

Economic Growth and Sustainable Development in Himalayan State Uttarakhand of India

Dr. P.D. Singh¹, Dr. Sunita Gusain², Prof. R.R.Nautiya³

¹Faculty at Department of Economics, H.N.B.Garhwal University, Srinagar Garhwal Uttarakhand, pawanmanhas1@india.com.

²Faculty at Department of Economics, Govt. P.G. College, Kotdwar, Uttarakhand. Sunita30gusain@gmail.com

³Prof. (Retd.) Department of Economics, H.N.B.Garhwal University, Srinagar Garhwal Uttarakhand
rnmautiyal@yahoo.in.

Abstract: Sustainability has appeared more frequently over the past several decades in literature in all fields, particularly those concerned with environment and halting environmental degradation (e.g. Senator Al Gore's 1991 Earth in the balance). Sustainable development is a constantly evolving concept. Thus the will to improve everyone's quality of life, including that of future generations, by reconciling economic growth, social development and environmental protection sustainable development becomes very important. The present piece of work is an attempt to explore the concept of sustainable development & highlights the importance of sustainable development in Uttarakhand and suggests some important measures to improve sustainability. The relation between economic growth and sustainable development is also presented in this paper.

[P.D. Singh, Sunita Gusain, R.R. Nautiyal . **Economic Growth and Sustainable Development in Himalayan State Uttarakhand of India.** *Researcher* 2017;9(11):65-72]. ISSN 1553-9865 (print); ISSN 2163-8950 (online). <http://www.sciencepub.net/researcher>. 10. doi:[10.7537/marsrsj091117.10](https://doi.org/10.7537/marsrsj091117.10).

Keywords: Sustainable development, Economic growth, Environmental degradation, Social development

I. Introduction

Sustainable development is not concerned with an individual state or nation but it is an international phenomenon. Since the conference of 1987 about sustainable development most commonly known as Brundtland conference from where the term came into known or from the inception of the term many conferences and seminars were conducted on sustainability and environmental protection. The important question which arises in the intellectuals minds is that even in the era of growth and development where urbanisation and industrialisation are very important for every country, is this growth sustainable? Factors which are affecting the environment or which are the major cause of environmental degradation are actual barriers to sustainable development. What is the need of the day, apart from these conferences (Rio, Rio+20, etc.) we have to change the mentality of the present generation so that we can give our future generations a plenty of resources? Sustainability has appeared more frequently over the past several decades in literature in all fields, particularly those concerned with the environment and halting environmental degradation. Sustainable development is a constantly evolving concept, thus the will to improve everyone's quality of life, including that of future generations, by reconciling economic growth, social development and environmental protection sustainable development becomes very important. Sustainable development is the need of the day and the ill effects of the growth are worsening the conditions for the future generations.

Present piece of work is an attempt to explore the sustainable development in the Uttarakhand state of India and give some suggestions to improve sustainability. Present research work is divided into six sections; the first section introduces study, the second section is about the profile of the study area followed by the third section which is dedicated to Sustainability and Sustainable Development. In the fourth section of the paper economic growth and sustainable development is explained. The fifth section of the research is dedicated to economic growth and sustainable development of the study area. In the sixth section of the paper conclusion and suggestions are given.

II. Study Area

Uttarakhand became the 27th State of India on November 9, 2000. It was carved out of the North Western hilly region of the erstwhile State of Uttar Pradesh. Due to its geography and strategic location, the Union of India has given it special category status (SCS). Since its formation, the economic development of the state has taken a new turn, growing as one of the fastest rates. Uttarakhand is poised to bridge the gap in per capita income from the average of all India to become a part of the leading states in the country (*Uttarakhand Development Report, 2009*). Uttarakhand is located between 28° 43' – 31° 27' N latitudes and 77° 34' – 81° 02' E longitudes. The river Tons separates the state from Himachal Pradesh in the North – West, whereas the river Kali separates it from Nepal in the East. The Greater Himalaya is the

northern boundary of the state and is also the international border with China (Tibet). Historically, Uttarakhand is believed to be the land where the

Vedas and the Shastras were composed and the great epic, the Mahabharata, was written (ENVIS, 2014).

