

MANAGING HUMAN-MADE SYSTEMS FOR SUSTAINABLE DEVELOPMENT**P. Tewari^{*}, P. Kumar^{**} and Anshu^{***}**^{*}Department of Geography, Shivaji College University of Delhi, Delhi, India^{**}Department of Commerce, Kirori Mal College, University of Delhi, Delhi, India^{***}Department of Geography, Kirori Mal College, University of Delhi, Delhi, India
pretewari@yahoo.co.in^{*}, pkumar@kmc.du.ac.in^{**}, anshubha@kmc.du.ac.in^{***}**ABSTRACT**

Even after three decades after accepting the need for sustainable development, the world is nowhere closer to achieving sustainability. Anthropogenic activity has degraded the creative and attractive values of our environment and has led to increasing poverty, hunger, ill health and illiteracy. Intensity and frequency of natural disaster have escalated globally increasing the risk and vulnerability for the humans. Management of the atmospheric, lithospheric, hydrologic and biospheric systems is undoubtedly essential to sustainable development. However, these natural systems cannot be seen in isolation. Development is a holistic concept, and it is equally important to focus on the human-made systems. The economic, political and social systems made by human beings have evolved developmental models that are not only inequitable and unjust, they also disrupt the functioning of natural systems, making them unsustainable. This paper highlights some aspects of the human-made systems that are contrary to the achievement of sustainable development. It concludes with a section on how sustainable models can be devised for the management of human resources. Although some of the issues raised herein are universal in nature, the focus is largely on India.

Keywords Sustainability, Economic, political, social, human resource management

Introduction

In 2015, the United Nations General Assembly presented a ‘blueprint to achieve a better and more sustainable future for all people and the world in the form of Sustainable Development Goals. The seventeen interlinked goals address the many challenges faced by humanity today, and aim, among other things, to end poverty, hunger, gender and other forms of inequality and conflict, while ensuring good health, education, clean water and sanitation for all by 2030. The world was making some progress towards these goals when the Covid-19 pandemic hit in 2019, disrupting economies, threatening lives and livelihoods, while exposing the inadequacies in food and health systems. Exacerbating the impacts of climate change and conflict, the pandemic will push another 150 million people into extreme poverty by 2021 (World Bank, 2020), simultaneously adversely affecting health and learning outcomes. While the impact of the pandemic is being felt globally, the already poor countries and communities have been more brutally affected. This could be a moment to examine the functioning of human systems and their interaction with natural systems in order to find management practices that could help in achieving the goals of sustainable development. The first ‘official’, and perhaps the most popular, definition of sustainable development was contained in the Brundtland Commission Report in 1987. This report, entitled ‘Our Common Future’, defines sustainable development as

“development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs”. While emphasising on inter-generational equality, this definition does not touch upon intra-generational equality. Neither does it elaborate upon the kind of development that would be desirable. The concept of sustainable development, however, gained currency after this report, and it has been refined substantially since its publication. More than three decades after accepting the need for sustainable development, the world is nowhere closer to achieving sustainability. The aesthetic and productive values of the environment have been degraded by human activity, forcing millions of people into lives plagued by poverty, hunger, ill health and illiteracy. Conflicts rage in several parts of the world, and humanity as a whole is more vulnerable to disasters of all kinds. This is perhaps because our development strategies have focused more on the management of resources and environmental conservation. Management of the atmospheric, lithospheric, hydrologic and biospheric systems is undoubtedly essential to sustainable development. However, these natural systems cannot be seen in isolation. Development is a holistic concept, and it is equally important to focus on the human-made systems. The economic, political and social systems made by human beings have evolved developmental models that are not only inequitable and unjust, they also disrupt the functioning of natural systems, making them unsustainable. This paper

highlights some aspects of the human-made systems that are contrary to the achievement of sustainable development. It concludes with a section on how sustainable models can be devised for the management of human resources. Although some of the issues raised herein are universal in nature, the focus is largely on India.

