

Biodiversity affected by Baghjan disaster will take a decade to recover: report

07 July 2021

Ecosystems damaged in the 2020 Baghjan oil and gas leak fire in Assam, which took over five months to douse, might take at least a decade to recover 70-80% of their original form, according to a report. The analysis also spelt out ecological restoration recommendations and budget to draw down carbon by managing trees, but a section of experts are sceptical while others have called for long-term monitoring of the region to understand the implications.

On May 27, a sudden and uncontrolled [release of gas](#) occurred from an oil-producing well, operated by the public sector unit Oil India Limited (OIL), near Baghjan village in Assam. The situation took a turn on June 9 when the well caught fire. The site of the well is less than a kilometre from the Dibru Saikhowa National Park (DSNP) and only 500 metres from the wetland Maguri-Motapung Beel, an Important Bird Area (IBA).

While the overall ecological damages estimated amounted to Rs. 25000 crore (Rs. 250 billion), the report of the one-person inquiry commission set up by the Assam government on the Baghjan blowout says that “estimated carbon earnings were valued at Rs. 18234 crores (during restoration) and this resulted in net liability of Rs. 6800 crore over a period of 10 years.”

Nandan Nawn, professor, Department of Policy Studies, and Coordinator, Internal Quality Assurance Cell (I-QAC) at TERI School of Advanced Studies told *Mongabay-India* that valuation of ecological losses is a contested area. “Valuation of damages towards computing compensation in the judicial space has not been consistent, including motor accident cases, involving human life loss,” Nawn said.

The findings of the report were discussed in a public forum in June 2021. The Baghjan blowout “could be the largest and biggest onshore blowout so far in the world as it continued for more than five months without any change in its intensity or exhausting of the well”, underlined the report compiled by Mahendra Kumar Yadava, a top-ranking Assam forest department official who headed the commission. It was prepared with the help of experts and researchers from different organisations including Cotton University, Assam.

Calling the report “comprehensive”, environmentalist Rituraj Phukan said any ecological loss is detrimental to the well being of the local communities in and around Baghjan and batted for prioritising restoration of the affected areas, noting that “there may be long-term damages that may need to be reassessed in the future.”



Damage to crops in Natungaon due to the blowout. Photo: Special arrangement

Restoring biodiversity-rich and carbon-rich landscapes

The report, which comes in the year that kicks off the [UN Decade on Ecosystem Restoration \(2021-2030\)](#) aiming to prevent, halt and reverse the [degradation](#) of ecosystems on every continent and in every ocean, recommends the creation of a special fund for ecological disasters, setting up of an institute of wildlife health and research, and carbon sink plantation of about 12 to 20 crore (120 to 200 million) seedlings and afforestation of 500 to 750 square km are among other suggestions. In its budgetary proposal for Rs. 6800 crores (Rs. 68 billion), a sum of Rs. 2000 crores (Rs. 20 billion) over 10 years is proposed for carbon capture and storage (plantations).

“These targets of earnings from carbon credit (18234 crores) in 10 years appears to be practically unachievable. We need to have clarity on where they plan to plant 12 to 20 crore seedlings, how they will procure the seedlings and what are the monitoring mechanisms to oversee the growth of the seedlings into plants. Other than that what are the exact details to afforest 500 to 750 square km area – where will they acquire the land and is this in northeast India itself?” questioned Arun Jyoti Nath, Assistant Professor, Department of Ecology and Environmental Science, Assam University, Silchar.

Carbon capture and storage such as the direct removal by sequestering through plantations and bioenergy and carbon capture and storage (BECC) technologies are discussed in the report to remediate the carbon dioxide and methane emissions that were primarily spewed out in the blowout. Nath stressed on “getting a holistic picture of the greenhouse gas emissions and their mitigations and restoration of agroecosystems, instead of focusing on only carbon dioxide removal.” He also raised questions about the assumptions about the potential of a tree to capture carbon and its link to the carbon sequestration target that has been considered in the report. It says that “assuming that every tree sequesters about 5 tons of carbon dioxide (CO₂), in its lifetime of 100 years (and we plan a mix of production and carbon sink forestry) and we need to sequester 30+ MMT (million metric tonnes) CO₂, then there is a requirement to plan roughly 50-80 year rotation carbon sink plantations and short rotation 20 to 30 timber production plantations.”

“The assumption of [CO₂](#) sequestration is severely overestimated. It is practically impossible to obtain such a high value by managing trees for 100 years,” adds Nath, emphasising the need for community participation in forest carbon finance projects.

Previous research has highlighted challenges with forest carbon finance, including in India. For forest-based carbon storage to be successful, [more attention](#) needs to be paid to underlying political reforms, as well as to policies that are not reliant on finance, notes a latest paper.

