

**Rabindranath Barthakur Memorial Lecture**

**Guwahati, November 7, 2014**

**Confronting the Ecological Crisis :**

**The Imperative of Cooperation among South Asian Countries**

**Shyam Saran**

I deem it a honour to have been invited to deliver the annual lecture in memory of Shri Rabindranath Barthakur, a much respected tea-planter of the old school, a great lover of the outdoors and, in his later years, a passionate champion of the rich bio-diversity and ecological treasures of Assam and of India. His love of Nature and his belief in the preservation of Nature in order to maintain the life-sustaining systems that nurture Planet Earth is reflected in the mini-forest he created at his home in Guwahati with local endemic species and some rare and exotic plants. His children and grand children have inherited his love of Nature and I wish to compliment Ranjit Barthakur, his son, for paying homage to his illustrious father by earning a name for himself as a naturalist and a conservationist.

I also wish to offer my very warm felicitations to those who have been honored this evening with the Balipara Foundation Awards 2014. They have been recognized for their significant contributions to the cause of conservation and for helping to preserve our country's rich natural wealth. I have no doubt that the award will inspire them to make even greater effort in the future.

Finally I wish to complement the Balipara Foundation for sponsoring a most interesting event on Asian Elephants in the Wild, bringing together experts from across the World to deliberate on these magnificent animals, whose habitat is shrinking under the pressure of human population and disappearing forests, we must find ways to ensure the survival and health of these species which are not only part of our rich wildlife but also associated with our religious and cultural heritage.

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) has confirmed with scientific evidence what has been evident for several years, that global temperatures are on a secular upward trend; that this warming trend is causally related to the increasing accumulation of greenhouse gases, in particular CO<sub>2</sub> in the earth's atmosphere; that this in turn is the result of the increasing use and burning of carbon-based fossil fuels, in particular, coal, oil and gas in the course of rapid industrialization; and that unless the increase in global temperature is limited to 2degrees centigrade or less by mid-century or thereabouts, there is a serious risk of irreversible alteration in the life-sustaining and fragile ecological balance of our planet with catastrophic consequences. Even if, by some miracle, global emissions of greenhouse gases fell to zero, the impact of Climate Change would be felt for an extended period of time since these gases stay in the atmosphere for a hundred years or more. This implies that even while the world makes determined efforts to reduce emissions, there needs to be an immediate and parallel focus on adaptation to the consequences of Climate Change. Thus the challenge of Climate Change takes on a dual character:

mitigation of emissions on the one hand and adaptation to Climate Change that is already taking place on the other.

It should come as no surprise that Climate Change poses a more serious risk to developing countries than to developed countries. Most developed countries are now in the post-industrial phase where the component of services in their GDP is replacing manufacturing. Furthermore, the possession of substantial financial and technological resources means that they have greater capacity and capability to adopt measures for increasing energy efficiency and for enhanced use of renewable and clean sources of energy than are developing countries. Possessing larger resources they are also more capable of adapting to the consequences of Climate Change, such as increased frequency of extreme climatic events and Climate-induced natural disasters than are developing countries. This significant asymmetry is further exacerbated by the fact that in developing countries the impacts of Climate Change tend to intensify all the stresses and strains that are inevitably generated in the course of rapid economic and social development. This includes unplanned urbanization, water stress, deforestation, soil erosion and environmental degradation in general. In developing countries, therefore, Climate Change action cannot be separated from the developmental process. Even if developing countries formulate sustainable development strategies, their efforts would be in vain unless the world as a whole is able to make a strategic and accelerated shift away from an entrenched pattern of economic activity based on fossil fuels to one that is progressively based on renewables such as solar and wind energy and clean energy such as safe nuclear energy. Global warming is a trans-national, cross-cutting challenge which demands mitigation of emissions world-wide . The consequences of global warming, however, are

usually manifest regionally and locally, depending upon geographical location, terrain features, demographic profile and the overall level of development. Our consideration of South Asia's ecological challenge must take place against the above backdrop.