The Economic System

The economic system is concerned with the production, distribution and consumption of goods and services. Economic growth has been seen as the cornerstone of development, and development models are based on the premise that economic growth is good, and rapid economic growth is even better. However, it is important to focus on what is produced, how it is produced and for whom it is produced. Questions regarding who is producing and who will benefit from the process of production must also be asked. We are made to believe that goods and services are produced in response to demand. However, the truth is that production meets demand only when the latter is backed by purchasing power. The needs of the poor are unmet, while the economic system readily caters to the wants of the rich. Land is allocated for the construction of luxury apartments while, for want of affordable housing, the poor are forced to live in slums. The Census of India, 2011, reveals that there are 0.9 million homeless people in urban India, and 65 million people, constituting 17 per cent of India's urban population, live in slums. A similar skew can be observed in the healthcare sector. Not only does the commercial health sector in India provide world class health care to its rich citizens, it attracts nearly five lakh medical tourists every year, many of them from the more developed countries. Yet 75 per cent of all dispensaries, 60 per cent of hospitals and 80 per cent of all doctors are concentrated in urban areas, leaving rural India desperately short of medical infrastructure and medical humanpower (KPMG Report, 2016). Each year, as many as 63 million people (equivalent to almost two people every second) in India slip below the povertyline because of healthcare costs (Oxfam, 2021).

One of the basic tenets of sustainable development is that resources are scarce and therefore must be used with great care. Yet a lot of resources are devoted to the production and distribution of goods that are harmful to the health of people or ecosystems. For instance, fertile land, irrigation water, fertilisers and labour are used to produce tobacco. Tobacco is then

transported to factories where it is processed and converted into products that are known to be carcinogenic. Not only do our production systems continue to manufacture undesirable substances like aerated beverages and dangerous chemicals and weapons, their production is seen as contributing to the GNP. At the same time, the contribution of women to unpaid labour in homes and family enterprises is not recognised as economically productive work even though it contributes towards keeping the population physically, mentally, psychologically and emotionally healthy and therefore, economically productive.

India shows wide disparities in the distribution of income and wealth, and unfortunately, these disparities have increased in the last thirty years. The richest one per cent earned 21 per cent of the country's income in 2019, markedly more than the 11 per cent they earned in 1990. The share of the top 10 per cent of the population in the country's income is 56 per cent, and that of the bottom 10 per cent is only 3.5 per cent. The richest 10 per cent owned 80.7 per cent of India's wealth in 2019 (Chaudhuri and Ghosh, 2021). The handful of Indian billionaires saw their fortunes rise almost tenfold in a decade, making their combined wealth more than the Union budget of India in 2018-19. The already existing social, economic and gender-based inequalities have been substantially widened by the pandemic. While the plight of the 40 to 50 million migrant workers played out in the media, many more in the middle- and low-income groups suffered job losses and economic stress. India's billionaires, on the other hand, increased their wealth by 35 per cent during the lockdown (Oxfam Report, 2021). The same report finds that it would take an unskilled worker 10,000 years to make what Mukesh Ambani, the richest Indian, made in an hour during the pandemic. Access to other productive assets, such as land, is equally uneven. The Agriculture Census, 2015-16 reports that there are 11.9 crore land-owning farmers and 14.4 crore landless workers and peasants. 86.2 per cent farmers own a mere 47.3 per cent of crop area. In the period between 2010-11 and 2015-16, the proportion of small and marginal farmers grew from 84.9 per cent to 86.2 per cent. Ownership, access to and control over resources is becoming a hotly contested issue. While marginal groups, like poor farmers and tribals are seeking to protect their lives and livelihoods, as well as their rights over forests and lands,

multinational corporations and indigenous business houses are collaborating with state power to seek control over the same resources. India must work towards building a more equitable society if the goals of ending poverty and hunger, and ensuring good health and well-being are to be met.

Humans involved in the economic system are seen as labour - just another input in the processes of production and distribution. Jobs are created by employers on the assumption that workers have no familial responsibilities, and are available for work round the clock. Current work culture rewards people for putting in longer hours at work, seeing this as a commitment to the job. The work-life balance of workers is of no concern to the employer and is seen as a personal problem to be sorted out by the employee. This is a major obstacle in the way of women's participation in the labour force. More family-friendly employee policies are needed to avoid burn out and stress-related issues among professionals.