Assam, one of the eight states in east India, that is [highly vulnerable](#) to climate change, has recently announced the creation of a separate department to tackle climate change. Though the state in the eastern Himalayan foothills, has 42% of its area under forest cover, the lack of forest area per 100 rural population was found to be a major driver of vulnerability.

While restoring carbon- and species-rich ecosystems is one of the cheapest and quickest nature-based measures to implement to tackle climate change, some of such “focused” measures can be harmful to biodiversity, emphasised a recently released [report](#) by Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and Intergovernmental Panel on Climate Change (IPCC).

For instance, planting trees in ecosystems that have not historically been forests and reforesting the area with monocultures, especially of exotic tree species, “can contribute to climate change mitigation but is often damaging to biodiversity, food production and other nature’s contributions to people has no clear benefits for climate adaptation, and may displace local people through competition for land,” the IPBES-IPCC report said.

Biodiversity loss in Baghjan’s changing ecosystem

Blaming the flawed [environmental](#) clearances given by the Ministry of Environment, Forest and Climate Change to these projects, the Baghjan report states that clearances did not reveal the presence of protected areas “within 10 km of the project sites.” “As a result, no mandatory wildlife clearance was required, and hence, there was no Regional Wildlife Management Plan or any Biodiversity Management Plan.”

Dibru-Saikhowa National Park was impacted to the extent of 12.07 sq km. As much as 16.32 sq km of wetlands were affected while the damage to the grassland cover was 5.23 sq km and 1.76 sq km area of rivers/streams and 2.13 sq km of forest areas were impacted, with the degree of damage varying based on the proximity of the ecosystem to the blowout.

There was a recorded direct loss of 55% of biodiversity due to the Baghjan blowout and deaths of 25,825 animals belonging to 41 genera/families were counted. Sound impacted the Dibru Saikhowa National Park, while Maguri Motapung *beel* was the most impacted and devastated of all ecosystems. Almost 70 per cent of earthworms in the Maguri grasslands and condensate affected areas were estimated to be dead, the report claimed.

Ranjan Kumar Das who had seen how the condensate from the blowout had “killed wildlife instantly, turning them black” corroborated the impacts of the condensate. He advocated studies at the micro-level to understand the impact holistically. “Insects, molluscs and worms are gone and it will take time for them to complete their life cycle. The ecosystem in which the disaster has happened is a dynamic one that keeps on changing regularly. If the ecosystem comes back, it will take time,” Das, associate professor, Department of Geography and Vice-Principal Tinsukia College, told Mongabay-India.

“There should be continuous spatial and temporal studies which would have not only the local significance but also will have the universal importance if such disaster occurs in any part of the world. The area has very complex and dynamic fluvial ecosystems,” Das added. The Baghjan blowout is the second blowout in the Tinsukia district preceded by the Dikom blowout in 2005. Both the oil wells are operated by OIL.



Water being sprayed at the Baghjan oil well site after three foreign experts were injured in an explosion, in Tinsukia district, July 22, 2020. Photo: PTI

Microbial ecologist Punyasloke Bhadury who had investigated the site in the immediate aftermath of the disaster and after six months, following capping of the well in December, 2020, adds that there was a clear persistence of hydrocarbons in some parts of the Maguri-Motapung Beel. “Even though the wetland ecosystem can remove some forms of hydrocarbons, we still need to monitor this sensitive ecosystem to understand the changes in the food chain,” Bhadury, Professor and Group Leader, Integrative Taxonomy and Microbial Ecology Research Group, Department of Biological Sciences and Head, Centre for Climate and Environmental Studies, IISER-Kolkata, told Mongabay-India. His investigations focused on understanding biogeochemical dynamics of the area with a focus on wetland biology, in particular microscopic organisms which can tell us about changes in the ecosystem after a major event.

“The hydrocarbons continue to persist in close proximity to the well even in December 2020. However, long-term monitoring is a must to understand the magnification of hydrocarbon residues on wetland ecosystems, linked rich fisheries and beyond,”

Signs of recovery of grasslands and vegetation subsequently suggest that the ecosystem can recover and exhibits resilience. However, there was no sign of recovery of vegetation within the immediate vicinity of the well. Bhadury held that at the microscopic level, there was no apparent sign of loss/damage on the observed aquatic biodiversity, post-June 2020 and later.

How the ecosystem recovers is important, considering the oil well concentration in the Tinsukia district, which, the report warns could lead to “one more blow out happening in Tinsukia district” in the next 5-10 years. The district should be very well studied in terms of the oil and gas industry and its impacts on local populations, ecosystems and environments.

Source: <https://science.thewire.in/environment/biodiversity-baghjan-disaster-decade-recover-report/>