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## How Did Bhutan Become the First Carbon Negative Country in the World

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### ABSTRACT

Over the forty-five years a small little kingdom nation in the distant Himalayas quietly became the first carbon negative country. How did it happen? Bhutan a small country which is barely visible in the map was recently awarded the title for being the first carbon negative country in the world which the country has worked hard for over the years. 60 percent of the country is permanently protected area and the country has made sure and has done everything to achieve it and maintain it. In Bhutan conservation for the environment has become a duty for every citizen of the country. Bhutanese people made a Guinness World Record by setting the title for planted most trees in one hour in the country's capital Thimphu on June 2<sup>nd</sup> which is also celebrated as Social forestry day in the country. The country also honoured the birth of their sixth king by planting trees. Today this small has become the hope and example for many other countries in term of ecosystem management and environment preservation. In today's contemporary world country like Bhutan becomes a hope of having a better future.

**Keywords:** Bhutan, carbon negative country, environmental conservation, gross national happiness.

“This remote kingdom, a place of ancient monasteries, fluttering prayer flags and staggering natural beauty. Less than 40 years ago, Bhutan opened its borders for the first time. Since then, it has gained an almost mythical status as a real- life Shangri-La, largely for its determined and methodical pursuit of the most elusive of concepts” – national happiness.

Annie Kelly

A small landlocked country Bhutan of south Asia situated in the Eastern Himalayas. It is surrounded by Tibetan region in the north, India on its south, the Sikkim (India) and the Chumbi Valley of Tibet on

the west and state of Arunachal Pradesh in the east and Assam in the south. It only opened its doors for foreign visits in 1974 and allowed TVs in 1999. Bhutan is one among the smallest countries in the world. But its assurance to safeguarding the environment is bigger than most of the countries. The country is very much engrossed with the idea of conservation and preservation of their culture and environment. Ever since Bhutan has opened its door to the world, it has been developing all this year. The first written constitution was adopted in 2008 and since then Bhutan follows the democratic form of government with the king as the head but still giving the people of the nation the rights to choose their leader. Bhutan has been marked as the carbon negative country and it has been following the development philosophy Gross National Happiness (GNH). GNH is a better objective than Gross Domestic Product (GDP) or economic growth. It is necessary that in GNH the individual enjoy the wellbeing in things like culture, governance, community and health, balancing the use of time and coherence with the environment hence yield sustainable development.

GNH is built on four pillars:

- Sustainable Socio-economic Development
- Good Governance
- Environmental Conservation
- Preservation and Promotion of Culture

Comparing Bhutan to other developing counties one can clearly identify a major variance when it comes to prioritizing environmental issues and concerns. Unlike developing countries where gross domestic product is given the most priority and the environment issues are given the least priority in term of security and various policy formation, Bhutan has placed environment conservation and preservation as a centre of attention where all the development in the country and policies made in the country would be formulated considering how intensely or affectively it affects the environment.

There are many reasons to how Bhutan became the first carbon negative country in the world. Some efforts may be small but they have made big impacts on the environment.

Bhutan became a monarchy country in 1905 when the first king of Bhutan was crowned. From 1905 to present day 2017 Bhutan have been ruled by powerful and wise monarch. Forest is very much respected in the country from the time of the first king His majesty Ugyen wangchuk. It is believed that before Buddhism flourished in Bhutan. The inhabitants their practice bonism (worship of non-living things) and it is also believe that the most worshiped element were the tress. This can also be one of many reasons why the forest life sustained all through the years. It is also believing that when British Indian wanted to attack Bhutan the dense forest played a vital role in it. It is believed that the arm force of the British wasn't used to the environment in term of searching for route or surviving in it and because it was a dense forest they kept losing their way and they went back.

If we date back to history Bhutan is also known as Manjoi langkha meaning the land of herbs. Because of the dense forest cover it became a fine place for many herbal plants and flowers. People were actually getting benefited by this resource. Bhutan still uninterrupted uses all these herbal medicine.

## **1. WHAT MADE BHUTAN FIRST CARBON NEGATIVE COUNTRY?**

Now the real question here is what made Bhutan the world's first carbon negative country?

People's attitude and governments support has made a huge difference in the protection and afforestation in Bhutan. Citizens of Bhutan have the knowledge and value concerning the forest life on the other hand the governments come up with various ideas and issues, which would encourage and enforce people to help the government achieve it. Individual effort and governments efforts go hand in hand, where one lacks behind the whole concept of forest protection gets destroyed.