We often say that despite its current political division into several independent and sovereign states, South Asia is a single geo-political and economically complementary region with a shared history and deep cultural affinity. What is not often appreciated is that the region also constitutes a distinct, clearly defined and densely inter-connected ecological space. If there are good political and economic reasons for South Asian countries to engage in expanded regional cooperation, the ecological reasons are even more compelling. Our countries are already experiencing an acute ecological crisis as a result of expanding populations, resource depletion and widespread environmental degradation. The stresses and strains spawned by rapid economic development and social transformation are being made even more acute by the growing impact of Climate Change. Natural disasters related to both environmental degradation and Climate Change are increasing in frequency and intensity, making already weak populations even more vulnerable. What should be noted is that national boundaries cannot insulate any country in our region from these impacts, irrespective of where the events originate. If deforestation takes place in the upper reaches of our mountain ranges, the rivers which flow through several countries will be affected through higher siltation and increased run-off. The melting of the glaciers across the Himalayan range, which is shared by several South Asian countries, would affect the entire densely populated Indo-Gangetic plain and not only the mountain countries. Recent Climate Change induced

natural disasters, such as the severe cyclonic weather affecting the Eastern coast of India or the unprecedented floods which ravaged Jammu and Kashmir have impacts which respect no national boundaries. Quite often such natural disasters are followed by the spread of water borne diseases which could spread across political boundaries. What this points to is the urgent need for a South Asian perspective on our region's ecological crisis, which is the result of both environmental degradation and the impact of Climate Change and jointly find solutions to these shared challenges. It is only through an awareness of our interconnected destinies would we be able to generate collaborative and trans-national responses.

Our success in this endeavour would not only serve the vital interest of 1.5 billion people who call South Asia their common home; it would also be an example to the world which has so far been unable to set aside a competitive mind-set in addressing what is clearly an elemental threat to human survival.

Through the mechanism of the South Asia Association for Regional Cooperation (SAARC), South Asian countries have recognized the ecological challenge the region confronts, including the challenge of global Climate Change. Thus in the Common SAARC Position presented to the 16<sup>th</sup> Conference of Parties to the UN Framework Convention on Climate Change (UNFCCC), they stated:

“The low-lying areas, long coastlines, island regions, flood plains, deserts, wetlands, mountain ranges etc of South Asia face serious threats from climatic variations including sea levels rise. Likewise, the Hindukush, Karakoram and Himalayan regions face catastrophic consequences of accelerated glacier melt, including Glacial Lake Outburst Floods (GLOF). Similarly the region is threatened

by other climate change related phenomena such as increased variability of monsoons and extreme weather events, e.g. floods, droughts cyclones and heat/cold waves. In the long run, this would also negatively impact water security for the region.”

The SAARC countries also adopted a SAARC Action Plan on Climate Change at the Thimphu Summit held in April 2010 which lists a number of measures to be taken to deal with the challenge of Climate Change. These have yet to be translated into collaborative action on the ground.

What would be the main elements of a regional strategy and which are the critical areas of our shared ecology where we need to deploy urgent and effective collaborative regional initiatives? For the purposes of this lecture I wish to focus on the following:

1. Mapping the Monsoons;
2. Safeguarding the Fragile Ecology of the Himalayas;
3. The Realm of the Seas and the Coastal Plains; and
4. Preserving the Treasures of Bio-diversity.

### **Mapping the Monsoons**

The Monsoons have sustained the lives of the peoples of South Asia for millennia. They bring rain to the fields on which our farmers grow our food. They fill our rivers, lakes and ponds with water on which all life depends. They have been, through countless centuries and even now, indispensable to the livelihood of hundreds of millions of our citizens . Without the monsoons there would be no

water or food security for our people. Small wonder, therefore, that much of our shared culture, our art and literature remain permeated with the romance of the monsoons. Whatever other differences there may be among the countries of South Asia, there is none which would remain unaffected by any significant and extended variation in the monsoon rainfall patterns.

