6.0 CONCLUSION

After detailed research work carried out by researcher, researcher came to the conclusion as under.

It is clear that climate change has started negatively affecting a wide variety of organisms world-wide. Climate change is one of the greatest environmental, social and economic threats facing the planet. There is now unequivocal evidence that the build-up of Greenhouse Gases (GHGs) in the atmosphere is mainly due to large-scale fossil fuel consumption and deforestation over the last century. The trends of higher surface temperatures, shifting climate patterns and an overall destabilization of the global climatic system are all pointing in the direction of a ‘tipping point’- a point in the climate graph beyond which entire ecosystems catapult into a different unpredictable state, one which we might not be able to put right. The increase in the greenhouse gases is leading to climate change at a faster rate and impacts the people and ecosystems. Every change in the ecosystem process works on the principle of Newton’s law of motion (Every action has an equal and opposite reaction) which may be damaging or complimentary. Even a small change in the climate can lead to the extinction of some vulnerable and sensitive species. Climate change results in the impact on the biodiversity like change in their distribution pattern, migration of species, invasion of invasive species, change in the phonological behaviours like breeding period, migration time etc, increase in the forest fires and pest attacks. To maintain the balance of ecosystem, interaction between the plants, animals and biodiversity needs to be understood, hence promoting its conservation and protection by designating the hotspots as biosphere reserves, increasing afforestation, deforestation and agroforestry practices. Biodiversity-based adaption and mitigation strategies will enhance the resilience of ecosystems and prevent damage to human and natural ecosystems\(^1\).

According to the Intergovernmental Panel on Climate Change (IPCC), atmospheric greenhouse gas concentrations are higher today than at any point in history and multiple evidence suggests that this is anthropogenic (man-made) and not a result of natural mechanisms. Historically the nations representing just 25% of the global population have emitted 83% of the world’s carbon dioxide (CO2) emissions. But today, as developing nations experience increasingly rapid economic and population growth, they are on a track to quickly become the major emitters of the future. 2010 has been a year of warnings, not just from the scientific community but from nature as well. Heat waves in Russia ravaged lives and economy alike and the worst ever floods in Pakistan decimated hundreds, displaced millions and required war footing measures to fight back. Significantly high frequency of such tragic events are adversely impacting not just humans, but also the vast biodiversity thereby placing entire ecosystems as risk.

Extinctions have started, and many organisms are being pushed closer to extinction or local extermination as a direct or indirect result of climate change. Since there is a problem that has been created by humans, it behooves us to solve it. It is morally reprehensible if we do not. According to Prof. E.O.Wilson, “The loss of species is the folly our descendants are least likely to forgive us.” So for the sake of posterity and for the very future of our planet’s biodiversity, lets us curb greenhouse gas emission and mitigate the threat of climate change. Climate change is increasing the pressure on the dwindling biodiversity of the Earth. In 2004, the conference of the parties to the Convention on Biological Diversity (CBD) requested all parties to “integrate climate change adaptation measures in protected area planning, management strategies, and in the design of protected area systems. The problems associated with tackling climate change are essentially global in both their causes and effects, respecting no national boundaries. As such, they require a significant element of global cooperation if they are to be tackled properly. There were difficulties in achieving this international cooperation in the context of nation-states driven by self-

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4CBD Decision VII/28, para 1.4.5
interest has been evident in all of the negations on Kyoto implementation since 1997. However, to some extent this is now a matter of history. By the end of 2007, attention had definitively shifted to the development of successor instrument to the Kyoto Protocol for the period after 2012.

The problems in climate change regime design do not lie only in the instruments of international law that have been developed to address them. The shortcoming of national and regional measures have been equally and perhaps even more evident. Progress at the international level may nevertheless eventually achieve agreement on how the post-Kyoto principles can be designed so that the more intensified national and regional efforts are harmonized and become much more effective in achieving climate change mitigation.

The past Decade shows beyond a shadow of doubt that a consensus now exists behind the central role of market mechanisms and legal frameworks (International and Regional) for tackling climate change. Currently, this consensus is strongest in the European Union, but it is also evident in carrying degrees in other parts of the world.

In the next few years the potential for linking these regional approaches will become apparent.