For example: the most popular policy trending in Bhutan is GREEN BHUTAN, which enforces the people to plant more trees. This policy also demands the citizen to plant seven trees after they cut one to retain the strength of the forest life. The organization keeps organizing all sort of forest related shows and workshop to sensitize the issue of global warming and environment preservation. They go to schools and villages to make the people aware of the all the environmental issues and how if it goes serious will harm them. The fact cannot be ignored that mountainous countries like Bhutan have already stated facing problems due to global warming where the large ice caps have started melting, which has resulted in flash flood and bursting of large lakes where many property and life are destroyed.

Citizens have suffered a lot which has concluded in them realizing how important protecting of environment is, individual support is biggest factory in achieving the negative carbon title because government policies concerning the environment is made everywhere in each and every country but the lack interest from the people of the country makes it impossible to achieve it.

Conservation of environment even if it was there from before it was first reintroduced by the fourth king of Bhutan Druk Gaylpo Jigme Singay Wangchuk when he introduced the concept of GNH (Gross National Happiness).

Preservation of the environment is one of the four pillars of GNH concept.

Even in the constitution where it demands that Bhutan should all time preserve sixty percent of its land frontier under tree cover. And looking at today's current situations Bhutan has succeeded in doing so. We cannot conclude on the point that GNH sowed the idea of preservation of environment in Bhutan but we can say that it encouraged the people of the country to move forward towards the issue at the hand. Substantiation of this idea of preservation of environment is very much followed by everyone in Bhutan. Wildlife comprising indefinable snow leopards, vanishing royal Bengal tigers, elephants and elegant black cranes all roam free in the country's five-million-acre network of protected areas and national corridors, which allow these animals to move freely around the country.

'Bhutan for life' was organization made by the government and WWF in July to ensure that country remains environmentally and economically sustainable during the changing times. Any type of aid or resources generated through these initiatives will be used to maintain and manage the country's protected areas and wild-life corridors in time without end. Sustainable economic development in the form of eco-tourism, which has flourished a lot in the country and organic farming, which is encourage and followed in the country by maximum of the famers. These are being allowed in the protected areas making this resourcefulness a real example of how the Bhutanese seek balance.

Bhutan also encourages the ecotourism, which is thriving and growing green initiative. Environment preservation in Bhutan has also been an advantage for many countries. Bhutan provides water for one-fifth of the world's population and her forests help to keep the world's climate change at bay by sinking atmospheric carbon dioxide.

