Vision Document
ON
CONSERVATION OF INDIAN GEOHERITAGE AND
DEVELOPMENT OF NATIONAL & UNESCO GLOBAL
GEOPARKS

1. Preamble
Despite unbound riches and diversity, the awareness and importance of preservation of Geoheritage is highly marginalised in India. Generally, there is low awareness within society about how important it is to protect key geological and geomorphological features and processes for their geoheritage values, and more so about the role of geodiversity in supporting biodiversity and ecosystem functions and related services.

This document embodies the primary aspirational goals the informal Group titled ‘Guardians of GEOHERITAGE’. This is proposed to be a formalised as a registered Society- Geoheritage and Geoparks Society of India until then The Society of Earth Scientists (www.earthses.org) will look after the affairs of this dedicated Group.

This note provides the core vision of ‘Guardians of GEOHERITAGE’ and leading all possible geoconservation measures through the ICE (Initiative for Conserving the Earth) Program.

1.1 THE VISION
The ‘Guardians of GEOHERITAGE’ Group shall endeavour to:

- It will contribute scientific inputs and advocate measures leading to the identification of geoheritage sites and museum collections that require a meaningful and sustained support for their protection from damage and loss to the future generations.

- Create a scientifically robust documentation of the geodiversity of India, a detailed Registry of Geoheritage Sites in addition to the formally declared National Geological Monuments in India with aim of creating awareness of its fascinating diversity.

- Recognizing the important initiative by the Group, in 2019, The Society of Earth Scientists (SES) formulated a committee of senior geoscientists and prepared a ‘Status Report on Geoheritage and Geoparks: Indian and International scenario and draft legislation’ and deliberated upon it on 6 August 2019 jointly with INSA at Delhi. The same was submitted to the Prime Minister’s Office, the Principal Scientific Advisor to Government and various related ministries.
Further, it is imperative for the Group and Society to pursue and advocate Geoconservation as a policy and interact with concerned authorities, and accordingly a Bill was drafted on ‘CONSERVATION OF GEOHERITAGE SITES AND DEVELOPMENT OF GEOPARKS BILL, 2020’ in consultation with the Task Group and Expert Group. However, the final outcome is still awaited.

- Provide a platform for scientific exchanges which will contribute to the further development and improvement of geoconservation concepts, principles and management approaches; leading to further improvement of the approaches currently being used.
- Provide a scientific framework for statutorily integrating geoconservation (besides biodiversity and environmental conservation) as an essential ingredient within the existing land-use policy and practices,
- Define legislative norms and framework to ensure that our rich geological heritage is conserved and protected as dedicated Geoheritage sites and developed into suitably managed Geoparks (in alignment with the IUCN (International Union for Conservation of Nature) and UNESCO Global Geoparks.

By enabling geoheritage monitoring and policing, through appropriate statutory and administrative mechanisms, the Guardians of GEOHERITAGE Group will ensure the geoconservation of the geoheritage in a pristine form for the present and future generations. Emphasizing the need for collective efforts to promote geoconservation of Geodiversity, Geoheritage sites and Geoparks for sustainable development in all its three dimensions in an innovative, coordinated, environmentally sound, open and shared manner, Besides, it will promote the dissemination of this knowledge of the geological heritage and its direct and indirect impact on Society; anthropogenic activities and the destructive effects of the human endeavours on such heritage.

It is imperative to build institutional and individual capacity to manage the protected area systems effectively, equitably and sustainably, and to cope with the myriad of challenges that crop-up in practice. The Vision document can provide a framework to assist national governments, non-governmental organisations, communities and private sector partners in meeting their commitments and goals.

**2.0 GEODIVERSITY, GEOHERITAGE, GEOPARKS AND GEOCONSERVATION**

Key concepts and definitions are provided:

2.1 Geodiversity refers to the variety of non-living elements of nature. Geodiversity is expressed in geological formations as various rock formations, minerals, fossils, tectonic structures; geohydrological features such as rivers and lakes, soils and geological processes that created distinctive minerals and
rock assemblages and landscapes. It is the major abiotic component of lithosphere that supports geologic and geomorphic processes creating variety of landforms, nurtures biodiversity and ecosystems (Stanley, 2000; Gray, 2004). Geodiversity underpins biodiversity, but has its own intrinsic values independent of biodiversity.

