

E-ISSN: 2709-9369

P-ISSN: 2709-9350

www.multisubjectjournal.com

IJMT 2021; 3(1): 282-287

Received: 19-01-2021

Accepted: 21-03-2021

Dr. Falak Butool

Post-Doctoral Fellow,
National P.G. College,
Hazratganj, Lucknow,
Uttar Pradesh, India

Dr. PK Singh

Head of the Department,
Department of Geography,
National P. G College,
Hazratganj, Lucknow,
Uttar Pradesh, India

Corresponding Author:

Dr. Falak Butool

Post-Doctoral Fellow,
National P.G. College,
Hazratganj, Lucknow,
Uttar Pradesh, India

Environmental governance with special reference to forest and wild life in Bahraich district

Dr. Falak Butool and Dr. PK Singh

Abstract

In the present paper an attempt is made to study the state of forest and natural protected area in Bahraich district. The study is based upon the secondary source of information collected from Forest Survey of India and the Uttar Pradesh Government web site of environment. From the results it is clear that effective environmental governance has become an inescapable reality in India demanding meaningful and effective steps to save life and its quality from the human misdeeds disturbing the 'nature' making its response adverse and reactive. It requires strong institutional reforms so that it can combat diverse environmental problems including the forest degradation. Apart from it environmental protection law and various agencies are not able to control the environmental problems and it is continuously increasing.

Keywords: environmental governance, forest, wild life, Bahraich

Introduction

India is the vast country with a rich biological diversity. Forest is the second largest land use in the country just after the agriculture. Roughly 275 million people in India depends on forest for at least part of their subsistence and livelihood (moef.nic.in/sites/default/files/India National REDD/ 2B/strategy released on 30.08.2018 pdf, p.1). The growing concern for conserving the natural resources has resulted in the formulation of long term perspective plans for conserving forests. These forests facilitate the conservation of ecological balances, biodiversity, enhance the quality of environment by checking soil erosion, water retention and conservation, regulate water cycle, act as carbon sink which balances the carbon dioxide and oxygen in the atmosphere and facilitate the reduction of green house gases effect etc (Raghupati, 2002) ^[14]. Out of all the ecological and economic benefits the reckless cutting of trees in the forested area is causing shrinkage in the forested area and finally the forest degradation in the tropical countries like India. Forest was brought degradation and "Degradation is a disinvestment in the stock of forests if more value than replaced (by nature or man) is extracted" (Reddy *et al*, 2001, p.39) ^[15]. Para 4.1 of the National Forest Policy, 1988 provides that a minimum of 1-3rd of the total land area of the country should be under forest or tree cover. In the hills and in mountainous regions, the aim should be to maintain 2-3rd of the area under such cover in order to prevent erosion and land degradation and to ensure stability of the fragile eco-system.

Forest degradation is one of the most important reasons for global climate change. The rapidly changing climatic conditions in different parts of the world during last two decades have come as a big surprise to climatologist and experts in the field of environmental science. This recent and unpredictable climate change is prompting an unprecedented questioning of the fundamental bases upon which society is founded. Natural set up has its own governing mechanism but continuous human intervention and tinkering into the natural zone resulted in violent response from nature. "Corporate giants and businesses claim that technology can save environment, while politicians champion the role of international environmental agreements to secure global action. Experts in the field of economics offer financial solutions and suggest that developed countries should provide monetary assistance to developing countries not to destroy their forests, while environmentalists question whether we can solve ecological problems with the same thinking that created them. Environmentalists demand for a total transformation in thought and action. As the process of steering society, governance has a critical role to play in coordinating these disparate voices and securing collective and more affirmative action to achieve a more sustainable future". (Evans, 2012, p.1) ^[2]

We are lucky to have mother earth as our living place which is very rich in natural resources.

Governing our planet's rich and diverse natural resources is an increasingly complex challenge. In our globalised world of interconnected nations, economies and people, managing environmental threats, particularly those that cross political borders such as air pollution and biodiversity loss, will require new global, regional, national and local responses involving a wide range of stakeholders (<http://www.unep.org/environmentalgovernance>).

