Suryachandra. **Effects of plyometric training with core exercises program on selected motor physiological and skill related performance variables among men volleyball players**. (Dr. P Johnson), Department of Physical Education, Yoga and Sports Sciences, Acharya Nagarjuna University, Nagarjuna Nagar.

4. Sanjay, E S. **Effect of imagery perspectives, video modeling and self confidence on performance of soccer skills among junior soccer players**. (Dr. Dhinu M R), Department of Physical Education, Sree Sankaracharya University of Sanskrit, Kalady, District Ernakulam.

Political Science

1. Jadhav, Ashok Baburao. **Maharashtrateel Maratha Jatichya rajkiye sehbhagacha chikitsak abhyas: Vishesh sandarbh Satara Jilhya**. (Dr. Panjab Chavan), Department of Political Science, Swami Ramanand Teerth Marathwada University, Nanded.

2. Nirwal, Ganpatrao Uddhav. **Narharu Kurundkar yanchey samajik va rajkiye vichar**. (Dr. Panjab Chavan), Department of Political Science, Swami Ramanand Teerth Marathwada University, Nanded.

Psychology

1. Chaudhary, Reeva. **Place attachment, value orientation, and perceived behavioural control in relation to pro-environmental behaviour: Mediated by new environmental paradigm**. (Dr. Mridula Sharma), Department of Psychology, IIS University, Jaipur.

2. Waqar, Maqbool Parray. **Effect of assertiveness training on self eastern, stress, psychological well-being and academic of adolescents**. (Dr. Sanjay Kumar), Department of Psychology, Dr Harisingh Gour Vishwavidyalaya, Sagar.

Public Administration

1. Ghogre, Balvant Vishnu. **Panchyat Raj sanstha va karamchari yancha chikitsak abhyas: Vishesh sandarbh Latur Jilhya**. (Dr. T N Gaikwad and Dr.S P Mundhe), Department of Public Administration, Swami Ramanand Teerth Marathwada University, Nanded.

2. Singh, Vijay Pratap. **Performance of primary agriculture credit societies in Haryana: A regional analysis**. (Dr. Pankaj Singh), Department of Public Administration, Kurukshetra University, Kurukshetra.

Social Work

1. Johnson, K P. **A study on the mental health of senior secondary school students in Kerala in relation to the spiritual well-being and social support**. (Dr. Riju Sharma), Department of Social Work, Assam Don Bosco University, Guwahati, Assam.

2. Mosala, Sunil Kumar. **Situational analysis of adolescent users in selected slums of NCR of Delhi**. (Prof.Saraswati Raju Iyer), Department of Social Work, Acharya Nagarjuna University, Nagarjuna Nagar.

3. Waghmare, Shreerang Datta. **A study of Corporate Social Responsibility (CSR) activities in Nanded District**. (Dr. Yelne G S), Department of Social Work, Swami Ramanand Teerth Marathwada University, Nanded.

Sociology

1. Gameti, Gitabahen Balubhai. **Relation of Tribe's with forest: Reference to Sabarkantha District**. (Dr. Subhashbhai Pandar), Department of Sociology, Gujarat Vidyapith, Ahmedabad.

2. Mung, Thang Sian. **Zomi ethnicity in Manipur: A sociological study**. (Prof. I L Aier), Department of Sociology, North Eastern Hill University, Shillong.

3. Pawar, Chandrakant Suresh. **Samantrekancha samajjshastriye abhyas (Vishesh sandarbh: Yashwantrao Chavan Maharashtra Mukt Vidyapeeth Nasik Vibhagiye Kendre, Naded**. (Dr. Kamble N T), Department of Sociology, Swami Ramanand Teerth Marathwada University, Nanded.