The Indian economy was among the faster growing economies in the world. However, much of this growth has been jobless. Not having been able to find gainful employment for its youth, India has not been able to take full advantage of its demographic dividend. This has led to social and political unrest that has manifested itself in the form of agitations by powerful castes (like the Patidars in Gujarat, Kapus in Andhra Pradesh and Jats in Haryana) seeking 'Backward' status that would entitle them to reservations in government jobs. Decent work and economic growth, together with growth in industry, innovation and infrastructure, have been identified as sustainable development goals, and it is necessary to keep these in mind while formulating policies for economic growth.

It is also important to examine the amount of energy used in the process of producing goods and services, as well as the sources of energy used. With the threat of climate change looming large, there is premium attached to energy efficiency and the use of clean sources of energy. Although India uses far less energy per capita than most large economies, its total and per capita energy consumption is bound to rise in future. Despite efforts to encourage the production and consumption of green energy, coal remains the main source of energy, accounting for more than 45 per cent of the total energy consumed. It is expected to remain the

main source of energy until 2047 (NITI Ayog Report, 2015). As energy consumption rises, per capita emission in greenhouse gases too will increase from 1.7 tons in 2012 to an estimated 5.8 tons in 2047. All sectors of the economy must invest in improving energy efficiency if greenhouse gas emissions are to be kept under check and India is to fulfil her commitment towards combating global climate change.

Greenhouse gases are one example of 'bads' produced by economic systems. Solid and liquid waste, toxic chemicals and harmful radiation are some other examples of bads that are often the by-products, but sometimes even the main products, of the processes of production and distribution of goods and services. Once released into the atmosphere and hydrosphere, or dumped into landfills, they pollute ecosystems and adversely affect their productivity. Though the effects of these may be felt universally, they are disproportionately larger for the poor and marginalised. With their physical and economic health being negatively impacted, these marginalised sections of society are rendered even more vulnerable to natural and human-made disasters. Strategies for pollution control and waste reduction and management must be put in place not only to protect land, water and the atmosphere, but also to safeguard the health of citizens by providing them clean water and sanitation.

A sustainable economic system should ideally focus on the reduction of poverty. This can be achieved by redistribution of wealth. Creating jobs is an effective way of reducing disparity in income across classes, and eventually across regions. Greater regional balance can be achieved by creating jobs in smaller towns and cities. This will help in reducing pressure on the larger cities. The government must fund public services like health care and education to make them more robust and accessible to all sections of society. Economic growth must be more inclusive and should allow disadvantaged groups to contribute to, and benefit from, it. Their economic empowerment will not only go a long way in their overall empowerment, but will also contribute to the national economy. Incentivising the adoption of green technology by all sectors of the economy will reduce the environmental impact of the processes of extraction, processing and transportation of resources and manufactured goods. Policy and legal frameworks need to be put in place for controlling pollution. This has to

be backed up by a rigorous enforcement of laws. It is also necessary to discourage mindless and endless consumption. Sustainable development cannot be achieved without sustainable and responsible consumption and production.

The Social System

The term social system has been used here in a very broad sense to include various demographic characteristics of the Indian population, as well as the treatment of certain social groups. With a population of 1.39 billion in 2021, India is the second-most populous country in the world. It is home to 17.7 per cent of the world's population, and with an annual growth rate of 1 per cent, India is poised to overtake China in 2026 (Worldometer, 2021) in terms of population. Although the rate of growth has been showing a declining trend, Indian population is expected to reach its highest level at 1.65 billion in 2060. With densities already very high, a further increase in population will place additional pressure on ecosystems, especially those in fragile areas. As rising sea levels will submerge fertile coastal lands and displace coastal populations, the remaining land will have to meet the competing needs of food, shelter and other infrastructure.