Undoubtedly, effective environmental governance at all levels is critical for finding solutions to these challenges. Environmental Governance comprises the rules, practices, policies and institutions that shape how humans interact with the environment.

When we look at governance in simple words, it means "the purposeful effort to steer, control or manage sectors or facets of society" in certain directions (Kooiman, 1993, p.2)^[5]. In fact, governance involves actors beyond the state in the practice of governing by securing the conditions to enable collective action. While the shift from government to governance has not been restricted to the environmental domain, the complex nature of environmental problems suited them to the governance approach. The recurring challenges of high levels of uncertainty, surrounding environmental change, the global or trans-boundary nature of many problems, and the lack of global institutions to make and enforce decisions, create an obvious need to include broader sets of actors in the process of decision making (<http://www.unep.org/environmentalgovernance>). Governance has the potential to link people, place and things together in radical new ways. Innovations, whether they take the form of new technologies, novel social networks or creative political system, can cause a ripple effect, whereby small interventions can have very large impacts. Breaking with the existing status quo requires diversity, open mindedness and the capacity to learn and change. In doing these things, governance can help forge new identities and visions for the world in which we want to live.

There is no doubt that effective environmental governance takes into account the role of all actors that impact the environment. From governments to NGOs, the private sector and civil society, cooperation is critical to achieving effective governance that can help us move towards a more sustainable future. United Nations Environment Programme (hereinafter referred to as UNEP) is the leading global environmental authority in global environmental efforts. It delivers expert scientific assessments providing international platforms for negotiation and decision making ever since its inception in 1972. It is remarkable to mention that UNEP's Environmental Governance sub-programme promotes informed environmental decision-making to enhance global and regional environmental cooperation and governance. Working with states and all major groups and stakeholders, UNEP helps to bridge the science and policy gaps by keeping the state of the global environment under review, identifying threats at an early stage, developing sound environmental policies, and helping and implementing these policies (<http://www.unep.org/environmentalgovernance>).

Many researchers from India and abroad had worked upon this very urgent and basic issue of human survival on this planet i.e., environmental governance. Young (1997)^[17] in his book has explained the concept of Environmental Governance and made an exhaustive study of governance from local level to global level. An environmentalist Evans (2012)^[2] in his book had discussed the concept of environmental governance. Lele *et al* (2009) had proposed the structure of environmental governance. Weale *et al* (2002)^[7] in their paper "Environmental Governance in Europe: An Ever Closer Ecological Union" have explained that how environmental governance may extend to the ways in which decision making on environmental policy has become institutionalized with in Europe, both at the level of the EU itself and in practice of the member states. It then looks at the operation of the system of environmental governance through an examination of policy case studies before examining the wider political significance of these developments. Loca (2011)^[12] in his paper has pointed out that the establishment of greater synergies between ecological economics, political ecology, sustainability sciences and earth system governance will be beneficial in developing the broader study area of Environmental Governance. Bennett *et al.* (2002)^[1] in their book have emphasized that local support is important for longevity of conservation initiatives. In their paper they have examined the relationships of ecological effectiveness, social impacts and good governance using the data from the survey of small scale fishermen in 11 marine protected areas from six countries in Mediterranean sea. But perhaps there is no such micro level study which deals with environmental governance in the light of its forest and wildlife resources in the Tarai District Upper Ganga Plains i.e., Bahraich district. Therefore, in this paper an attempt has been made to visualize the state of Forest resource and wild life sanctuary in Bahraich district.

Objectives

The major objectives of this research paper are:

1. To discuss the concept of Environmental Governance in detail.
2. To discuss state of forest and Wild life Protection in Bahraich in the light of legal procedure laid down for its protection.
3. To highlight the efforts made by different stake holders for effective environmental governance in Bahraich.

Database and Methodology

The entire study is based upon the secondary sources of data for Bahraich which have been collected from reports of Forest Survey of India.

Study Area

Bahraich District, an administrative district of Uttar Pradesh, is situated in the north eastern part of Devipatan Division. Bahraich is the district headquarters. It is situated between the 28 degree 24 minutes and 27 degree 4 minutes latitude and 81 degree 65 minutes to 81 degree 3 minutes eastern longitude.