❑

Kasegaon Education Society's, Kasegaon Rajarambapu Institute of Technology Rajaramnagar

At/Post- Sakharale, Pin Code 415 414

Tal. Walwa, Dist. Sangli (Maharashtra)

(Affiliated to Shivaji University, Kolhapur)

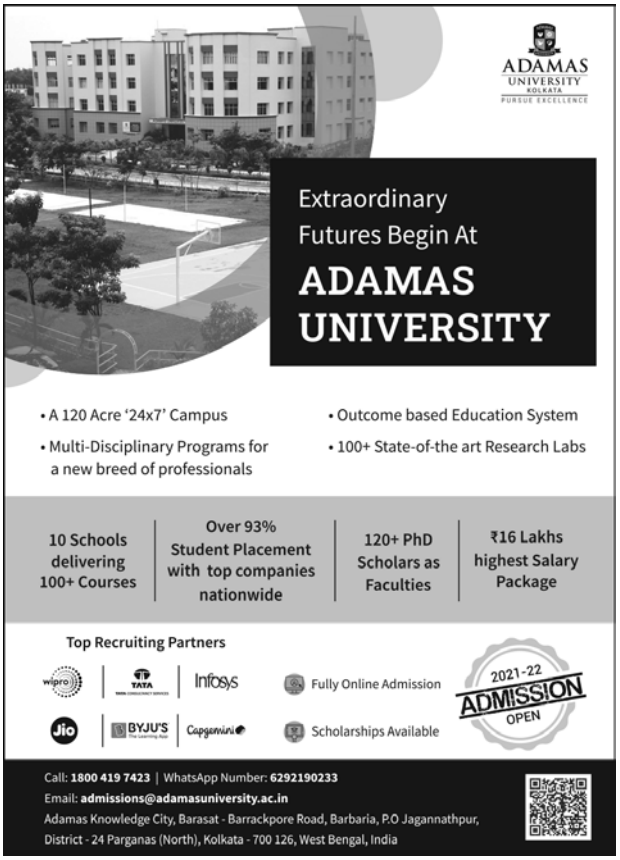
W A N T E D

Applications are invited from eligible candidates for the following posts:

Sr. No.	Name of Posts	Total Posts	Unreserved (Open) Posts
A	**Professor:**		
1	General Management	01	01
B	**Associate Professor:**		
1	Functional Area Management	01	01
C	**Assistant Professor:**		
1	Operation Research Management	01	01
2	Marketing Management	01	01

Note: For detailed information about posts, qualifications and other terms and conditions, please visit University **website: www.unishivaji.ac.in, www.ritindia.edu.**

Director



St. Dominic's College, Kanjirapally

Parathode-686512, Kottayam District, Kerala

Phone: 04828 234340

Email: principal@sdck.in

Applications are invited from eligible candidates for the appointment to the post of **Assistant Professor** in Botany-5 posts (Open-3, Community-2), English-3 posts (Open-1, Community-2) and Physics-1 post (Open). Community posts are reserved for Syro-Malabar Catholics only. Age and qualifications shall be as per UGC/ Government of Kerala/ Mahatma Gandhi University norms. One vacancy in the open category of posts is reserved for Persons with Benchmark Disabilities as stated in Clause 34 of the Rights of Persons with Disabilities Act, 2016. Application form can be downloaded from the college **website: www.sdck.in.** Duly filled application form and all supporting documents must reach the college office **within one month** from the date of this notification. Those who have applied earlier for Physics and English posts notified in 2018 needn't pay application fee of Rs.1,000/- but they have to submit fresh application.

Sd/-
Manager

ALPHONSA COLLEGE

Arunapuram P.O., Pala
Kottayam Dist. Kerala - 686574

No.A1-52/2019 **DATED: 16/11/2021**

WANTED

Applications are invited for the following posts in Alphonsa College Pala. Age and qualifications as prescribed by the rules and regulations of UGC/ State Government /Mahatma Gandhi University, Kottayam. Apply within 30 days from the date of this notification. Applications can be had from the College Office on payment of Rs. 1000/-.

Subject	Open Merit	Community/ Merit	Person with Benchmark Disability
English	3	2	1
History	1	NIL	NIL
Physical Education	1	NIL	NIL

This re-advertisement is in compliance with the GO (MS) No.96/2021 H.Edn dt 15/02/2021 as per the provision of persons with disability. (Equal opportunities, Protection of Rights and full participation Act 1995)

Those who applied for the above vacancies in response to advertisement on 22/05/2017 and 10/01/2019 need not apply again.