As the rest of the world greys, the median age of India's population is 28.4 years. This youthful population could be a demographic asset. A larger working force, with fewer dependents, could lead to more output and more savings, stimulating economic growth. On the other hand, with poor health, nutritional and educational standards, and with poor skills, the youth may not be able to contribute gainfully to the economy. The country may be unable to take advantage of the demographic dividend. The literacy rate of the Indian population was a poor 77.7 per cent in 2017-18. There are stark gender, rural-urban, caste and region based differences in literacy levels (NSS, 75th Round). Literacy is not just a tool for social change; it can also equip individuals with skills to enhance their employability. Without adequate skills and opportunities for sustainable employment, young adults can be stuck in disguised unemployment, making them a potential source of social and political problems like rising crime rates and civil unrest. Simultaneously, increase in life expectancy will add to the absolute number and relative share of elderly citizens in the total population. The specific needs of this section for

financial and emotional support, as well as geriatric health care will have to be catered to. The level of urbanisation in a country is believed to be an indicator of its economic development. The low level of urbanisation in India may be a cause for concern. About 35 per cent of Indian population lived in urban areas in 2020, as compared to 56 per cent of the world population, and more than 75 per cent of the population in the more developed countries (World Bank, 2020). Cities today not only function as manufacturing centres and nodal points facilitating the movement of people, goods, capital and information, but are also emerging as sources of knowledge, ideas and innovations. However, cities in India are experiencing population growth without an expansion in employment opportunities. A large section of the population is therefore unemployed, self-employed, or engaged in work that is intermittent, insecure and low paying. The vulnerability of this section of society was amply exposed after the imposition of the lockdown in March 2020. Despite these problems, economics of agglomeration because of the high density of population makes it easier to provide amenities and infrastructural facilities to people living in urban areas. Planned urbanisation which includes green and smart cities is needed to counter the haphazard urbanisation that is taking place at present. This will make both cities and communities sustainable. Simultaneously, it is important to improve living conditions in villages as well. Rural to urban migration is currently propelled more by 'push factors' in villages, rather than the pull exerted by cities. Better health care and education infrastructure, as well as more and secure livelihood opportunities, will induce people to remain in villages rather than move to an uncertain and insecure future in towns and cities. It is often said that a society should be judged on the basis of how it treats its weaker members. Women constitute a weaker section in India, and their treatment leaves a lot to be desired. A sex ratio of 940 females to a thousand males in 2011 is in itself a horrifying indicator of the number of missing women. Although the overall sex ratio has improved slightly from 933 in 2001, there has been an alarming decline in the child sex ratio from 927 in 2001 to 919 in 2011. In the states of Haryana, Punjab and Jammu and Kashmir, the child sex ratios were 830, 846 and 859 respectively (Census of India, 2011). Starting from pre-

conception sex selection to sex-selective foeticide, many techniques are used by families to avert the birth of a female child. Despite stringent laws and special government programmes to save the girl child, female foeticide is still practiced in India. Skewed sex ratios are detrimental to the safety of women as they are accompanied by a rise in crime against them and increased trafficking and sale of women. Rising crime against women then becomes a pretext for families and communities to police their behaviour and exercise control over the rights of movement of women in public spaces. This in turn affects their ability to acquire education and skills, and eventually, to participate in paid employment. Gender-based discrimination is evident in literacy levels too. The 75th Round of NSS (July 2017 to June 2018) found male literacy levels to be 84.7 per cent while female literacy levels were only 70.3 per cent. The net result of all this is the disempowerment of women and a wide gender gap, contrary to the Sustainable Development Goal of gender equality. Consequently, India ranked a poor 140th among 156 nations ranked by the Global Gender Gap Report in 2021. The gender gap in India has widened because women are poorly represented in politics, their participation in the labour force has decreased, and they face income inequality and lag behind their male counterparts in access to education and health care. Indian society also faces challenges from discrimination along the lines of caste, religion, race and sexual orientation. Despite constitutional protection to Dalit's, members of the community continue to face oppression in myriad ways. Caste-based prejudices are deeply entrenched in the Indian mindset, and any perceived transgression of 'caste-appropriate' behaviour is met with opposition, sometimes violently so. Racial discrimination is faced by people from the north-eastern states of India. Persons from the LGBTQI community also struggle to find social acceptance. Religion too acts as a divisive factor to the extent that a random incident sometimes assumes communal overtones. By and large, Indian society remains insensitive to the needs of those with physical and mental disabilities. The needs of persons with disabilities are not kept in mind while designing buildings, public transport and public spaces. The absence of a barrier-free environment hinders their access to many facilities and prevents their social inclusion.