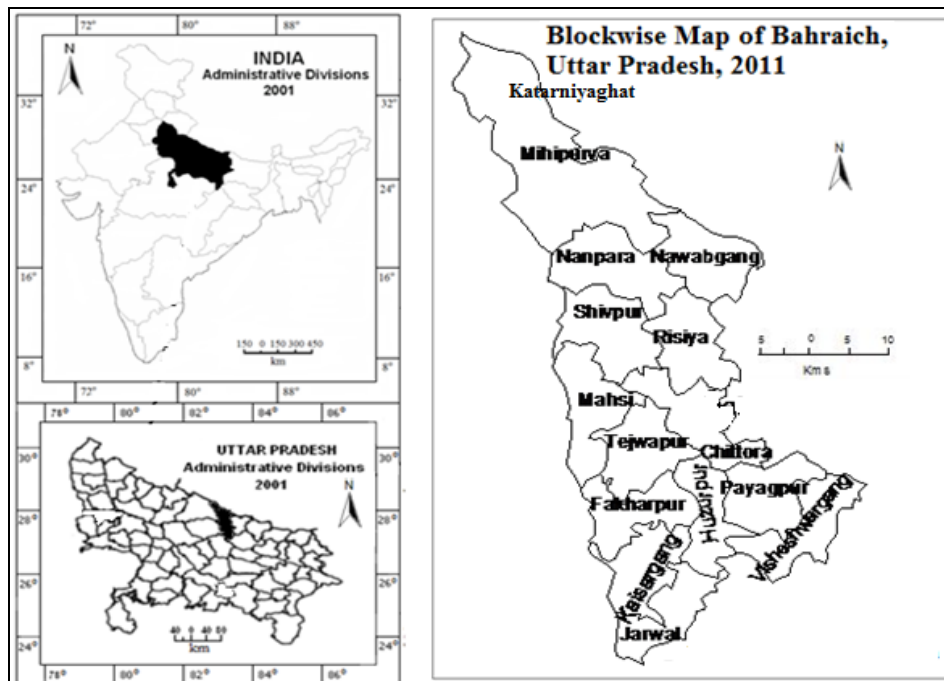


Fig 1: Study Area

It has an average elevation of 126 metres. Bhaerach District has an international border with Nepal on the northern part. It is surrounded by Barabanki District and Sitapur District in its south, Khiri in west and Gonda and Saraswati are in its eastern side. Due to convenience of administration the district is divided into four Tehsils, 14 development blocks, 16 Police Stations, 136 Panchayats and 903 Gram Sabhas. The total area of Bhaerach district is 4,696.8 km²(1,813.4 sq mi).

Discussion

Environmental Governance

While governance is a relatively recent phenomenon, the practice of governing more broadly has a long history, accompanying the emergence of the modern nation state, which required an administrative government to tend to its population. The transition from government to governance that has occurred over the last 25 years and has been a gradual process, in which various roles that were traditionally performed by government have been opened up to actors beyond the state. Depending on the political viewpoint up the process of governing in this way can be seen as an extension of democracy that strengthens decision-making, or conversely as part of a wider undermining of the state and public sector by neoliberalism and economic globalization.

The period prior to 1990 was an age of 'big government', when citizens expected the state to take the lead in providing services, but economic globalization precipitated a crisis of legitimacy in the state. Rather than the state taking sole responsibility for governing, governance provided a way to bring the public, NGOs and business into the process of governing. "Governance is ultimately concerned with creating the conditions for ordered rule and collective action. But this collective action is rather a challenging task. The key challenges identified are scientific uncertainty can make policy makers hesitant to act. Environmental problems are generally subjective so the solution can never be absolutely fine". Apart from it many

environmental problems are transboundary in character, which means that they require international cooperation. Finally, environmental issues tend to have complex causes that spill across many different areas of human activity, making it hard to coordinate action.