The biological diversity available on the earth plays an important role in the life of the human being. The extraction of these biological diversities without in a proper way affects the ecological system of the world and also cause for the reduction of biological diversity from the earth. Access with respect to biological resources has today become increasingly synonymous with trade. The world’s crops, cures and cosmetics are derived from these resources and the knowledge associated with them. Globally the interdependence of countries with varying biological resources and therefore the need for access is taken as a given. But nationally, given the fact that bio-trade seems to dominate and both local communities and in situ conservation have not proportionately benefited, there is no consensus on whether access to biological resources and people’s knowledge should at all be allowed by governments for corporations. To conserve the biological diversity the international community passed and international Convention on Biological Diversity. The CBD provides for the

\[\text{Supranote 1}\]
Conservation of biological diversity, sustainable use of its components and the fair and equitable sharing of benefits derived from the utilization of genetic resources.

Conversely, in developing climate change law, we must not forget the need to protect and enhance biodiversity. The Biodiversity Act has been a much needed legislation on the point. However, there are several concerns over its provisions that need to be addresses in the best interest of all concerned. The first such concern relates to the unreasonable classification done between foreign nationals and residents and Indians while granting access to biological resources. It is very absurd to believe that the threat to biodiversity and resources of India is generated only by the foreign entities. Indian actors can be as much as threat to the resources as any outsider. Therefore, Section 3 must be amended to apply it uniformly to residents, and non-residents alike. Special provisions for certain Indian practitioners can be made by extending the exemptions if so desirable, but such direct immunity should not be granted. An appropriate legal strategy needs to be structured in order to deal with climate change problem and the same may prove to be a key assignment for the legal fraternity in years to come. The role of the judiciary is particularly important in interpreting the existing laws for formulating a new legal approach in the backdrop of growing impact of greenhouse gas emissions, and the ever increasing economic activities affecting every facet of human productivity, daily life and ongoing global climate change negotiations. The problems associated with tackling climate change are essentially global in their effects if not necessarily in their origins, and they respect no national boundaries. As such, they require a significant element of global co-operation if they are to be properly tackled. In spite of a growing consensus among scientists and widening public support for action, the principal instrument for change, the Kyoto Protocol, had run into serious difficulties by mid-2001. This resulted in uncertainty about the future legal and regulatory framework that the energy business will have to work with.
6.1 SUGGESTIONS

On the bases of research work and conclusion, researcher suggests following Suggestion:-

- Moreover, the legislation must be made clear on the point whether biological resources being talked about are the ones only restricted to *in situ* conservation or any resource found in India. Also, the anomaly with regard to the patent application on publication can be removed, in line with the concept of ‘grace period’ in the developed nations, as pointed out earlier. For better awareness about the provisions and substance of the Act needs to be make in order to avoid the misuse, or even minimal use of the positive enactment.

- Conservation management plans should be revised to take account of the impacts of climate change in particular incorporating consideration of adaptation measures as outlined above and the retention or further capture of carbon within habitats where possible.

- Vigorous action should be taken to safeguard Protected Areas and other high-quality wildlife sites from destruction and damage such as built development, using the existing planning policy framework and wildlife legislation to full advantage to achieve this.

- Opportunities should be actively sought to create buffers of semi-natural habitat around protected Areas and other high-quality wildlife sites to protect them from external influences such as pesticide and herbicide drift, and to make sites more welcoming for species following chance and long distance dispersal. This could be achieved through targeted site acquisition, management agreements and encouraging take up of agri-environment scheme options by other land managers.

- A more strategic approach to site protection should be developed through Local Biodiversity Action plans, partnership arrangements with other conservation land managers, including development of local conservation forums, outreach programmes, and countryside management schemes.
• Enhancing local variation within sites and habitats can be achieved in the following ways:
  o Remove or fragment commercial forestry in the uplands and restore semi-natural habitats, to allow vulnerable species to disperse to higher ground.
  o Manage Vegetation to give more varied structure (For example, a range of grassland heights, or varied age structure of the heather canopy on heaths is a way of increasing variability). This must be done with care and with the scale of patch size in mind, to ensure that disturbance created by management for varied structure does not inadvertently increase fragmentation of habitat.
  o Design and manage civil engineering structures, such as cuttings and embankments, or restore quarries, to provide added landforms with a range of slope and aspects that will increase microclimatic variability.
  o Ensure that a diversity of regimes are maintained, despite dry summers, by carefully regulating extractions and water flows where possible and increasing water storage within and between sites.