A social system must be inclusive if it has to sustain itself. All forms of discrimination have to be eliminated, and all types of inequality have to be reduced. Public spaces must be made safe and friendly to all sections of society by removing physical and mental barriers. All citizens must enjoy equal access to resources and opportunities, irrespective of caste, class, gender, sexual orientation and physical and mental ability. An enabling environment must be created to allow all citizens to participate fully in all spheres of human activity. While laws are a necessary means to this end, education and awareness also have a major role in changing attitudes and mindsets.

The Political System

The political system consists of the state (including the government, bureaucracy, judiciary and other institutions), political parties, citizens and the media, all of which have an important role in any functioning democracy. Governments are responsible for engaging with other countries and international agencies in the interests of the nation as well as the general benefit of humanity as a whole. At the international level, governments across the world have failed to work for peace, choosing instead to spend large amounts of money and precious resources on weapons and other forms of security. Wars and conflicts have disrupted the lives of millions of people, causing immense misery and hardship. Governments have also failed to agree on effective ways to tackle the global problem of climate change, choosing to place the short-term economic interests of their own countries over the larger and long-term interests of humanity. The more developed countries have failed to transfer resources and technology needed to end poverty and hunger in the less developed world. The government and the administration have a role in formulating policies, creating a legislative framework, and implementing laws. They must also establish monitoring and regulating bodies. High levels of poverty, hunger, malnutrition and illiteracy prevailing in India nearly 75 years after independence represent the failure of successive governments in addressing these issues. Far from being the custodian of the poor and downtrodden, the state has often used its power to side with the rich and powerful. Blame must also be shared by all political parties for not focusing adequately on human development and environmental protection. Ineptitude, corruption and a lack of

will among politicians and government officials may have contributed in varying measures to the inability of the state to provide food, healthcare, quality education, employment and a healthy environment to its citizens. A top-down, rather than a bottom-up approach, has often failed to ensure the participation of people, leading to the failure of well-intentioned programmes. While the role of the judiciary has been commendable in certain areas, it has a limited role in the formulation of policies. Successive governments have compromised the autonomy of several agencies, making them ineffective in keeping a check on government bodies.

Political parties have failed to support progressive measures to empower women and other marginalised sections of society, increase transparency in governance and reduce corruption and criminalisation in politics. They have chosen instead to polarise the country on the basis of caste, religion and language. Environmental issues seldom find place in the manifestos of political parties, the focus being instead on short-term political gains. The rampant use of money and muscle power in electoral politics has deterred ordinary citizens from entering this field. Media too has often been found wanting in its role as a watchdog in a healthy democracy. Shedding their impartiality, many media houses have openly revealed their allegiance to the government and the party in power. A strong urban bias is evident in media coverage, and commercial interests determine the allocation of substantial amount of space to fashion and glamour. There is a clear preference for sensational rather than serious news. Citizens too have failed in their duty towards the nation. They have not demanded accountability from public officials and their elected representatives. They often vote for candidates because of their caste or religion rather than their political ideology or individual merit. Many of them still see themselves as subjects rather than as citizens. However, it is the same citizenry which can

assume the role of watchdog, advocate and mobiliser, to become the agent of sustained development at the local, national and global levels.

The Human Resource Management System

It is clear that fundamental changes are required in the way economic, social and political systems are organised if the goals of sustainable development are to be met. These changes must come at the individual, family, community, national and global levels. Households, towns, cities, nations, as well as industries and businesses must adapt their functioning to incorporate principles of sustainability in their day to day operations. This section shows how organisations can use human resources management practices to promote sustainability. The emerging approach towards employees sustainability, referred to as Sustainable Human Resource Management (SHRM), means employees training should be carried out keeping the long-term perspective in mind. Human Resource Development has been one of the priorities in SHRM to develop competency among employees for sustainable development. Existing research shows that in developing countries, Human Resource Development programmes are only focusing on current needs and are not aligning with the SHRM approach towards long term perspectives. In addition, environmental sustainability has been a neglected area in terms of imparting training to the employees to increase their awareness about environmental issues. Developing a culture of environment sustainability in terms of employees’ awareness, decision making, and developing strategies in an organisation is still underdeveloped. Recent studies on SHRM practices indicate a positive and strong correlation between SHRM and company performance in terms of environment sustainability (Singh, 2020).