Table (1) the total area of the state is distributed in altitude zones as given below

Altitudinal Zone	Percentage of area
Below 1000 meters	26.00
1000-2000 meters	33.00
2000-3000 meters	13.00
Above 3000 meters	28.00
Uttarakhand State	100.00

Source: Uttarakhand State Perspective and Strategic Plan 2009-2027, Watershed Management Directorate, Dehradun, p.2

Within an altitude variation ranging from 200 m to more than 8000 m above msl, the state comprises five lithotectonically and physiographically distinct subdivisions namely, the Outer Himalaya comprising

the Tarai and Bhabhar, Sub- Himalayan belt of the Siwalik, the Lesser Himalaya, the Great Himalaya and the Trans- Himalaya or Tethys (*Uttarakhand State Perspective and Strategic Plan 2009-2027*).

Table (2) important features of Uttarakhand

Date of formation	9/11/2000
Area (km ²)	53,483
Capital (Provisional)	Dehradun
Number of Districts	13
Population (2011)	1,00,86,292 [Male: 51,37,773; Female: 49,48,519]
Major languages	Hindi, Garhwali and Kumauni
Major Rivers	Ganga, Yamuna, Saraju, Kali
Forest cover (2013)	45.82 % of total geographical area
National parks	Gangotri, Nanda Devi, Rajaji, Corbett, Govind, Valley of Flowers
Major wildlife sanctuaries	Askot, Kedarnath, Sonanadi, Binsar, Govind Pashu Vihar
Rural Population (2011)	70,36,954 [Male: 35,19,042; Female: 35,17,912]
No. of towns and villages including uninhabited villages (2001)	87 and 16,826
Agricultural land (2001)	14.25 % of total geographical area
Per capita income (1999 - 2000)	D 12,000/-
Population density (2011)	189/km ²
Birth rate (2009)	19.7/ thousand*
Death rate (2009)	6.5/ thousand*
Infant Mortality rate (2009)	41/ thousand*
Literates (2011)	68,80,953 [Male: 38,63,708; Female: 30,17,245]
Literacy rate (2011)	78.82 % [Male: 87.4 %; Female: 70.01 %]
Sex ratio (2011)	963 (females per 1000 males)
Schedule Castes/ Schedule Tribes	17.87 % and 3.02 % of total population
Number of Scheduled Castes	66
Number of Scheduled Tribes	5
Major tribal communities	Tharu, Buksa, Bhotia, Jaunsari and Raji
Major source of occupation	Agriculture, Forestry
Major Industries	Tourism, Medicinal herb, Handicrafts, Handloom, agro-based industries, Tea

* Family Welfare Statistics in India 2011, Ministry of Health and Family Welfare, Govt. of India.

Source: Uttarakhand, Physiography, ENVIS Centre on Himalayan Ecology, 2014

III. Sustainable Development

Sustainability is generally understood to mean doing things that can be continued over long periods without unacceptable consequences (Ross, 2009). Ethical and not efficient use of natural resources is the key to sustainability (Solomon, 2010). Sustainable development has its roots in the environmental movement in the history of the United Nations. Sustainable development can be traced back over several decades, including the 1972 *United Nations Conference on Environment in Stockholm*, which led the establishment of many environmental protection agencies and the United Nations Environment Program (Mekeown, 2007). Since the Stockholm conference on the human environment in 1972, there have been a large number of specialized UN Conferences to deal with global issues that have direct bearing on sustainable development (Kunugi, 1992). It was the first time in the world history when nations were thinking about sustainability, after which concept of sustainable development was growing. After Stockholm conference, at a special session on development held in 1974, the UN General Assembly also adopted the declaration and programs of action on a New International Education Order (NIEO) “based on equity, sovereignty, interdependence, common interest and co-operation among states” for “steady accelerating economic and social development in peace and justice for present and future generations” (UN General Assembly Resolution 3201 (S-VI) and

3201 (S-VI) of May 1974). The concept of sustainable development actually got highlighted when in 1987, *World Commission on Environment and Development* chaired by the prime minister of Norway, **Mrs Gro Harlem Brundtland** published the report *Our Common Future*. This report became the founding stone of the present day burning concept of sustainable development to the international agenda and it also provided the most commonly used definition of sustainable development describing it as “*development which meets the needs of the present without compromising the ability of the future generations to meet their own needs*” (Lindroos & Paaso, 2008).