• Substantial emphasis should be placed on co-operative working between land managers and others to encourage the planning and establishment of ecological network through the following steps:
  o Secure protected Area by putting in place necessary conservation management actions and seek recognition and management for other high-quality priority habitat areas in the landscape. These areas will form the core of an ecological network, from which wildlife can spread.
  o Identify areas that are most favourable for habitat creation or restoration through analysis of land ownership, land use, soils, hydrology and physical features in the landscape taking account of all ecological, social and economic factors. This would be most effectively done at the regional scale to provide the right strategic overview and economies of scale rather than as a separate exercise for each LBAP.
  o The multi-dimensionality of climate impacts makes it vital that India adopts a completely new approach that is interdisciplinary in its character, breaks traditional ministerial boundaries, and learns rapidly from successes and
failures. Unless the country is able to do these things, our goals and aspirations for ‘climate-proof’ development will not be attained.

- Practical ways to link climate change and biodiversity
  - Focusing on national programmes may get better results. A small number of practical projects on both biodiversity and climate change are already getting off the ground in several countries. One example is the proposed Greater Addo National Park in South Africa. The park covers a large area with a range of elevations, microclimates and ecosystems. By protecting such a variety of diverse habitats, the park’s planners have factored in the effects of climate change, by ensuring that species can migrate to another safe habitat if climate change adversely affects their present one. In Vietnam, a project to rehabilitate 12,000 hectares of mangrove forest along the northern coast is creating both a large carbon reservoir and a valuable habitat. Local communities benefit, too, from new fisheries for crabs, shrimp and molluscs, while the mangroves offer vital protection from tropical storms for villages and ecosystems alike.  
  - Energy production is another area with a strong potential for reducing human impacts on climate change while protecting biodiversity. Currently, about 80 per cent of the global carbon dioxide emissions arising from human activities originate from the generation and use of energy from fossil fuels. Renewable energy is widely seen as a desirable alternative. Indeed, in countries where people use wood for fuel, promoting fuel-efficient stoves and biogas can significantly reduce pressure on forests, and thus conserve carbon.

But some projects that promote renewable energy also have an impact on biodiversity. Large-scale hydropower schemes, for example, can trigger losses of terrestrial and aquatic biodiversity, inhibit fish migration and lead to mercury contamination. They

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can also be net emitters of greenhouse gases, as submerged soils and vegetation decay, and lead to the release of carbon dioxide and methane.

Similarly, biodiversity conservation should be factored in to the design and location of wind turbines. Birds, including several threatened species, have been killed in wind turbines, but simple design modifications can limit these mortalities. Such risks make it important to take biodiversity issues into account when formulating policies on alternative energy sources.

- Looking ahead

There remain many unanswered questions about the relationship between biodiversity and climate change. One is the amount of carbon that forests actually draw down and release – something signatories to the UNFCCC need to be able to estimate. To be accurate, these calculations must take into account factors such as pest infestations, forest fires and logging which can lead to carbon release, yet scientists have not worked out precisely how that should be done.

A second question relates to the joint governance of biodiversity and climate change issues. In addition to the conventions on biodiversity and climate change, UN member states are party to many other environmental agreements, including treaties to protect migratory species, regulate trade in endangered species, phase out organic pollutants, slow down the pace of desertification and restore the ozone layer.

So if climate change and biodiversity are ever to be considered in tandem, there must first be a much wider debate on how countries can best fulfil all their environmental obligations. This debate has particular relevance for developing countries – many of which have neither the required expertise, nor the necessary finance, to implement these highly complex international agreements.

In recent years, several alternative models for international environmental governance have been suggested. One possible reform at the national level would be to encourage countries to set up a single body to deal with their obligations under all international environmental agreements. At present, many countries have a separate national
organisation handling each concern that has little contact with each other, despite the fact that they may report to the same ministry.

Another area for national-level reform could be in the area of disaster management. For example, countries that are drawing up plans to deal with climate-induced disasters could identify not just vulnerable human settlements, but also the local ecosystems on which they depend. An important element of this highly integrated approach is that it would protect ecosystems not just as economic mainstays of local peoples, but also as havens of biodiversity.

Overall, all environmental issues concern natural systems that are linked in myriad ways. Before long, research and policymaking – both at the national and international level – will need to reflect this interconnectedness.