Core concept of SHRM and its characteristics

Characteristics of SHRM	Core aspects of SHRM
Long-term orientation	Identification of the availability of human resources in the future; identification of the needs of the future employees; elimination of the “hire and fire” approach
Care of employees	Health and safety management; work-life balance
Care of environment	Evaluating the employee performance according to environment-related criteria; fostering “eco-career”; employee rewarding according to environment-related criteria
Employee development	Job rotation; different training forms and methods; the transfer of experience; focus on future skills and employability

External partnership	Cooperation with education system; partnership with all external stakeholders
Compliance beyond labour regulations	involves employee representatives in many decision-making processes beyond those for which worker participation is a statutory requirement; financial and non-financial support
Fairness and equality	Fostering diversity; respectful relationships; fairness as regards as remuneration, career

Source: Stankevičiute and Savanevičiene, 2018.

A similar approach can be adopted within other systems to devise a sustainable model in all spheres this would ensure environmental

sustainability, inclusion and participation of all sections of society, while upholding the principles of equality and justice for all.

References

1. Census of India, (2011). General Population Tables. A-1 Tables Area, Population and Household Census of India, 2011. Decadal Variation in Population since 1901. A-2 Tables
2. Chaudhuri, D. And Ghosh, P. (2021) Why Inequality is India's worst enemy. <https://www.downtoearth.org.in> 5th March, 2021.
3. Government of India (2013), Ministry of Rural Development, Draft National Land Reform Policy. smartnet.niua.org/sites/default/files/resources/draft_national_land_utilisation_policy_july_2013.pdf
4. Jha.S (2015) Manufacturing job growth remains under stress. Business Standard. https://www.business-standard.com/article/economy-policy/manufacturing-job-growth-remains-under-stress-115102000047_1.html.
5. KPMG (2016) Healthcare in India: Current State and key imperatives. <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/009>
6. Ministry of Agriculture and Farmers Welfare, Government of India (2020) All India Report on Agriculture Census 2015-16. https://agcensus.nic.in/ac_1516_report_final_220221.
7. NITI Aayog, 2015. A Report on Energy Efficiency and Energy Mix in the Indian Energy System ,2030. <https://www.niti.gov.in/default/files/energy>.
8. Oxfam International (2021) India: extreme inequality in numbers. Oxfam.org 2021-07-18. <https://www.oxfam.org/en/india-extreme-inequality-number->
9. Oxfam India (2021), The Inequality Virus – Global Report 2021.
10. Sarma B. 2014. Energy Efficiency in India: Challenges and Lessons-UNFCCC. https://unfccc.int/awg/pdf/2_india_revised.
11. Singh,S.K., Giudice,M. Del., Chierici, R., and Graziano,D. (2020)Green innovation and environmental performance: the role of green transformational leadership and green human resourcemanagementTechnological Forecasting and Social Change, Volume 150, January 2020.
12. <https://doi.org/10.1016/j.techfore.2019.119762>
13. Stankevičiute, Ž., Savanevičiene, A. (2018) Designing Sustainable HRM: The Core Characteristics of Emerging Field, Sustainable Times, Volume 10, Issue 12.
14. SustainableTimes
15. <https://doi.org/10.3390/su10124798>
16. United Nations Report of the World Commission on Environment and Development: Our Common Future. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
17. World Bank (2020) 'Covid-19 to Add as Many as 150 Million Extreme Poor by 2021', <https://www.worldbank.org/news>.
18. Worldometer (2021) www.worldometers.info
19. World Bank (2020) <https://data.worldbank.org/indicator>
20. World Economic Forum (2021) Global Gender Gap Report 2021. <https://www.weforum.org/reports>