Sustainable development was incorporated later in Maastricht and Amsterdam Treaties of the European Union and then in *Rio Declaration and Agenda 21*, adopted by *United Nations Conference on Environment and Development (UNCED)* meeting in *Rio de Janeiro* in June 1992. The European community and its member states have subscribed to the *Rio Declaration and Agenda 21* and thereby committed themselves to the rapid implementation of the measures agreed upon at UNCED (Lindroos & Paaso, 2008, p.582). It was one of the major steps towards sustainability; many nations around the world agreed and adopted the rules and regulations of declaration and agenda. International events and agreements on sustainable development are given in a below table:

Table (3) International Agreements for Sustainable Development

Year	Event	Recommendations
1972	UN Conference on Human Environment–Stockholm Conference	It was agreed that education on environment matters should be there (Principle 19).
1975	UNESCO – Belgrade Charter	Principles of Environment Education were articulated.
1987	Our Common Future	World commission released a report on our common future and popularized the concept of Sustainable Development.
1988	Copernicus – CRE	Cooperation among universities in Europe for education on sustainable development. Now over 300 European Universities are signatories of this agreement and are trying to introduce courses on sustainable development.
1990	Tailors Declaration	31 University leaders articulated and agreed on sustainable development
1990	World Conference on Education for All	It was agreed to spread primary education
1991	Halifax Declaration	It endorsed the role of Universities in moving towards sustainable development
1992	UNCTD	Section 36: Promoting education, public awareness and training for sustainable development
1993	Kyoto Declaration	In support of sustainable development
1994	CRE Copernicus Charter	Universities in Europe agreed to enhance initiatives for sustainable development
1997	Thessaloniki Declaration	Agreed to spread public awareness for sustainability
1998	WCHE	The values of higher education must be to promote sustainable development
2000	Daker Framework	Quality education for all by 2015

Year	Event	Recommendations
2000	UN Millennium Summit	Priority areas are peace, development, environment, human rights and protecting the vulnerable.
2001	56 th UN General Assembly	MDG (Millennium Development Goals were adopted)
2002	World Summit on Sustainable Development	Countries have adopted resolutions that obstacles to sustainable development have to be removed
2002	Ubuntu Declaration	Emphasis on education for sustainable development and international partnerships for these goals.
2002	57 th UN General Assembly	Declared as Decade for education for sustainable development (2005-15)
2003	WCHE	World conference on higher education
2004	DESD Draft	Decade for education for sustainable development
2005	DESD Launched	Decade (2005-15) of education for sustainable development. UN is supporting initiatives for sustainable development

Source: T.K.Jain, 'Relative Economics: As the Road Map to Sustainable Development', *Contributing Sustainability*, P.Kumar and R. Ranjan (Ed.), 2014, pp.210-211

Since its inception till date it has many definitions, according to Moragan "sustainable development represents a commitment to advancing human well-being, with the added constraint that this development needs to take place within the ecological limits of the biosphere" (Moragan, et.al, 2008) in the words of Glasby "the way we live in harmony with the environment" (Glasby, 2002) is sustainable development. Engel describes it as the kind of human activity that nourishes and perpetuates the historical fulfilment of the whole community of life on earth (Engel, 1990, p.10-11). Sustainable development is a commitment to human well-being, recognising the reality of one diverse but ultimately finite planet (Keiner, 2006, p.12). Sustainable Development has become an essential question of international environmental policy, at least since the summit of the United Nations in Rio 1992 (Rennings & Wiggering, 1997, p.25). Sustainable development is based on the integration of four dimensions; the economic, the environmental, the social and the institutional. For the economic dimension, in particular, growth has been considered an essential element of sustainable development (Spangenberg, 2004, p.74).

IV. Economic Growth And Sustainable Development

Before 1970s economic growth and development were the most important objectives in the world, especially in developing countries. Speeding up the pace of industrialisation was the developing countries main concern (Deming, 1999, p.3213). Countries around the world were busy in the process of growth and development, attention was not given to environmental degradation caused by the externalities of these factors of growth.