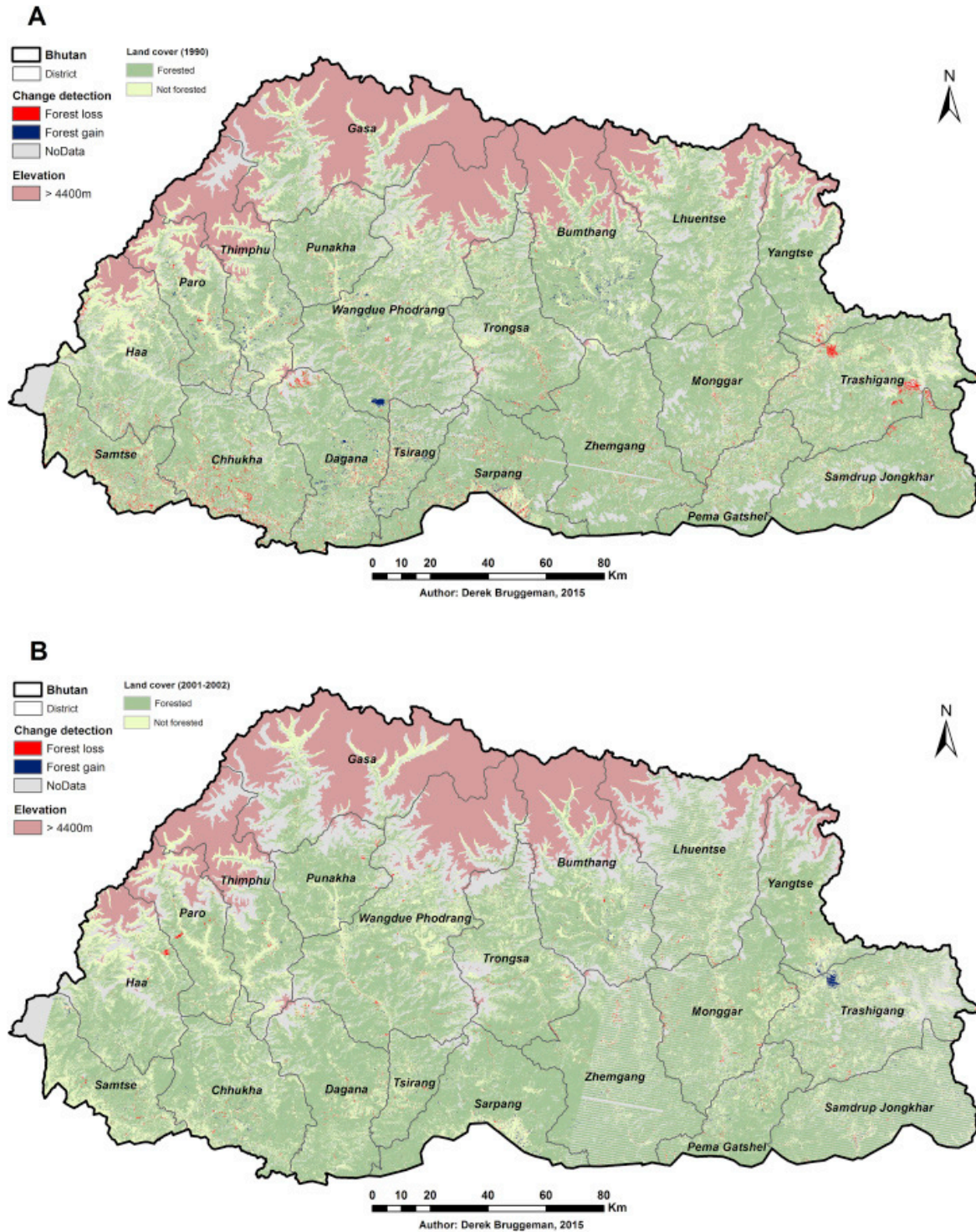
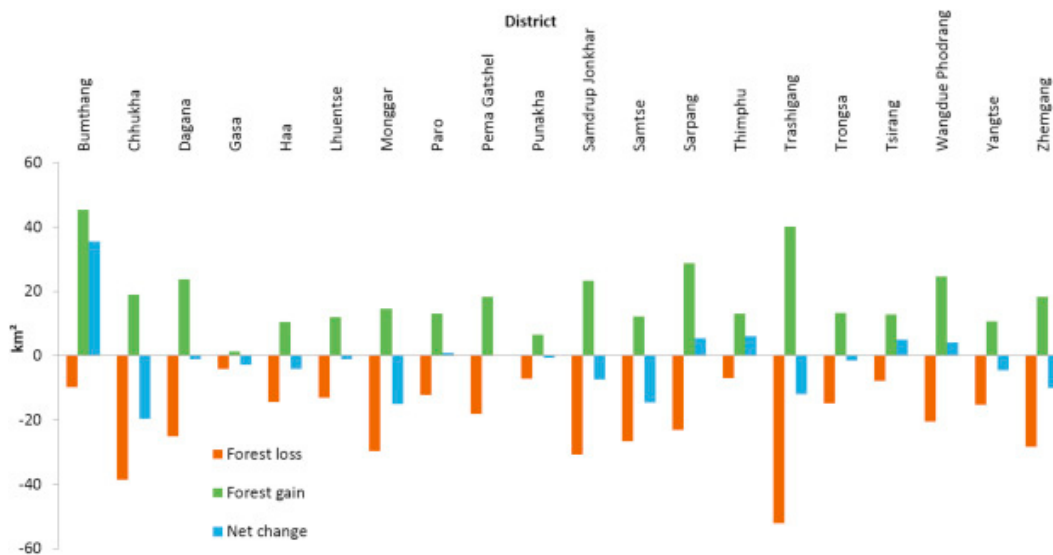


Figure 1: Land Cover – Bhutan from 1990 to 2002



Ecotourism can also be a reason to preservation of environment because that is the biggest economy for the country. As tourism over the years have become a backbone for Bhutan in term of economy and has helped the country develop. As it is a popular source of income, the government has put a lot of effort to protect it. And this has two advantage where it not only protects the country environment but also helps the country develop, hence a form of sustainable development. There are seven national park in Bhutan from which wangchuk centennial national pack in the north side of Bhutan is the biggest tourist attraction.

Recently the royal government of Bhutan and WWF have merged together and have formed a project called home stay programmer (which offers tourists the chance to stay and enjoy in a traditional Bhutanese home, and provides the home owners with an opportunity to benefit from the emerging tourist industry). It has been proven as a very effective thing to stop urban rural migration. The quantum of tourists visiting Bhutan has increased dramatically from 2,850 in 1992 to 7,158 in 1999. By the late 1980s tourist industry contributed over US\$2 million in annual revenue of the country. Eco-tourism helps the country a lot to support it economically so the country makes sure that they follow sustainable development where development of the country and the forest preservation remains balanced. Not only does dance forest cover keeps Bhutan away from many environmental peoples but it helps nation in term of economy too.



**Figure 2: District wise forest change detection**

## **2. POLICIES AND ACT DRAFTED BY THE GOVERNMENT**

- The Constitution also orders that 60% of forest cover be maintained
- The NEC (national environmental commission) was established under the NEPA (The National Environment Protection Act) of 2007 as the supreme decision making organization on complete matters concerning to the environment and its management.
- Environment Assessment Act (2000) ensure that the Govt. should confirm that environmental issues and challenges are fully taken care while formulating, modifying, renewing and implementing any policy, plan or program so that the development or implementation of any kind of rules will not affect the environment.