There is now sufficient evidence to show that the monsoons are being affected by Climate Change. There is greater frequency of extreme climatic events, such as prolonged drought in some areas and high intensity rainfall in others. The degree of unpredictability has increased and weather forecasting has become more difficult and complex. There appears to be an emerging pattern, not yet confirmed through rigorous research, that precipitation on an average has not changed much in recent years but that there is more intense rainfall over shorter time periods. This is leading to more frequent flash floods and storm surges. In the fragile mountain regions to the north, this is causing more frequent landslides and avalanches. There may also be a gradual shift in the distribution of rainfall across our region. Formerly dry areas have begun to receive greater precipitation in recent years leading to disruptions in age old patterns of living and farming. These alterations in the patterns of monsoon winds are not well understood. Each country has a slice of the total picture but the overall pattern is not clear to any of us. This can only be remedied through a joint research project, spread over several years, studying the monsoons over the entire region, collecting data throughout the sub-continent and developing more sophisticated multi-variable climate models to discern any changes in weather patterns. This regional initiative will need to be linked with work being done in other countries and the World Meteorological Organisation (WMO). Such joint scientific research must be

accompanied by an even more complex study of the impact any change in the monsoon patterns would bring to the social and economic fabric of our countries and what are the ways in which we need to adapt to these changes. Given how critical the monsoons are to our survival, it is imperative that we take a regional initiative for Mapping the Monsoons. With its larger financial, scientific and technical resources, India will have to play a leading role in this endeavour.

### **Safeguarding the Fragile Ecology of the Himalayas**

South Asia is home to the world's highest mountains, the Himalayas, which are sometimes described as the "Third Pole" after the North and the South Poles respectively because of the massive quantities of permanent ice which lie embedded in its glaciers. Others describe the Himalayas as Asia's "Water Tower" because so many of the continent's perennial rivers are born from these glaciers. These snow-fed rivers have, over millennia, sustained rich civilizations along their courses, as they wend their way to the oceans. Thus the livelihood, in fact the very survival of these millennial civilizations are dependent upon the health and sustenance of these glaciers. In South Asia, the entire Indo-Gangetic plain depends upon the perennial river flows that arise in the Himalayas. There is evidence that several of these glaciers are in stubborn retreat both due to environmental degradation but also due to global warming. The melting of these glaciers would initially lead to increase run off in the river systems, but eventually the disappearance of the glaciers would mean that perennial rivers may well become seasonal flows dependent upon the monsoons, which are themselves becoming more unpredictable as we have seen.

As snows melt in the high mountains, glacial lakes are being formed which sometimes break their banks and flood areas down stream. There have already been several cases of storm surges and flash floods due to rapid snow melt in several parts of the Himalayas.

The Himalayas represent a very unique ecology. There is a very wide variation in the flora and fauna in the Himalayan zone because of the very steep ascent in the terrain in a very short distance. One moves from the sub-tropical to the temperate to icy desert in a very short spatial distance and this has spawned a very rich and rare bio-diversity which is a veritable ecological treasure house. This is already being impacted by warming temperatures and melting glaciers as the already narrow habitat of the existing flora and fauna is being further eroded. There is very little reliable data on the health of the thousands of glaciers that make up the Himalayan "Pole". Much of our knowledge is anecdotal. The impact of glacial melt on the river flows has hardly been studied nor the behavior pattern of both animal and bird life and of the unique vegetation of the region due to Climate Change. And yet several South Asian countries, including Afghanistan, Pakistan, India, Nepal, Bhutan and Bangladesh will all be deeply impacted from any changes in the fragile ecology of the Himalayas. There are other countries who will be impacted as well, in particular China. It is only a coordinated strategy on the part of South Asia which will yield any results in any interactions with China whether in safeguarding the Himalayas or preserving the health of the glacier-fed rivers on which our common survival depends.

The countries of South Asia need an ongoing collaborative study of the behavior of Himalayan glaciers and the impact on the flow of South Asian rivers. To the

extent that the problem is being exacerbated through environmental degradation there needs to be an agreed code of conduct to help preserve the fragile mountain ecology which we share. These may include norms concerning construction of roads and highways or hydro-electric power projects in the mountain zone. There need to be some regulation over the spreading urban settlements in the zone with little attention paid to waste disposal or sewerage. Unregulated tourism is leading to the spoliation of water bodies and mountain lakes and a growing problem of untreated waste being dumped indiscriminately. The habitat for the rare and often endangered flora and fauna unique to the Himalayas is shrinking and with cross-border initiatives the ecological crisis will only get worse.