Pala (Sd/-) Manager

Maharana Pratapsinh Shikshan Sanstha's

ANANDIBAI RAORANE ARTS, COMMERCE & SCIENCE COLLEGE

At./Post./Tal. Vaibhavwadi, Dist. Sindhudurg, Pin-416810

APPLICATIONS ARE INVITED FOR THE FOLLOWING **CLOCK HOUR BASIS**
POSTS FOR THE ACADEMIC YEAR 2021- 2022

AIDED

Sr. No.	Cadre	Subject	Total No. of posts	Posts Reserved for
1.	Assistant Professor	Mathematics	16	02 – SC
2.	Assistant Professor	Physics		01– ST
3.	Assistant Professor	Statistics		02 – DT/ NT
4.	Assistant Professor	Zoology		03 – OBC
5.	Assistant Professor	Botany		02 – EWS
6.	Assistant Professor	Hindi		06 – OPEN

The posts reserved for the Backward Class candidates will be filled in by backward category candidates (Domicile of State of Maharashtra) belonging to that particular category only.

Reservation for women will be as per **University Circular No. BCC/16/74/1998 dated 10th March, 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 05th July, 2019.**

Candidates having knowledge of Marathi will be preferred.

" Qualification, Pay Scales and other requirement are as prescribed by the UGC Notification dated 18th July, 2018, Government of Maharashtra Resolution No. Misc-2018/C.R. 56/18/UNI-1 dated 8th March, 2019 and University Circular No. TAAS/(CT)/ICD/2018-19/1241 dated 26th March, 2019 and revised from time to time." Remuneration of the above post will be as per University Circular No. TAAS(CT)/01/2019-20 dated 02nd April, 2019.

The Government Resolution & Circular are available on the website: mu.ac.in.

Applicants who are already employed must send their application through proper channel. Applicants are required to be account for breaks, if any, in their academic career.

Application with full details should reach the **Principal, Maharana Pratapsinh Shikshan Sanstha's Anandibai Raorane Arts, Commerce & Science College, At./Post./Tal. Vaibhavwadi, Dist. Sindhudurg, Pin-416 810 within 15 days** from the date of publication of this advertisement. **This is University approved advertisement**.

Sd/-
PRINCIPAL

NSS Colleges' Central Committee
NSS Head Office, Perunnai,
Changanacherry

CORRIGENDUM NOTIFICATION

This corrigendum notification is in continuation to the notification published by the NSS Management in "The Indian Express and Malayala Manorama dated 29/11/2018, in Mathrubhumi dated 30/11/2018, in The Hindu dated 05/12/2018 & in the University News Volume 56, Issue No. 51 dated December 17-23, 2018", inviting applications for the post of **Assistant Professors** in various subjects in the NSS Colleges affiliated to the Kerala, Mahatma Gandhi, Calicut & Kannur Universities. The last date for submitting the filled in applications as per the said notification was on 16/01/2019. Meanwhile the number of posts got depleted due to the Revision of Workload by the Government and the further process of selection should be conducted in terms with UGC Regulations, 2018. Hence those applied in response to our earlier notification need only submit their certificates proving qualifications for the period upto 16/01/2019 in tune with the score sheet contemplated under Appendix II Table 3 (B) of UGC Regulations, 2018.

The applicants are hereby informed to download the Proforma to be filled from the **website www.nss.org.in** and the filled in Proforma along with self-attested copies of the certificates should be submitted to the undersigned **within 15 days** of this notification.

Sd/-
Secretary
NSS Colleges' Central Committee,
NSS Head Office, Perunnai,
Changanacherry, Kerala-686102
Ph : 0481-2420604

Chhatrapati Shivaji Bhau. Gramin Vikas Sevabhavi Shikshan Sanstha Kingaon

Mahatma Phule Mahavidyalaya, Kingaon,

Tq. Ahmedpur, Dist. Latur - 413523

WANTED

Applications are invited for the post of **Principal** to be filled in **Mahatma Phule Mahavidhyalaya, Kingaon, Dist. Latur (Granted)** run by Chhatrapati Shivaji Bhau.Gramin Vikas Sevabhavi Shikshan Sanstha Kingaon, Tq. Ahmedpur, Dist. Latur. Eligible candidates should submit their application along with all necessary documents **within Fifteen days** from the date of publication of the Advertisement by Registered post only.