2.2 Geoheritage is the abbreviated version of the term geological heritage. It includes any area/place/mining site located inland and/or offshore within the territorial waters of the country containing distinctive examples of geological materials (e.g., sediments, rocks, minerals and fossils) and phenomena, stratigraphic type sections, geological structures and geomorphic landforms including caves, natural rock-sculptures of national/international interest. It is part of the natural heritage of a certain area constituted by geodiversity elements with particular geological value and hence worthy of safeguard for the benefit of present and future generations.

Geoheritage can include both in situ elements (geosites) or ex-situ elements (collections of geological specimens) having paleontological, geomorphological, mineralogical, petrological or stratigraphic significance, etc. The latter includes museums and scientific repositories, which maintain a detailed metadata of their collections. The former requires an appropriate documentation of the site and dissemination of its geoscientific significance.

2.3 Geopark is a unified area that advances the protection and use of geological heritage in a sustainable way, and promotes the economic well-being of the people living there. There are global geoparks and national geoparks. UNESCO Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. A UNESCO Global Geopark uses its geological heritage, in connection with all other aspects of the area’s natural and cultural heritage, to enhance awareness and understanding of the key issues facing the society in the context of the dynamic planet we all live on, mitigating the effects of climate change and reducing the impact of natural disasters.

2.4 Geoconservation is the conservation of geodiversity for its intrinsic, ecological and geoheritage value (Sharples, 2002). Geoconservation includes all efforts and activities required for the protection of geodiversity and geoheritage. This may be achieved through a three-pronged approach: conservation, education and geotourism respectively (Hose, 2012; Gray et al., 2013).

The importance of Geoconservation may be stated from a variety of perspectives, and numerous workers have provided long lists of reasons for undertaking the same. The underlying value of conserving geodiversity may be categorised into intrinsic (or based on its unique ‘existence’); ecological (or part of a natural process) and anthropocentric (human-centred based on the economic, recreational and heritage) values (Sharples 1995).
3.0 THE CHALLENGES AND THE WAYS FORWARD

3.1 Why is geoconservation needed?

There is low awareness within the society about how important it is to protect key geological and geomorphological features and processes for their geoheritage values, and about the role of geodiversity in supporting biodiversity and ecosystem functions and services. There has been a popular, but misconceived view that rocks and landforms are reasonably robust and not liable to change or damage by human activities and therefore do not need special measures for their conservation. This is not the case, as these geodiversity sites are subject to both natural threats – weathering and erosion and human interventions. Recently there has been growing concern for conservation and management of Geodiversity and geoheritage in a more structured way duly supported by legal protection.

Prevailing apathetic scenario where most of the Earth-Science community in India would not debate on the value and importance of Geoconservation of such rare and unique geodiversity and geoheritage sites needs to change towards more proactive indulgence and promotion of geoconservation issues amongst geoscience students, scholars and public at large. Whereas consistent efforts have promoted protection and conservation of biodiversity through sustained campaigns that can be more easily assimilated by the public in view of potential ‘extinction’ of species – including the human race – and need for its conservation comes up logically. The same may be said to be true for environmental (ecological) diversity and preservation of concerned ecosystems. Both are easily visualised by the public and their impacts experienced in a day-to-day existence. Therefore, Biodiversity conservation gets a rapid and proactive response. Unfortunately, geoheritage is not something that we encounter in our daily activities. Although one may use numerous products derived from the Earth every day, that the source of these products needs protection and conservation as it has a finite presence on Earth is to be projected vigorously with better publicity efforts through all forms of media and pitch-films. This lack of awareness (verging on ignorance) in the general public about the inherent nature and importance of geodiversity to start with is the primary challenge to all efforts towards recognition of geoheritage and the criticality of geoconservation. The urgent need is to promote appreciation for abiotic nature and concepts of geoconservation of geoheritage sites from primary school levels onwards.

3.2 Advantages of Geoconservation to the Society

The implementation of effective geoconservation strategies brings great advantages to the society. Firstly, it raises awareness of the need to understand natural systems and the geological component of ecosystem services. Moreover, well-managed geological sites can support different types of sustainable use with clear benefits for the society, such as scientific, educational and economic use. This is already happening in many territories
around the world such as with Global Geoparks which have been recently fully recognized by UNESCO. Geotourism and recreational activities based on geodiversity elements are completely integrated in the aims of the International Year of Sustainable Tourism, proclaimed by the United Nations for 2017. Similarly, Scientific Committee on Antarctic Research (SCAR) has an Action Group on Geological Heritage and Geoconservation within the Geosciences Group (https://www.scar.org/science/geoconservation/home/) which is actively proposing conservation mechanism of geoheritage sites in Antarctica similar to the other environmentally protected domains. This is done under considered practices in remote terrains such as Antarctica (Hughes et al., 2016) but surprisingly, no defined geoconservation strategy/regulation exist in India.