The problem of environmental degradation can be tackled by engaging wider groups in the governance especially the cooperation of local public because the local communities have deep knowledge about and emotional attachment to the places in which they live and work, making them indispensable partners in the delivery of sustainable development. Public participation involves designing institutions and rules that can involve all interested parties in decision-making to produce a consensus that forms the basis for legitimate decisions. But sometime public knowledge is not sufficient the expert opinion is desirable as they have technical knowledge as they devote their professional lives to mastering a specialist field. Wynne (1996) suggests that public knowledge should be used to help frame the ways in which expertise is represented applied to society, especially in local context, but has but has no role to play in deciding what constitutes expert knowledge or the actual procedure of science.

Here network governance will be helpful for effective environmental governance. Network governance involves groups of actors with common interests coming together to work towards mutually beneficial outcomes, leveraging the collective resources of diverse actors and simply bypassing reluctant national government. The profusion of NGO and local communities in to practice may be the most exciting and dynamic development in the field of Environmental governance, it can generate real change to the political and economic behavior of the government, companies and local public.

The Forest Resource in Bhaerach District and the Legal Provisions for its Conservation

Forest was brought under concurrent list in 1976 by 42 constitutional amendment Enactment of the forest

(Conservation Act in 1980 amend in 1988) empowered the central government (MoEF) to guide the state in the matters related to diversion of forested land for non forestry purposes, conservation of natural forests into plantation and even priorities of forest management in line with the National Forest Policy. (planningcommission.nic.in, p.14). In Resolution No. 13/52/F, dated the 12 May, 1952, the government of India in the erstwhile Ministry of Food and Agriculture enunciated a forest Policy to be followed in the management of State Forests in the country. The per capita forest area is only 0.064 ha against world average of 0.64 ha (FAO) i.e., 1/10th of the world average. As per the India State of Forest Report (SFR)-2015, the total Forest and Tree Cover of the country stood at 708,273 Km² while it was 701495 Km² in 2015 recording an increase of 6778km² within two Years. (moef.nic.in/sites/default/files/India National REDD/2B/strategy released on 30.08.2018 pdf, p.1).

The district Bahraich is placed in the forest rich region of the Tarai belt of Uttar Pradesh. The forested area in this district has remained same over the period of time as shown in the table given below. From the table 1 it is clear that the total forested area was 11.68 percent of the total geographical area of the district in the year 1997 which was increased in 2001 and has become 13.22 percent and then started decreasing afterward and slip down 12.33 percent in 2011 and then remained constant till 2013 and then further rolled down up-to 10.48 per cent in 2015. This remarkable decrease in the forest cover i.e., 1.85 percent was associated with the separation of Srawasti from Bahraich district. The in-depth analysis of the table shows that the open forested area has increased over the period of time and gradually the dense forest cover has decreased with time in Bahraich district.

Table 1: Forested Area in Bahraich District (Km²)

Year	Geographical Area	Dense	Open	Total	Total Geographical Area
1995	6877	589	214	803	11.68
1997	6877	589	214	803	11.68
2001	6878	642	267	909	13.22
2005	6878	210 (D) 294 (M)	347	851	12.37
2011	6878	290 (D) 315 (M)	243	848	12.33
2013	6878	290 (D) 315 (M)	243	848	12.33
2015	5237	240 (D) 156 (M)	153	549	10.48

Source: Forest Survey of India, 1997, 2001, 2005, 2011, 2013, 2015

Wild Life Protection in Bahraich District and the Legal Provisions for its Conservation