Sr. No.	Post	No. Post	Full Time	Reservation
01	Principal	One	Full Time	Unreserved

Educational Qualification:

A. Eligibility:

1. A Master's Degree with at least 55% marks (or an equivalent grade a point scale wherever grading system is followed) by a recognized University.
2. A Ph.D. Degree in concerned/allied/relevant/discipline (s) in the institution concerned with evidence of published work and research guidance.
3. Professor/Associate Professor/ with a total service/experience of atleast fifteen years of teaching / research in University, Colleges and other institutions of higher education.
4. A minimum of 10 research publications in peer-reviewed or UGC-listed journals.
5. A minimum of 110 Research score as per Appendix II, Table 2 of UGC regulations 2018.
6. **Academic Eligibility and other rules as per UGC Regulations 18 July 2018 and Govt. Resolution No. Misc-2018/C.R.56/UNI-1 dated 08 March 2019.**

B. Tenure:

A college Principal shall be appointed for a period of five years extendable for another term of five years on the basis of performance assessment by a committee appointed by the University, constituted as per these Rules.

Salary & Allowances:

Pay Scales as per the U.G.C, State Government & Swami Ramanand Teerth Marathwada University's rules from time to time.

Note:

1. Prescribed application form is available on the University **website (www.srtmun.ac).**
2. No. T.A/D.A. will be paid for attending the interview.
3. Eligible candidate should submit their application through the proper channel.
4. Attested Xerox copies of S.S.C. Certificates, Degree, Mark Sheets, etc. should be attached to be application.
5. The Vacant Posts are being filled under the decision of Hon. High Court, Aurangabad Bench, Petition No.12051/2015.
6. The original certificates must be provided at the time of interview.

Prasident/Secretary
Chhatrapati Shivaji Bhau. Gramin Vikas Sevabhavi Shikshan Sanstha Kingaon,
Mahatma Phule Mahavidyalaya, Kingaon,
Tq. Ahmedpur, Dist. Latur - 413523

Navmaharashtra Shikshan Mandal's
ABASAHEB KAKADE COLLEGE OF B. PHARMACY
Bodhegaon, Tq. Shevgaon, Dist. Ahmednagar

RECRUITMENT NOTIFICATION

Invites Applications from the eligible, self-motivated and goal oriented candidates for filling up following post for Degree Course in Pharmacy.

S. No.	Name of Posts	No. of Posts
1	**PRINCIPAL**	1
2	**Associate Professor**	
	Pharmaceutics	1
	Pharmaceutical Chemistry	1
	Pharmacology	1
	Pharmacognosy	1
3	**Assistant Professor**	
	Pharmaceutics	1
	Pharmacology	1
	Pharmacognosy	2

Note:

1. The Qualification, Experience for the above post is applicable as prescribed by AICTE New Delhi, PCI New Delhi, SPPU Pune, Government of Maharashtra.
2. Interested candidates may apply with their updated Resume, Passport size Photograph and attested copies of all testimonials with all experience certificates so as to reach undersigned **within 07 days** from publication of this advertisement at Navmaharashtra Shikshan Mandal, Vidyanagari Campus, Gadgebaba Chowk, Pathardi Road, Shevgaon, Dist: Ahmednagar, **Email: akss.recru@gmail.com.**

.3. No T.A./D.A. will be provided for attending interview.

Secretary
Navmaharashtra Shikshan Mandal, Shevgaon

Shoolini University

UNITED NATIONS

ASSOCIATION OF INDIAN UNIVERSITIES

Association of Indian Universities

&

Shoolini University, Solan

Welcome

The Delegates

of

AIU North Zone
Vice Chancellors' Meet-2021-22

(November 26-27, 2021)

Licenced to post without prepayment under WPP No. U(C)-109/2021-23
Postal Regd. No. DL (C)-05/1241/2021-23
UNIVERSITY NEWS 59 (47) November 22-28, 2021
Regd. No. RNI-7180/1963
Published on Monday: 22-11-2021 No. of Pages 124 including covers Posted at LPC Delhi RMS, Delhi-6 on Tuesday/Wednesday every week

Edited, Printed and Published by Dr Sistla Rama Devi Pani, on behalf of the Association of Indian Universities, AIU House, 16 Comrade Indrajit Gupta Marg (Kotla Marg), New Delhi-110 002. Phones: 23230059 (6 Lines). Fax: 011-23232131, E-Mail : sgoffice@aiu.ac.in, advtun@aiu.ac.in, publicationsales@aiu.ac.in, subsun@aiu.ac.in (for subscription), unaiu89@gmail.com, universitynews@aiu.ac.in, Website: http://www.aiu.ac.in
Printed by Chandu Press, 469, Patparganj Industrial Estate, Delhi-110092, chandupress@gmail.com