3.3 How Geoconservation of Geoheritage sites and Geoparks serves the UNESCO Global Sustainable Development Goals?

Geoconservation and the 2030 Agenda for Sustainable Development

The United Nations 2030 Agenda for Sustainable Development defines 17 Sustainable Development Goals to be universally applied in all countries. Many of these goals will demand proper management of nature, including both geodiversity and biodiversity. Geoconservation may help to:

- increase the quality of education (Goal No 4)
- have clean water (Goal No 6)
- promote decent work and economic growth (Goal No 8)
- organize sustainable cities and communities (Goal No 11)
- understand climate change (Goal No 13)
- protect, restore and promote sustainable use of terrestrial ecosystems, combat desertification, and halt biodiversity loss (Goal No 15).

The International Union for Conservation of Nature (IUCN) is the global authority on the status of the natural world and the measures needed to safeguard it. The interest of IUCN for geoconservation has increased in the last decade as revealed by the approval of three geoheritage-focused resolutions in 2008, 2012 and 2016, the creation in 2014 of the Geoheritage Specialist Group under the IUCN World Commission on Protected Areas, and the integration of a geoconservation chapter in the “Protected Area Governance and Management” handbook published in 2015. IUCN is also responsible for the assessment of the “Outstanding Universal Value” of geoheritage included in new UNESCO World Heritage applications, together with a strong cooperation regarding UNESCO Global Geoparks.

Achievement of sustainable development goals (SDGs) hinges on Geotourism that is based on appreciation of natural geological features of the terrain and aesthetic values of landscape. In addition to the fauna and flora (Biodiversity), geotourism thrives on the abiotic dimension of the environment...
and is treated as an integral part of the UNESCO’s Geopark programmes. Besides, geotourism and recreational activities based on geodiversity elements are completely integrated in the aims of the International Year of Sustainable Tourism, as was proclaimed by the United Nations for 2017.

3.4 IMPLEMENTATION STRATEGIES IN INDIA

In India central and state Governments including organizations like Geological Survey of India (GSI), NGOs, geoscientific associations and universities can play significant role in geoconservation and establishment and promotion of geoparks.

Five major areas need to be addressed to provide a basis for successful practical management of geoconservation values based on the foregoing theoretical principles and concepts:

1. Legal and Administrative Instruments and Procedures
2. Awareness of Issues
3. Identification of Significant Sites and Processes
5. Monitoring and Indicators

India is blessed with spectacular geological heritage sites. These geoheritage sites are under threat of destruction as there is no proper national conservation policy that is operational in the present time. The preservation and protection of these geological sites is totally left at the discretion of the concerned State Governments. These State Governments also do not have required expertise and proper policy/law for conservation, and while some sites are conserved (mainly caves or fossil sites) as natural sites, as they but do not follow international scientific norms and procedures. Although there are proper policy and legislations in place for the conservation of cultural heritage sites and biological resources in India, yet the geological and natural heritage are not given proper attention insofar as a policy/legislation aiming at the conservation and preservation of the same is concerned.

Governments in democratic set-ups, as in India appear very hesitant, mainly owing to general apathy and for historical, political and managerial reasons, to manage properties that are not pristine landscapes.

There are several case studies where important and recognised geoheritage sites have been destroyed because of lack of knowledge and proper protection policy. For example, high concentration of the element iridium in the geological section at Anjar, Kutch district, Gujarat, provides evidence for a massive meteoritic impact that caused the extinction of the dinosaurs nearly 65 million years ago. This site was destroyed due to the alignment of a new rail line in this area. Unscrupulous excavation of dinosaur eggs at Kheda, Gujarat and Bagh, Madhya Pradesh and well-preserved ammonite fossils from Spiti being sold for petty gain of small money. The unique rock named Nepheline Syenite, Kishangarh, Ajmer District, Rajasthan (a National
Geological Monument) has been destroyed in road widening project. The number of such sites are increasing day by day if we do not act swiftly to conserve them. There have been several cases of sites being vandalized and fossils being sold to, or pilfered by, visitors. Many critical geological sections of global significance have also been sacrificed on the pretext of development.

