

BAGHJAN FIRE: A CASE STUDY OF THE '2020 ASSAM GAS AND OIL LEAK' AT BAGHJAN OIL FIELD, TINSUKIA, ASSAM

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Abstract

The 2020 Assam gas and oil leak, also referred as the Baghjan gas leak, is a Natural gas blowout that happened in Oil India Limited's Baghjan Oilfield in the district of Tinsukia, Assam, India on 27 May 2020. The blowout occurring at Well No. 5 in the Baghjan Oil Field, resulting in a leak of natural gas, subsequently caught fire on 9 June 2020, and was finally doused on 15th of November after burning for 159 days, becoming India's longest Oil well fire. The disaster has resulted in three deaths (officially), large-scale local evacuations, and environmental damage and the locals losing their homes, belongings and livelihoods and separated families.

Thus, after documenting the disaster and emphasizing the fact that a disaster has its greatest impact at the local level; this paper aims at understanding the disaster at Baghjan from the perspective of the local disaster survivors. The study is guided by the experience of three women survivors with three different disaster response and recovery context of the same Disaster. While using qualitative methodologies, the study tries to document the unique personal accounts, in their own words and using their own personal time lines with respect to the disaster. This Phenomenological attempt draws out micro-histories of the three women survivors taken as individual subjects through unstructured interviews, and while doing so, it would shed light on how the interface of human, environment and disaster is of a complex and dynamic character which cannot be understood in a singular or linear aspect.

Keywords: Industrial Fire, phenomenology, women and disaster, disaster response, recovery, intersectionality

Outline of the Paper

The paper begins with the Introduction, the Objectives and Methodology (Field Survey and Phenomenology), the Documentation of the disaster, the three Interviews, the Discussions and finally the Conclusions and the References.



1. INTRODUCTION

A disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins. $\text{Disasters} = (\text{Vulnerability} + \text{Hazard}) / \text{Capacity}$. Disasters are often used synonymously with the word Hazard. But presently, these two terms are understood in a much varied sense. Hazards are defined as phenomena that pose a threat to people, structures or economic assets and which may cause a disaster. Hazard is a threat, while disaster is an event. A disaster occurs when a hazard impacts on vulnerable people. The combination of hazards, vulnerability and inability to reduce the potential negative consequences of risk results in disaster.

Developing countries and the poorer sections of the society suffer the most when a disaster hits – more than 95% of all deaths caused by hazards occur in developing countries, and losses due to natural hazards are 20 times greater (as a percentage of GDP) in developing countries than in industrialized countries. No matter what society disasters occur in, they tend to induce change in government and social life. They may even alter the course of history by broadly affecting entire populations and exposing mismanagement or corruption regardless of how tightly information is controlled in a society. The word disaster is derived from Middle French *désastre* and that from Old Italian *disastro*, which in turn comes from the Ancient Greek pejorative prefix *dus*, meaning "bad" and *aster* meaning "star". The root of the word disaster ("bad star" in Greek) comes from an astrological sense of a calamity blamed on the position of planets.

Disasters are mainly divided into natural or man-made, although complex disasters, where there is no single root cause, are more common in developing countries. A specific disaster may spawn a secondary disaster that increases the impact. A classic example is an earthquake that causes a tsunami, resulting in coastal flooding. Some manufactured disasters have been ascribed to nature. Some researchers also differentiate between recurring events such as seasonal flooding, and those considered unpredictable. A natural disaster is a natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Various phenomena like earthquakes, landslides, volcanic eruptions, floods, hurricanes, tornadoes, blizzards, tsunamis, cyclones and pandemics are all natural hazards that kill thousands of people and destroy billions of dollars of habitat and property each year. However, the rapid growth of the world's population and its increased concentration often in hazardous environments has escalated both the frequency and severity of disasters. With the tropical climate and unstable landforms, coupled with deforestation, unplanned growth proliferation, non-engineered constructions make the disaster-prone areas more vulnerable. Developing countries suffer more or less chronically from natural disasters due to ineffective communication combined with insufficient budgetary allocation for disaster prevention and management. Human-instigated disasters are the consequence of technological or human hazards. Examples include stampedes, fires, transport accidents, industrial accidents, oil spills, terrorist attacks, nuclear explosions/nuclear radiation. War and deliberate attacks may also be put in this category. Other types of induced disasters include the more cosmic scenarios of catastrophic climate change, nuclear war, and bioterrorism. One opinion argues that all disasters can be seen as human-made, due to human failure to introduce appropriate emergency management measures.