The wild life protection act 1972 is the first legal step to avoid illegal poaching and killing of wild animals. It is mandate under section 38 (Z) of the wild life (Protection) act, 1972, to collect intelligence related organized wild life crime activities and to disseminate the same to the state and other enforcement agencies for immediate action. Wild life crime control Bureau is a statutory multi-disciplinary body established by the Government of India under the ministry of Environment, Forest and climate change, to combat organised wild life crime in the country. The Protected area network in India comprises of 730 protected areas (103 National Parks, 535 Wild Life Sanctuaries, 66 Conservation Reserves 26 Community Reserves. Out of these only one wild life sanctuary (Katarniyaghat) is located in Bahraich district with no National park or other protected area. The Katarniyaghat Wildlife Sanctuary is a protected area in the Upper Gangetic plain in Uttar Pradesh, India and covers an area of 400.6 km² (154.7 sq mi) in the Terai of the Bahraich district. In 1987, it was brought under the purview of the 'Project Tiger', and together with the Kishanpur Wildlife Sanctuary and the Dudhwa National Park it forms the Dudhwa Tiger Reserve (Mathur and Midha, 2008) [25]. It was established in 1975 (Tripathi and Singh, 2009) [16]. The Katarniyaghat Forest provides strategic connectivity between tiger habitats of Dudhwa and Kishanpur in India and the Bardia National Park in Nepal. Its fragile Terai ecosystem comprises a mosaic of sal and teak forests, lush grasslands, numerous swamps and wetlands.

Katarniya Ghat is home to a number of endangered species including gharial, tiger, rhino, Gangetic dolphin, swamp deer, hispid hare, Bengal florican, the white-backed and long-billed vultures. One of the best places in the world for seeing the gharial in its natural habitat is the Girwa River, where it is found sympatric with the mugger. Mugger crocodiles are also seen in small number in the Girwa river ,as their favorite haunts are stagnant wetlands like the many taals and baghars that dot the sanctuary. Side by side the serenely swimming gharial can be seen frolicking Ganges dolphins. Recent discoveries in herpetofauna of Katarniyaghat are highly fascinating and are represented by several species such as the banded krait, the Burmese rock python, the yellow speckled wolf-snake and the paradise flying snake. In 2012, a rare red coral kukri snake was sighted in the sanctuary. (http://article.timesofindia.indiatimes.com/2012-07-15/flora-fauna/32684552_1_snake-species-head-of-reptile-division-oligodon-kheriensis). This snake with the scientific name *Oligodon kheriensis* was first described from the North Kheri Division in 1936 (Green, 2010) [27]. Today Katarniyaghat has more than 20 tigers and is home to rhinos and elephants. (Green, 2010) [27].

Various Agencies and Their Efforts for Environmental Governance

Governance is seen by some as the only way to govern an increasingly unruly world, in which the old economic and political coordinates have been eroded by the force of globalization. (Herod *et al*, 1998) [3]. Governance extends the practice of governing to non state actors or stakeholders

who have an interest or stake in governing, including charities, NGOs, businesses and the public. Environmental governance operates by setting common goals or targets, which allow different actors to devise the most suitable ways to reach them.

Efforts of the Apex Government Bodies of the Environmental Issues

Uttar Pradesh government is organizing the forest festival from 1 July to 7 July, 2019. The Government order SU-05/20-1/ illegal cutting dated 19/06/2015 has directed the district forest departments to submit data regarding the felling and logging of the trees online on the official website of Principal Chief Conservator of Forest, Uttar Pradesh. The Government order 2239/22-10 dated 17/05/2019 explains the legal procedure to cut the trees in the forested and non forested areas so that illegal felling and logging the trees in Gonda east can be checked. Government order P-01/36-P-23A dated 03/07/2019 has allotted 1512010 saplings out of 22 corers saplings to be planted in the whole state in the Uttar Pradesh in the month of July, 2019.

Efforts Taken by Public

Public participation is a decisive factor in success of policies. In U.S., U.K., Sweden, Canada the public pressure brought environmental issues to the policy arena in contrast to India where policy came before people. The public has a rooted interest in making sure that environmental laws are properly carried out, because local communities are directly harmed by environmental problems (docs.nrdc.org/international/int_10051901). Public participations in the administrative process ranges from individuals to larger, expert nonprofit organizations. Chipko Movement started in Tehri Gharwal region, Save Narmada Movement, Jal Sathyagrah Movement are some of the efforts taken by the local public to save their native natural resources including the forests. Contrary to it the tribals (Tharu) of this region have almost raided all the gharial nests as these tribal people consider them a delicacy between the years 2001 to 2005 (<http://www.edgeofexistence.org/species/gharial>). Thus in order to protect this endangered species of reptiles environmentalists have saved their breeding grounds (sand bars of the Ghirwa river). The identification of these breeding places was done with the help of few local tribal people.