Economic growth may protect the environment in the long run but causes environmental degradation in the economic take-off stage (Deming, 1999,

p.3213). To find out how economic growth causes environmental degradation in the short run and protect or become favourable in the long run we can use *environmental Kuznets hypothesis*. It is based on income inequality relationship. It shows that there is an inverted U-Shaped relationship between economic growth and environmental degradation. Kuznets Hypothesis was given by Grossman & Krueger's in 1991. The relationship between growth and environment degradation is represented by the U-Shaped curve. The curve depicts that as per capita income increases environmental degradation also increases till its maximum points/ turning points, then after reaching the apex level it starts declining as per capita income increases. This is because after apex level people become more concerned about environmental degradation.

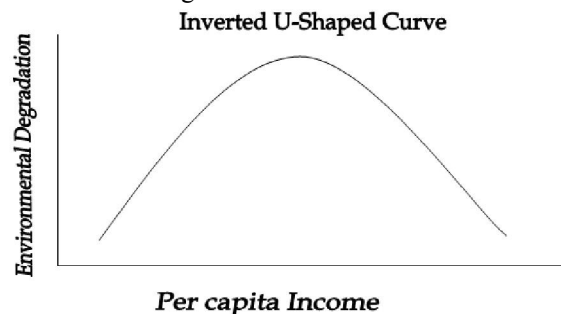


Figure (1) Environmental Inverted U-Shaped Kuznets Curve

When considering Sustainable Development, it has been more important to understand the influence that economic growth has on the environment, and so the concept of the Environmental Kuznets Curve (EKC) has also become attractive when pursuing sustainable development (Uchiyama, 2016, p.12). The Sustainable growth and Sustainable economic growth have been used synonymously with the term Sustainable development. Growth-based definitions

are misleading as Sustainable development recognises limits in Natural System (Daley, 1991).

Since economic reforms of 1990-91, the Indian economy has developed rapidly. The standard of living in the country has been improved but at the same time, environmental degradation has also grown causing serious threats to future generations. All over the world including India, the deterioration and rapid exhaustion of natural resources leading to

environmental degradation is a matter of concern. This imbalance and degradation causing unsustainability are due to the irrational ways of agriculture/ farming and forestry exploitation, a non-weighted introduction of exotic species, the expansion of urban zones, Soil/air/water pollution, the non-regulated growth of services, infrastructure development and production process. These activities globally threaten species given in the below table:

Table (4) globally Threatened species.

Countries	Mammals	Birds	Higher Plants	Reptiles	Amphibians
India	317	964	16000	389	206
China	394	1100	32200	282	190
Indonesia	515	1519	24375	511	270
Malaysia	264	501	15500	268	158
Thailand	251	616	12625	298	107
Vietnam	273	638	10500	180	80
World	4327	9672	270000	4771	4014
India/World	7.32	9.96	5.92	8.15	5.13

Source: World Resource, 'Globally Threatened Species in 1990s', 1994, pp.322-25

Neoclassical economists identify the inefficient use of natural resources as the main reason for environmental problems (Rennings & Wiggering, 1997, p.26). Nations around the world are ignoring the fact that "we get what we give to our environment" the countries who achieved high economic growth believed in the philosophy of "pollute today and clean tomorrow". They also disregarded/ neglected environmental degradation expecting the concentration of pollutants to reach a saturation peak at a certain per capita income and then fall due to development of newer technologies, as they believed that technological development/ innovation will not be restricted at a later point in time due to availability of financial resources (Gupta, 2015) they are not thinking about what they are giving to their future generations.

Environment degradation is the fallout of rapid industrialisation, economic growth and increasing population pressures, etc. (Gupta, 2015) but still, we are not accepting the truth of degradation of those resources which may be much needed in the future and not explore sustainable way of doing these activities. Sustainable development attempts to strike a balance between the demand for economic development and

the need for protection of our natural environment (Bhutia, 2014, p.45).