The Lonar impact crater, Buldhana District, Maharashtra is an important geoheritage site of international significance and is under threat of destruction. The nature conservation activists lodged a PIL in the Nagpur branch of Honorable Bombay High Court for defining program and policy to protect the Lonar crater and surrounding areas. The conservation work is in progress under the supervision of Honorable High Court.

The PIL at Madras High Court was to protect and conserve the Kolakkanatham fossil site from encroachment and destruction and to declare Kolakkanatham fossil site as Paleontological world heritage site.

However, it is emphasized that it is nearly impossible to take up issue of individual geosites under threat and there is urgent need to take up the issue in a holistic manner and a national conservation policy is needed under the direct supervision of a ‘national body’ devoted for development and protection of geoheritage sites.

We need to attempt here to enumerate the importance of protecting and conserving the geodiversity through collective efforts of Government and non-government stakeholders for systematic and sustainable development of geosites, geoparks and programmed geotourism. Following measures are listed for geoconservation of geoheritage sites and development of Geoparks at regional and national levels:

1. As each geoheritage site has its own distinctive set of attributes—both natural, geological as well as the cultural together with socio-economic regional factors, and considering the basic tenets of geoconservation, strengths and short-comings of aspiring geoparks, guidelines and a coordinated approach need to be adopted with defined roles and responsibilities of all concerned stake-holders, tour-operators, destination managers and local community engagements for long-term societal benefits.

2. Adaptation of a more outward-looking and bottoms-up approach should help to progress the integration of geoconservation within nature conservation, protected area planning and management, and broader environmental strategies and policies.

3. In India central and state Governments and government organizations like Geological Survey of India (GSI), NGOs, geoscientific associations and Universities together should play a role in geoconservation and establishment and promotion of geoparks.

4. It is high time for the government to take initiative to establish the geoparks in the country by involving the Ministries of Mines, Earth Sciences, Science
& Technology, Tourism, Culture etc., and assigning the responsibility to one of these ministries to act as a nodal ministry, by constituting Indian Geoheritage and Geoparks Management Authority, and by legislation of the Indian Geoheritage Protection Act, by encouraging the state governments to establish and promote geoparks and by forming Indian Geopark Network (IGN) and joining the Global networks. Central government can take initiative in forming the regional network of geoparks involving the neighbouring countries of the Indian subcontinent on the lines of other regional geopark networks like EGN, APGN etc.

5. The State Governments should also take the lead in establishing the geoparks in their respective states and enhance geotourism prospects and adding to economic growth. As such there are number of attractive tourist places in each state. The governments need to incorporate the important geosites with nearby archaeological and cultural tourist sites so that it forms an integrated tourism circuit and can be designated as a geopark and managed by State Geoparks Management Authority. Number of such geoparks in each state can be networked to form state geopark network which ultimately can be networked with India Geopark Network.

6. GSI should accord priority to Geoheritage and constitute a committee comprising representatives from geoscientific organizations, associations, Universities for selection of National Geoheritage sites; prepare status paper on permanently lost and critically endangered geoheritage sites for prioritizing the conservation measures; maintain declared geoheritage sites till some organization takes responsibility.

7. Geoscientific organizations / University geology departments can identify geoheritage sites and popularize them in society; join with other organizations and take lead for protection of sites with the support from public and authorities. Universities should include Geoheritage in geology curriculum. All those concerned should try to change the established misconception that Geological Resources are “Wasting Assets” as these resources can generate sustained income once they are converted into Geoparks.

8. Though there are publications on the individual geosites and other aspects hither and thither, there is no single document in which all geological, archaeological and cultural aspects are assessed and discussed to identify the potentiality of an area to be designated as a Geopark. In this back drop it is thought that there is a need for a document in which potential geoparks are projected which will act as a reference for establishing the Geoparks in our country.

9. Geoparks will have an impact on society as they focus on developing the interaction between conservation of the natural environment and socio-economic development as well as raising public awareness of environmental matters. The dynamism of this movement is detailed in this Monograph, an
exciting look into the potential geoparks across India and an open invitation to visit and support them.