Efforts Taken By the Media

While the media are not strictly a part of governance, their influence over public opinion science means that they play an important role in meta-governance. As Bennett (2002) ^[1] states (2002:10), "few things are as much a part of our lives as the news and the media have great potential to generate legitimacy for collective action", p.14. On the one hand, the media reinvigorate the social sphere by stimulating public debate (Morley and Robins, 1995) ^[6]. Media has popularize the poaching issue of leopard in Motipur region of Katarniyaghat done by Jyotinder Singh Randhawa who was ranked among the top 100 golfer in the world several times between 2004-2009 and the chief judicial magistrate Bahraich send him to the jail. (Press Trust of India: 26 Dec 2018/ http://wap.business-standard.com/article-amp/pti-stories/jyoti-randhawa-s...hunting-in-dudhwa-reserve-sent-to-14-day-jail-custody-118122600803_1.html)

Conclusions

The challenges of ecological conservation and management are immense in a country as large and diverse as India. But institutional mechanisms and implementation have not kept pace with the legislative and policy evolution as evident from the continuous degradation of the environment including the forest. It is mandatory to conserve natural resources including the forest resource because forest degradation will disturb the fragile ecological balance and in turn will intensify the problem of global climate change. Here environmental governance is supposed to help in forging new identities and versions for the environment in which we want to live. But it has not sufficient potential to link people, place and resources in the radical new ways. It is creating only a rippling effect and requires institutional reforms and strong linkages. Quite clearly, there is a need to reassess the entire ambit of environmental governance in the country including Bahraich district. At the end it can be said many action plan plans are prepared but action is missing it requires some time motivation in the form of incentives and sometimes forceful implementation but environmental issues in are just like the old wine sold in the old bottle with new brand without concrete action and desired results.

Recommendations

Among the various environmental challenges and crisis, deforestation being linked with health hazards has caused greatest concern to humans in various parts of the earth including Bahraich district. It is necessarily, an outcome of urban-industrial-technological revolution which has resulted in complex man-environment relationship associated with large scale and speedy exploitation of resources, especially forest. It is only the good environmental governance which can combat various environmental problems as it promotes the cooperative efforts of the state and people to reduce environmental pollution. Here researcher would like to suggest few measures to combat environmental problems in Bahraich.

1. Ecological modernization may act as a buffer to control various environmental problems. As ecological modernization is techno-centric, relying heavily on scientific research and technical expertise to develop new technologies that will enable environment friendly economic growth. Development of bio gas plants may reduce the dependency of local tribal people and Villagers upon the charcoal which in-turn will reduce the cutting of trees.
2. Government shape markets, innovation contexts, political visions and legitimacy through the policies that they enact. Under the recent scheme of domestic need of the fuel supply "Ujjawa" the villagers and tribal people are benefitted with the free domestic gas supply to reduce the dependency on firewood.
3. If the state provides an application based support system to villagers and tribals to rent out factors and farm implements and earn additional income, it would be cause to "Modernization of Agriculture". It would not only curb stubble burning but at the same time make farming more mechanized, cost effective and a source of employment and the need for more agricultural land will be reduced which may up to certain extent will reduce cutting of forest.
4. Current energy need of Bahraich should be shifted from traditional organic resources to non-conventional

resources through the development alternate technologies which is certainly more expensive to install than their existing counterparts. For this purpose government has to subsidize these non-polluting technologies like Solar power plants.