V. Economic Growth And Sustainable Development In Uttarakhand

The growth performance of Uttarakhand appears to fully justify its formation as a separate state and vindicates the arguments favouring smaller states in the country. The new state is closing the gap with the national average. While Uttar Pradesh continues to lag behind the national average in terms of annual economic growth, Uttarakhand has demonstrated robust growth on a sustained (Uttarakhand Development Report, p.115).

Gross State Domestic Product (GSDP) Provisional at Constant prices (2004-05) for the year 2011-12, was 6086991 lakh rupees and GSDP quick estimates at constant prices (2004-05) for the year 2012-13 was 6635599 lakh rupees. The annual growth rate of Uttarakhand economy was 10.02 percent in 2010-11, the provisional estimate shows it was 9.35 percent for the year 2011-12 and quick estimates for the year 2012-13 it stood at 9.01 percent.

Table (5) Sector wise Percentage Contribution of GSDP at Current Prices.

Industry	2011-12	2012-13	2013-14	2014-15	2015-16
Primary	14.48	14.93	15.35	12.84	13.07
Secondary	51.73	51.33	49.14	48.36	46.48
Tertiary	33.80	33.74	35.51	38.80	40.48
Total	100.00	100.00	100.00	100.00	100.00

* rounding off has been done

Source: Sanjay Sharma, Contribution of Agriculture in State GDP, 2016

Table (6) State Domestic Product of Uttarakhand.

(A) Gross State Domestic Product (At current prices)				
S.No.	Items	Year/Period	Unit in Rupee	Statistics
1	Primary Sector	2012-13	Lakh	1634148
2	Secondary Sector	2012-13	Lakh	4054290
3	Tertiary Sector	2012-13	Lakh	5707352
Total		2012-13	Lakh	11395790
Per Capita GSDP		2012-13	Rupee	112086
(B) Net State Domestic Product (At Current Prices)				
S.No.	Items	Year/Period	Unit in Rupee	Statistics
1	Primary Sector	2012-13	Lakh	1473140
2	Secondary Sector	2012-13	Lakh	3106660
3	Tertiary Sector	2012-13	Lakh	5335888
Total		2012-13	Lakh	9915688
Per Capita NSDP		2012-13	Rupee	97528

Source: Uttarakhand at a glance 2013-14, Directorate of Economics and Statistics, Uttarakhand, 2014

As per sustainable development is concerned, India is one of the mega bio-diverse countries of the world. India has put many steps forward to achieve sustainability for which National Green Tribunal is established under National Green Tribunal Act, 2010. India's progress towards sustainable development can be best known by checking at life expectancy which has achieved a decade's gain, forest cover is also raised which is another measure of environmental sustainability and the important one literacy rate shows a great improvement which inversely improves sustainable development of the nation. Although India ranks among top five countries in terms of GHG's emissions, its per capita emissions are much lower than those of the developed countries (*Singh & Nautiyal, 2015*).

The assessment carried out by the Indian Network for Climate Change Assessment (INCCA) in May 2010, shows that total net GHG emissions from India in 2007 were 1727.71 million tons of CO₂ equivalent (eq.) of which CO₂ emissions were 1221.76 million tons, CH₄-20.56 million tons, and N₂O-0.24 million tons. In 1994, the total net GHG emissions for India were 1228.54 million tons of CO₂ eq. This represents a compounded annual growth rate (CAGR) of 2.9 percent during the period 1994 to 2007 (*Singh & Nautiyal, 2015*). While the literacy rate of India in 1991 was 52.21 and in 2001 it was 65.38, a growth of 13.17 points which makes the difference.

Uttarakhand – the "Land of God" (Known as Uttaranchal from 2000 to 2006) is one of the most beautiful and enchanting states of northern India. Blessed with breathtaking natural beauty, rivers and many mountains this state has been the heaven for people seeking Solace in Spirituality and a paradise for adventure lovers. Nested in the Himalayas, Uttarakhand mainly depends upon its tourism industry that generates huge revenue for its economy (*Ahmad,*

2013, p.108). The beauty of this place will not sustain if stringent rules should not be implemented. Presently, the Himalayas are suffering from serious ecological repercussions, e.g. Population increase of diverse culture, reduction in severe soil erosion, extensive runoff, and land degradation (*Jain, 2017, p.1*).