In this case as in the proposed initiative on the Monsoons, India must take the lead as it has the most advanced capabilities in the region. It has time series satellite data on the entire Himalayan range which it can share with its neighbours. It needs their cooperation to carry out ground truth surveys in selected parts of the range. What would really make a difference is a joint collaborative project, perhaps in cooperation with UN or other international agencies which have the requisite technical capabilities, to methodically study the glaciers in the Western, Central and Eastern Himalayas, determine if and to what degree melting has been taking place and what impact this is having on river flows and on weather patterns across the region. This must be accompanied by studies on the environmental degradation of the Himalayas and the cooperative measures required to arrest and reverse this trend. As of now we see no interest among the governments of South Asian countries to raise awareness of the

common dangers we face and the imperative need to join hands together to ensure our collective well-being and survival.

In this context, I would like to applaud the work which is being done by the Balipara Foundation on the Eastern Himalayas as also the sustainable development of the Brahmaputra basin. The ecology of North East and Eastern India depends upon the health of these mountains and of the mighty Brahmaputra and its tributaries. It must also be recognized that the ecology of this region spreads across the national boundaries of India, Myanmar, China and Bhutan. It is necessary therefore to deal with this cross-cutting ecological challenge through cooperation among stakeholder countries. The Balipara Foundation is well-placed to contribute to this.

### **The Realm of the Seas and the Coastal Plains**

The oceans which embrace our sub-continent and the associated islands and island chains, play a critical role in sustaining coastal, island as well as inland communities. The coastal plains constitute rich crop growing areas, while fishing is a major source of food and livelihood. The oceans impact on weather patterns and weather patterns in turn affect the oceans and marine life. It is increasingly evident that Climate Change is leading to impacts which threaten all communities which draw their sustenance from the oceans and the coastal plains and this is true across our region. Both India and Bangladesh have extensive low-lying coastal plains which support large populations. Both suffer from increasing coastal erosion and the increasing salinity of soil due to salt water ingress. This takes place as a result of sudden storm surges but also from longer term rising sea levels. The rise in sea levels take place as a result of thermal expansion, or the

increase in the temperature of water due to global warming as well as due to the melting of large bodies of ice from permafrost areas, in particular, the Antarctica. A rise in sea levels would not only inundate low lying coastal plains throughout South Asia but also threaten the island countries of Sri Lanka and the Maldives. Maldives is specially vulnerable as the numerous atolls which constitute the country are barely above sea level. Sea level rise may trigger large scale population transfers both intra-country as well as between countries as affected communities seek to move to higher ground. Such population movements may have serious economic and social consequences and sharpen political tensions. We do not fully understand how Climate Change may affect ocean currents and marine chemistry, which in turn will inevitably impact on the rich flora and fauna in the seas around us. The impact on fishery resources may be significant and may exacerbate the declining fish populations due to over-exploitations and marine pollution. There is an urgent need for the countries of South Asia to undertake a major study of how Climate Change will impact on our shared marine ecology and the measures we need to jointly undertake to adapt to the changed marine environment. There is no doubt that irrespective of the Climate Change phenomenon, there are measures that we could adopt to regulate fishing in our shared ocean space, prevent marine pollution and put marine conservation high agenda for regional cooperation. As pointed out earlier failure to control such degradation of the marine environment will inevitably exacerbate the impact of Climate Change.

Of particular urgency is the establishment of a sound regional capability to enable early warning of impending maritime emergencies such as the tsunami or cyclones. This must be accompanied by an efficient disaster response and

management capability. India has set up a network of satellite linked Automatic Weather Stations (AWS) along its coasts which provide real-time weather data which is extremely useful for fishing communities and coastal populations. The network also enables early warning on extreme climatic events, so that populations can be moved to safer locations well in time, thus saving lives and property. The efficacy of such a network was apparent during the recent cyclone, Hud, which hit the eastern coast of India. The network can be easily extended to cover the entire coastline of the Indian sub-continent.