References

- Bennett W. News: The politics of Illusion. New York: Longman 2002.
- Evans JP. Environmental Governance. London: Routledge Publication 2012.
- Herod A, O' Tuathail G, Roberts S. (eds) An Unruly World? Globalization, Governance and Geography, London: Routledge 1998.
- Hulme M. Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity. Cambridge: Cambridge University Press 2009.
- Kooiman. (ed). Modern Governance: New Government-Society Interactions, London: Sage Publications 1993.
- Morley D, Robins K. Space and Identity: Global Media, Electronic Landscapes and Cultural Boundaries. London: Routledge 1995.
- Weale A, Pridham G, Cini M, Konstadakopoulos D, Porter M, Flynn B. Environmental Governance In Europe: An Ever Closer Ecological Union?, OUP Catalogue, Oxford University Press 2002, RePEc:oxp:books:9780199257478
- Guha R. Forestry in British and Post British India: A Historical Analysis, Economic and Political Weekly 1983;29(1):20-27.
- Gupta S. Environmental Policy and Governance in a Federal Framework Perspectives from India, Retrieved from econ.dse.org/wp-content/uploads/2016/07/chapter-1-gupta.pdf
- Holling C. " Resilience and Stability of Ecological Systems. Annual Review of Ecology and Systematics, 1973;4:1-24.
- Lele S, Dubash NK, Dixit S. A Structure for Environment Governance: A Perspective, Economic and Political Weekly 2010;65(6):13-15.
- Luca T. Developing Environmental Governance Research: The Example of Forest Cover Change Studies, Interdisciplinary Progress in Environmental Science and Management 2011;38(2):234-246.
- Narayana S. Green Manifesto-Pondicherry, Green Governance 2011;1(3):51.
- Raghupathi L. Environmental Degradation With Special Reference to India, Geography and You 2002;2(8, 9):39-47.
- Reddy VR, Behera B, Rao DM. Forest Degradation in India: Extent and Determinants, Indian Journal of Agriculture Economics 2001;56(4):631-651.
- Tripathi KP, Singh B. Species diversity and vegetation structure across various strata in natural and plantation forests in Katarniaghat Wildlife Sanctuary, North India. Tropical Ecology 2009;50(1):191-200.
- Young OR. Right Rules and Resources in World Affairs, In O.R. Young (Ed.) global governance: drawing insights from the environmental experience, Massachusetts: Massachusetts Institute of Technology 1997.
- Press Trust of India: 26 Dec 2018/ http://wap.business-standard.com/article-amp/pti-stories/jyoti-randhawa-s...hunting in dudhwa-reserve-sent-to-14-day-jail-custody-118122600803_1.html
- "Rare Indian snake species discovered at Katarniaghat sanctuary". 16 July 2012. http://article.timesofindia.indiatimes.com/2012-07-15/flora-fauna/32684552_1_snake-species-head-of-reptile-division-oligodon-kheriensis
- Bennett NJ, Franco AD, Calo A, Elizabeth N, Niccolini F, Millazo M *et al.* Local Support for Conservation is Associated with Perceptions of Good Governance, Social Impacts, and Ecological Effectiveness, Conservation Letters, Wiley Periodicals, Inc 2019. Retrieved from <http://doi.org/10.1111/conl.12640>
- Curmally A. Environment and Rehabilitation: Governance and Regulation in India 2005. Retrieved from www.archidev.org/spip.php?article597: 22/1/17
- Nagdeve AD. Environment and Health in India, Paper Presented at IUSSP, Regional Population Conference on South East Asia's Population in a Changing Asian Context at Bangkok, Thailand 2002, 10-13.
- Ministry of Environment Forest and Climate Change. (2015-16). Annual Report <http://envfor.nic.in/> (Annual Report of MoEF)/ 4/2/17
- Ministry of Environment and Forest. (1997). Forestry Statistics, Indian Council of Forestry Research and Education Dehradun,
- Mathur PK, Midha N. Mapping of National Parks and Wildlife Sanctuaries, Dudhwa Tiger Reserve. WII – NNRMS - MoEF Project, Final Technical Report. Wildlife Institute of India, Dehradun 2008.
- "Gavialis gangeticus". IUCN. Retrieved 24 September 2014.
- Green M. Molecular Phylogeny of the Snake Genus Oligodon (Serpentes: Colubridae), with an Annotated Checklist and Key. M. Sc. thesis, University of Toronto 2010.
- <http://www.conservationindia.org/articles/tales-from-the-bush-an-afternoon-along-the-orai>