10. To enhance awareness about the conservation of India’s geoheritage sites, the Society of Earth Scientists (SES) organised an outreach program ‘Walk to Save our Geoheritage’ on the 21 July 2019 at six different cities- Jodhpur, Udaipur, Chandigarh, Lucknow, Hyderabad and Visakhapatnam in which geoscientists, earth lovers, students, and young kids marched on the city roads to attract the attention of the common people and the government in particular. Press and media covered the event enthusiastically and highlighted the need of proper legislation to protect the important geoheritage sites. This year, the pandemic limited it only up to organizing a webinar.

11. The Society of Earth Scientists also approached the governments of Gujarat and Rajasthan to declare the Dinosaur Fossil Park at Raiyoli, Gujarat; Ramgarh crater in Baran district of Rajasthan; and Zawar, the world’s oldest mining and metallurgical site in Mewad, Udaipur district, also in Rajasthan, as National geoparks. Similarly, Mandu Fossil Park and Museum in M.P. and Saket Siwalik Fossils Park in Himachal Pradesh are also suitable geoheritage sites duly recognised, protected and promoted by the concerned State Governments and attract a lot of geotourists. These can be developed into best candidates to become UNESCO Global Geoparks.

12. The declaration of 6th October as International Geodiversity Day by UNESCO, for which Indian government and associations also extended their support, adds further importance to the need of conservation and attention of governments.

There are several such stories where individuals (local or government officials of state forest authorities or other agencies) took action and protected the area. However, in the absence of any law to protect the geoheritage sites, the isolated efforts are not able to bring out the required impact. This is also to indicate that several protected natural sites developed by the tourism departments (mainly caves and rock gardens) do not bear any scientific details or, in many cases, exhibit misleading details. There is urgent need to compile and provide authentic yet user friendly dossiers on several of such geoheritage sites in India.

4.0 UNESCO GLOBAL GEOPARKS

A UNESCO Global Geopark must have geological heritage of international significance. The purpose of a UNESCO Global Geopark is to explore, develop and celebrate the links between the geological heritage and all other aspects of the area’s natural, cultural and intangible heritages. It is about reconnecting human society at all levels to our planet and to highlight how our planet and its 4.6 billion-year long history has shaped every aspect of human lives and societies.

During the 38th session of the UNESCO’s General Conference in 2015, the 195 Member States of the UNESCO ratified the creation of a new label,
the UNESCO Global Geoparks. This expresses governmental recognition of the importance of managing outstanding geological sites and landscapes in a holistic manner, and also provides a new international status to a former network of sites of geological significance, preferably allowing the Organization to more closely reflect the societal challenges of Earth Science today. At present, there are 169 UNESCO Global Geoparks in 44 countries. China alone has 41 UNESCO Global Geoparks, followed by 15 in Spain, nine each in Italy and Japan, seven each in France and North Ireland, five each in Canada, Germany, Greece, Indonesia and Portugal, 4 in Republic of Korea, three each in Norway and Vietnam, two each in Austria, Croatia, Finland, Hungary, Iceland, Ireland and Mexico, and one each in Belgium, Brazil, Chile, Cyprus, Czechia, Denmark, Ecuador, Iran, Malaysia, Morocco, Netherlands, Nicaragua, Peru, Poland, Romania, Tanzania, Thailand, Turkey and Uruguay. It is interesting to note that there are four transnational UNESCO Global Geoparks in Europe, viz., Austria and Slovenia, Germany and Poland, Hungary and Slovakia, Ireland & U.K. and Northern Ireland. The UNESCO in close collaboration with the GGN supports Member States’ efforts to establish UNESCO Global Geoparks, especially the developing countries without Geopark.

The geoheritage movement is particularly strong in Europe, where the grassroots organization ProGEO: The European Association for the Conservation of the Geological Heritage has been a leader in geological conservation.

“The only record of the history of our planet lies in the rocks beneath our feet: rocks and the landscape are the memory of the Earth. Here, and only here, is it possible to trace the processes, changes and upheavals [that] have formed our planet over thousands of millions of years…” begins the ProGEO mission statement. It concludes with the organization’s raison d’être: “The record preserved in the rocks and landscape is unique, and much of it is surprisingly fragile ... what is lost can never be recovered, and therefore, there is an urgent need to understand and protect what remains of this, our common heritage.”