- If the Projects which do not necessitate development consent may initiate only after getting environmental clearance.
- Mines and Minerals Act of 1995 demands that all minerals should be industrialized or extracted as per agreement with the policies and frame work of the Government of Bhutan and while doing this so they should make sure that there is efficient and sustainable use of resources, safeguard of environment, worker and public health & safety.
- The Biodiversity Act of Bhutan in 2003 apply to all states for conservation and sustainable use of genetic and biochemical resources like wildlife, domesticated and cultivated species of fauna and flora both in-situ and ex-situ conditions.
- All Reserved Forest land belongs to Government must have forest management plans dedicated to the sustainable source of forest products and ecosystem services.
- National forest inventory (NFI) shall be carried out efficiently and modified periodically to enrich awareness about the overall forest resources, ecosystem health and biodiversity across the country and to help in strategic investment and decisions.
- The forest and natural conversation act of 1995 addresses issues concerning the forest life in the country.

### **3. FOREIGN COLLABORATIONS FOR CARBON CREDITS**

A country is allowed to produce certain amount of carbon and if it not fully met it can trade its carbon credits - for Bhutan it is producing clean hydropower energy and industries factories use only electricity and not carbon related energy like coal - therefore Bhutan gets carbon credits, which it trade with other countries and earn money. Dagachhu hydropower is such a project and it is called clean development mechanism under Kyoto protocol. Dagachhu is already selling carbon credits to Asian development bank and earning money. This is also an encouragement for countries to reduce carbon and earn additional revenue as incentive supporting climate change mitigation. This is the one of the global incentives for Bhutan for being carbon negative.

The carbon credit system was an idea that got developed in 20th century, as the citizens became more conscious that human and industrial activities are potentially accountable for global warming and degradation of environment. The notion of the scheme is to empower the government and all those organizations who regulate the total emission of carbon dioxide so that the regulations are being accomplished exactly.

A carbon trade is give and take of credits among nations aimed to minimize the emission of carbon-di-oxide. The carbon trade facilitates countries that have advanced carbon emissions to procure the right to release excess carbon dioxide into the atmosphere from countries having lower annual carbon emissions.

### **4. AGENCIES SERVING BHUTAN**

Carbonyatra (Mumbai, India): Provider of quality carbon credits and offsets from carbon reducing projects in India to energy and carbon intensive companies worldwide.

Evolution Markets Inc. (White Plains, New York): Evolution Markets got expertise in structuring transactions, providing consultation and risk managing advisory services for environmental credit markets including global CO<sub>2</sub>, renewable energy credits and water and nutrient credits.

Carbon Capital Markets (London, United Kingdom): Carbon Capital Markets is a vertically assimilated carbon-credit market expert, providing carbon offsetting for businesses and emissions compliance solutions for voluntarily looking to reduce their carbon footprint.

## **5. ECOLOGICAL AND ENVIRONMENTAL GAIN**

Trees have a very important place in Buddhist region and culture. Recently to mark our love for tree a team of hundred volunteers succeeded in making the world record for planting forty-nine thousand six hundred trees in just one hour. And while celebration the birthday of the new born prince and her majesty the queen, around eight two thousand households in around the nation planted at least one tree while different volunteers planted another twenty-six thousand around the country for a total of one lakh more trees.

Pollution like air pollution and water polluting has reduced a lot through the years as now the country has a clean air to breath and non-contaminated water to drink. Bhutanese administration has developed a partnership with Nissan to provide electric cars to the country. The government wants to turn all the vehicles in the country, which are run by oil to car which will be run by electricity. Most of the forest cover of Bhutan falls under secure and protected areas. There are stringent rules made against hunting, poaching, illegal mining and causing pollution in these areas, where the offender will be penalized with high penalties. The government developed ecological corridors that connect these protected areas to each other. The enrich biodiversity of animals is therefore allowed to roam throughout the country. It supports them to familiarize better to changing environmental conditions to boost their populations naturally.

## **6. CONCLUSIONS**

Bhutan has over 2700 glacier in the country from which some are in the verge of breaching their wall all due to either global warming or other factors, which is harming the environment by the minute. Bhutan has 71 percent forest cover confirmed at present. The entire country produces about 2.2 million tons of carbon dioxide each year but the forest takes in more than three times its produces. The country has banned smoking and has become a net carbon sinker for 5.5million tonnes of carbon dioxide each year. Still Bhutan suffers through environmental problems like flood due to bursting of lakes or melting of ice caps again leading to flash flood.

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