Uttarakhand is situated in the lap of Himalaya so it also faces the same environmental problems as other Himalayan states face. Despite its rich biological and cultural resources, the region is underdeveloped. Present trends in environmental health suggest that existing interventions are unsustainable. Inherent fragility of the mountains as well as the increased vulnerability of the Himalaya to human-induced environmental impacts makes people live in the shadow of fears of natural hazards (*Jain, 2017, p.4*).

A large number of studies carried out in the region focusing on development interventions/initiatives reflect the unscientific exploitation of resources leading to increasing in environmental degradation (*Jain, 2017, p.4*). These studies found that some of the major issues such as pressure of human population and cattle grazing on the hill areas and indiscriminate felling of trees for commercial purposes have led to rapid depletion of forest cover and reduction in the productivity of land, impairing the economic conditions of the hill regions (*Bhutia, 2014, p.46*). Apart from this traditional agriculture practices like shifting cultivation have been responsible for the exposure of the thin- cover leading to accelerated erosion of both soil and forest cover.

Other activities like construction of roads, dams, and unplanned buildings have further aggravated the situation (*Bhutia, 2014, p.46*). With the increase and setting up of various small and large river water dams in the state, sustainability concerns also emerged. The calamity in the state in 2013 has brought to the

forefront the connection between development and natural resources has often resulted in threatening of the fragile ecosystem. The earth's fragility has never been more obvious and we are facing unprecedented levels of environmental harm and as a result, increasing social and environmental factors are traded off against social and economic ones, has meant that today's income comes from liquidating our social and natural assets capital (Ross, 2009, p.53). All economic activities either affect or are affected by the natural environment.

Thus development based on reckless use of the natural resources is bound to result in reduced productivity of our economic system affecting the quality of life of the future inhabitants of this planet (Bhutia, 2014, p.45). Sustainable development is the vision for the future. Natural calamities and natural disasters are intricately linked with energy and environmental sustainability (Sukanchan, 2013, p.189). There is now a burgeoning literature on the recent 'greening' of the land use planning system and the way in which the concept of the 'environment' which planners use is being transformed by adopting a goal of sustainable development (Rydin, 1995, p.369). The state is facing an unprecedented level of environmental harm and as a result, increasing social and economic hazards.

VI. Conclusion And Suggestions

In the end, it should be concluded that Uttarakhand state which lies in the lap of Himalaya faces the same condition of environmental degradation as other Himalayan states are facing. Since its inception in 2000 as a separate state carved out of presently Uttar Pradesh state it has seen many changes, in these seventeen years, Uttarakhand has done excel in growth and development. Data shows that Gross State Domestic Product (GSDP) was increased up to a level 10.62 to 12.88 from 2012-13 to 2014-15 which is higher than the national average. The economy of Uttarakhand is primarily based on Tourism; the industrial sector is not broad as compared to neighbouring states. About 70 percent of the population is directly or indirectly dependent on agriculture. Hydropower project is another source of revenue for the government. In the process of growth and development environmental degradation also takes place. Environmental degradation is the fallout of these activities; namely, industrialisation, increasing population pressure, unplanned urbanisation, unhygienic agricultural activities, uncensored economic growth, etc.

Based on the conclusion part of the study following suggestions should be taken to prevent environmental degradation:

- A National Committee on Environmental Planning and Coordination (NCEPC) like organisations should be set up at the state level also to look into environmental concerns.
- Prevention and Control Board should be established in the state to control:
 - Water Pollution.
 - Air Pollution.
 - Soil Pollution.
- Stringent rules on Hazardous Waste and Biomedical Waste Management should be established.
- Act. For the environment, protection should be enacted at the state level also.
- Increase the number of Biosphere Reserves in the state.
- Improving Mountain Ecosystems, G.B.Pant Institute of Himalayan Environment and Development (GBPIHED) is playing an important role in designing and implementing R & D activities on priority environmental problems. Number of GBPIHED like institutes should be increased.
- Unplanned urbanization should be controlled by controlling migration and providing employment opportunities in the hometown. Small-scale industries will be the best option, increase the number of these industries.
- Agriculture plays an important role in providing a livelihood for the inhabitants. Its ratio should be increased by employing best and sustainable techniques.