### **Preserving the Treasures of Bio-diversity**

South Asia is one of the most bio-diverse regions of our planet, falling between two of the eight bio-geographical realms, the Palaearctic and the Indo-Malayan. The region covers 19 of the 235 global eco-regions, a science based global ranking of the planet's outstanding terrestrial, fresh water and marine habitats. Three of the twenty five most significant bio-diversity "hotspots" of the world happen to be located in our region. Forests make up nearly 17% of our land area, constituting an extensive and valuable carbon sink for the globe as a whole. These are invaluable assets and a shared treasure for the countries of the region but they lie astride most political boundaries. They cannot be sustained and allowed to grow and flourish unless the countries of South Asia recognize the inescapable need for nurturing this shared ecological space without which the life sustaining systems which bind our countries together may break down irretrievably.

Once it is accepted that sustaining South Asia's rich bio-diversity is as integral to its productive capacity and economic well being as are the Monsoons, the logic of

regional cooperation in this field becomes compelling. We need a regional plan for the preservation of regional bio-diversity. One should begin with undertaking a region-wide inventory of bio-diversity resources. We should also establish a comprehensive gene bank. The wealth represented by the thousand of varieties of medical plants and herbs is presently being lost to outsiders because of lack of information and shared knowledge. It is only through a well structured regional initiative that such bio-diversity loss can be prevented and the full benefit from the use of these resources can be derived by people of the region itself.

Some of the world's endangered species can only be found in South Asia. Tigers are one such class of animals. Rhinos are another. Their habitat ranges across national boundaries. These habitats are shrinking under the pressure of rising populations and expanding economic and industrial activity. Climate Change will also impact on these habitats. For example, the retreat of glaciers may shrink the habitat for the snow leopard in the Himalayan zone. The countries of South Asia need to create cross border bio-diversity zones, to protect endemic flora and fauna and ensure the survival of endangered species.

### **South Asia and the Global Climate Change Regime**

The 16<sup>th</sup> SAARC Summit convened at Thimphu in 2010 adopted ecological sustainability as its theme in a declaration entitled, "Towards a Green and Happy South Asia". This enabled the coordination of strategies in multilateral for a for addressing the challenge of Global Climate Change. A significant step in this direction was the Common SAARC Position which was presented at the 16<sup>th</sup> Conference of Parties to the UN framework Convention on Climate Change (UNFCCC) in Cancun in 2010. The Common Position called upon developed

countries to commit themselves to undertaking deep and legally binding, reductions in their emissions of greenhouse gases within the time frame recommended by the IPCC. It emphasized the importance of mobilizing new, adequate and additional resources, which are easily accessible, to address the full incremental cost of tackling Climate Change under the authority of the Conference of Parties (COP). The SAARC countries also stated that the adaptation needs of developing countries should be met by the developed countries through an allocation of 1.5% of their GDP to be paid into the Adaptation Fund of the UNFCCC.

SAARC members identified a number of important regional initiatives as well:

1. To work together to ensure access to adaptation finance for all developing countries which are vulnerable to the adverse effects of Climate Change, with special reference to Least Developed Countries (LDC) and Small Island Developing States (SIDS);
2. Establish an International Centre for Adaptation Research and Training in the SAARC region as a platform for sharing experience and best practices in adaptation;
3. Provide adequate and full support for the conservation of forests as an integral part of the Reducing Emissions from Deforestation and Forest Degradation or the REDD Plus mechanism under the UNFCCC; and

4. Set up Technology Innovation Centres and Networks in the South Asian region and across the globe to promote the development and transfer of technologies addressing both adaptation and mitigation issues.

Distinguished guests, ladies and gentlemen, the world will make another effort to conclude a global Climate Change regime at the Climate Summit scheduled to be held in Paris in 2015. As countries that are certainly going to be impacted most by the consequences of continuing Climate Change, it is imperative that South Asia put across their perspective on this issue firmly and persuasively. However, the most persuasive argument that we could put across would be the collaborative initiatives that we ourselves are able to undertake, which not only promote action on Climate Change but also, at the same time, contribute to our collective energy security.

It is my earnest hope that our leaders can demonstrate the wisdom and statesmanship that is required to deliver such initiatives.

Thank you for your attention.