China has seen a rapid growth in interest and demand for geoheritage protection, and has embraced the international initiatives to develop the geopark concept. China set up 11 National Geoparks for the first time in the year 2000, under the guidance of the UNESCO Earth Science Division, and hence has become one of the pioneers in this aspect. During the period 2000–2011 a total of 27 Global Geoparks and 140 National Geoparks have been established in China. 79 other parks have obtained the qualifications to become National Geoparks. At present there are 41 UNESCO Global Geoparks, more than 200 (219 as of October 2019) National level and nearly 400 Provincial level Geoparks in China. Chinese geoparks have been divided into eight types, which covered different geological settings and landscapes. These geoparks have been serving local community-based purposes of geoconservation, popularization, earth science education, socio-economic
and cultural development of the region. More than 500 million tourists each year visit these Geoparks in the country generating an average annual income of 26 million USD from each of Chinese Geopark. Besides, these geoparks have become important avenues of nature education.

5.0 DEVELOPMENT OF INDIAN GEOPARK NETWORK

The geology of India is very diverse in terms of various natural parameters including the ages of rocks, rock types, physiographic features, fossils, landforms etc., having a great scientific value and aesthetic appeal. Different regions of India contain rocks belonging to different geologic periods, dating as far back as the Eoarchean Era (4600 mya – 3600 mya). Owing to such wide geodiversity, India has a huge potential of unique geosites of very high geoheritage value. Geological Survey of India (GSI) has the mandate and bounden duty/ responsibility to identify, delineate spectacular geoheritage sites with rare scientific values and to popularise geosciences amongst the students and public in India. Based on their geoscientific significance and aesthetic appeal the GSI, until 2014, has declared a total of 32 sites as National Geological Monuments / National Geoheritage Sites (Wadhawan, 2020). Unfortunately, majority of these sites are in a dilapidated condition as there is no law to protect them, unlike for the protection of the Archaeological sites and biodiversity in India.

Nevertheless, in absence of legal protection, such rare geodiversity is getting vandalised and require urgent conservation measures. On the contrary, in many of the developed and developing countries, there is a law to protect the geoheritage sites, because of which UNESCO has recognized 161 Global Geoparks from 44 countries. In spite of having great geological diversity and potential there is not even a single geopark established in our country as there is no legislation to protect the geoheritage sites. The efforts of the Indian geo-community for more than the last two decades have not been successful in getting the Geoheritage Protection Act duly resolved by the Government of India.

Protecting and conserving such geological sites of international significance is our international scientific responsibility. It requires a long-term commitment and legislative measure such as enacting a prohibitory law with strongest deterrent rules for strict enforcement by the responsible authorities for geoconservation, protection and maintenance these geosites.

In India, there is sole example of a palaeontological/fossil site in Gujarat protected under the law as declared by Government of Gujarat- 6th December 1999. It protects the unique dinosaur fossil site discovered by Geological Survey of India in 1981, that hosts both graveyards and hatcheries of 67 million years old sauropods and theropod dinosaurs in a single local locality at Raiyoli in Mahisagar (erstwhile Kheda) District) in Gujarat. This internationally acclaimed Dinosaur Fossils Site (spread over an area of 54 hectares) is declared, as "Prohibited Site for illegal digging, sale and theft
of dinosaur fossils under the section 33(5)(2) of Bombay Police Act 1951. Plundering the fossil locality is now punishable under section 131 of Bombay Police Act.

Presently this National Dinosaur Fossil Park, Raiyoli is importantly attached with a big state-of-art Field Museum with 11 Galleries maintained by Government of Gujarat and currently under further expansion.

In addition to commemorating notable geologic landscapes, features and events, a vital function of such parks is to promote geotourism and provide credible means of livelihood for sustainable growth of the local communities. Therefore, there an urgent need to establish a ‘National Geoheritage Authority’ immediately to take proper conservation measures of geoheritage sites of India in consultation with State Governments and scientific experts.

An ‘Indian Geopark Network (IGN)’ should come up and collaborate with International geopark networks and help and guide governments to develop geoparks in a coordinated manner following UNESCO guidelines so as in the next step these geoparks get UNESCO recognition and enhance inflow of geotourists in India. IGN may be a governmental initiative or a government-private-scientific association collaborative effort. Private partnerships may also be explored in the development of geoparks.

“We and the Earth share our common heritage. We and governments are but the custodians of this heritage” - JM Gray

BIBLIOGRAPHY / SELECTED REFERENCES


Vision document prepared by:
Dr. Sudesh K. Wadhawan, Dr. Satish Tripathi, Prof. Naresh C. Pant, Prof. C.P. Rajendran, Prof. DRS Reddy, and Prof. Vivek S. Kale