References

1. Ahmad, N. (2013). Sustainable Tourism Development in Uttarakhand Region of India. *International Journal of Management and Social Science Research*, 2(4), p.108.
2. Bhutia, S. (2014). Economic Development and Environmental Issues in Darjeeling Himalaya of West Bengal. India: A theoretical perspective. *International Journal of Humanities and Social Sciences Invention*, 3(7), p.45.
3. Daley, H.E. (1991). *Steady State Economics*. Island Press, Washington, 1991.
4. Deming, L. (1999). Economic Growth and Sustainable Development in China. *Economic and Political Weekly*, 34(45), p.3213 .
5. Engel, J.R. (1990). Introduction: The ethics of Sustainable Development. in J.R.Engel & J.G.Engel, (Ed.) *Ethics of Environment and development: Global challenge. International response*. (London: Belhaven Press and Tucson: University of Arizona Press), p.10-11.
6. Glasby, G.B. (2002). Sustainable development: The need for a new Paradigm. *Environment, Development and Sustainability*, 3, P.333-345.

7. Gupta, S. (2015). Forest Sustainability and Development in hills of Uttarakhand. India: Can they move together? *Springer*.
8. Jain, S. (2017). Sustainable Development of the Indian Himalayas. *UPSARR*, 1(1), p.1.
9. Keiner, M. (Ed.). (2006). Rethinking Sustainability, the Future of Sustainability. *Springer*, Netherland, p.12.
10. Kunugi, T. (1992). The Roles of International Institutions in Promoting Sustainable Development. *Ambio*, 21(1), p.12.
11. Lindroos, P., and Paaso, M.M. (2008). Strategies and Challenges for Education for Sustainable Development in Higher Education- with a focus on the Baltic Sea Region. *International Schulbuchforschung*, 30(2), pp.581.
12. Mekeown, T. (2007). Education for Sustainable Development and the United Nations Decade of Education for Sustainable Development: An overview. *International Schulbuchforschung*, 29(2), pp.148-151.
13. Moragan, D. et.al. (2008). Measuring Sustainable Development- Nation by Nation. *Ecological Economics*, 64, p.470.
14. Rennings, K., & Wiggering, H. (1997). Steps Towards Indicators of Sustainable Development: Linking economic and ecological concepts. *Ecological Economics*, 20, p.25.
15. Ross, A. (2009). Modern Interpretations of Sustainable Development. *Journal of Law and Society*, 36(1), p.37.
16. Rydin, Y. (1995). Sustainable Development and the Role of Land-use Planning. *Area*, 27(4), p.369.
17. Singh, P.D., & Nautiyal, R.R. (2015). Role of Education in Sustainable Development of the Nation. *VARTA*, 369(1), pp.58-59.
18. Solomon, U.U. (2010). A detailed look at the three disciplines, environmental ethics, law and education to determine which plays the most critical role in environmental enhancement and protection. *Environment Development and Sustainability*, 12(6), p.1069-1080.
19. Spangenberg, J.H. (2004). Reconciling Sustainability and Growth: Criteria, indicators, policies. *Sustainable Development*, 12, p.74.
20. Sukanchan, P. (2013). Concept of Sustainability and Development in Indian Perspective: A Vision for the Future. *Journal of Environmental Research and Development*, 8(1), p.189.
21. Uchiyama, K. (2016). Environmental Kuznets Curve Hypothesis and Carbon Dioxide Emissions. K.Kaizuka (Ed.). *Springer*, Japan, p.12.
22. UN General Assembly Resolution 3201 (S-VI) and 3201 (S-VI) of May 1974.
23. Uttarakhand Development Report, *Planning Commission, Government of India*, New Delhi, 2009, p.77.
24. Uttarakhand State Perspective and Strategic Plan 2009-2027, *Watershed Management Directorate*, Dehradun, pp.1-2.
25. Uttarakhand, Physiography, *ENVIS Centre on Himalayan Ecology*, 2014 Retrieved from http://gbpihedenviis.nic.in/Uttarakhand_glance.html On 9 December 2016.

11/25/2017