Here in this study the focus is mainly on Industrial Disaster under the categories of man-made disasters, with special reference to the Industrial Fire. An industrial fire is a type of industrial disaster involving a conflagration which occurs in an industrial setting. Industrial fires often, but not always, occur together with explosions. They are most likely to occur in facilities where there is a lot of flammable material present. Such material can include petroleum, petroleum products such as petrochemicals, or natural gas. Processing flammable materials such as hydrocarbons in units at high temperature and/or high pressure makes the hazards more severe. Facilities with such combustible material include oil refineries, tank farms (oil depots), natural gas processing plants, and chemical plants, particularly petrochemical plants. Such facilities often have their own fire departments for firefighting. Sometimes dust or powder is vulnerable to combustion and their ignition can cause dust explosions. Severe industrial fires have involved multiple injuries, loss of life, costly financial loss, and/or damage to the surrounding community or environment.

The present work is a case study based on field surveys and unstructured interviews carried out in one of the most historic industrial fire disasters that took place in the Baghjan Oil Field situated in the Tinsukia district of Assam. An attempt has been made to understand the disaster through field survey, secondary literature and analysing first hand experiences narrated by the local people inhabiting the area. In this study, the experiences of the three women survivors are introduced and analyses from three perspectives. Firstly, how the understanding of the Disaster dynamics should start from the local level in a bottom-up approach; secondly, how the event itself is perceived, responded to and recovered from, differently from the standpoints of various intersectionalities and inequalities that exist in our society and lastly, how the same disaster is creating different aftermaths, which becomes more complex and diversified due to the intersectionality between Disaster Vulnerability, Risk, Risk Perception, Resource Distribution, Social categorizations such as Class, Caste and Gender, Disaster Response and Recovery. The study also aims to argue that a disaster event apart from being understood through a theoretical or technical lens should be understood from a more humanistic perspective, and how in doing so it transcends theoretical confinements as it spirals down to the life of the communities residing in a complex and dynamic natural as well a cultural environment.

2. OBJECTIVES AND METHODOLOGY

The present study mainly revolves around two objectives. The first one is to document the disaster with its pre, post and during disaster stages. And the second objective is to understand the disaster and its effects in the local level in a more humanistic and qualitative perspective. The first objective is tried to be fulfilled by carrying out field visits, surveys and collecting information from primary and secondary sources. And for the second objective, a phenomenological methodology is taken into account. Phenomenology is an approach to qualitative research that focuses on the commonality of a lived experience of an individual or a group. This approach aims to study a phenomenon as it is experienced by the participant and to reveal what the phenomenon is rather than what causes it or why it is being experienced at all. This is achieved by interviewing three women survivors of the disaster through unstructured interviews. This also aims to bring out a gendered view of a disaster and the different intersectionalities that lie within our society that become a catalyst for creating different disaster aftermaths.

3. DOCUMENTING THE DISASTER AT BAGHJAN

3.1 Study Area: The study area is the source area of the Industrial Fire disaster that occurred in the Oil No. 5 in the Baghjan Oil Field situated in the Baghjan Gaon. According to Census 2011 information the location code or village code of Baghjan Gaon is 290252. Baghjan Gaon is located in Doom Dooma Tehsil of Tinsukia district in Assam, India. It is situated 20km away from sub-district headquarter Doom Dooma and 50km away from district headquarter Tinsukia. Baghjan is the gram panchayat of Baghjan Gaon village. The total geographical area of village is 533.84 hectares. Baghjan Gaon has a total population of 4,488 people, consisting of 2,244 male and 2,244 female population. There are about 872 houses in Baghjan Gaon. Average Sex Ratio of Baghjan village is 1000 which is higher than Assam state average of 958. Child Sex Ratio for the Baghjan as per census is 615, lower than Assam average of 962. Baghjan village has lower literacy rate compared to Assam. In 2011, literacy rate of Baghjan village was 57.60 % compared to 72.19 % of Assam. Male literacy stands at 58.33 % while female literacy rate was 56.92 %. The village is well connected with public and private bus services. The nearest railway station is available within 10+ km distance. As per constitution of India and Panchyati Raaj Act, Baghjan is administrated by Sarpanch (Head of Village) who is elected representative of village. Schedule Caste (SC) constitutes 5.61 % while Schedule Tribe (ST) was 1.09 % of total population in Baghjan Gaon. In Baghjan village out of total population, 1915 were engaged in work activities. 72.43 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 27.57 % were involved in Marginal activity providing livelihood for less than 6 months. Of 1915 workers engaged in Main Work, 339 were cultivators (owner or co-owner) while 54 were Agricultural labourers.

Wildlife, which criticised the Government of India for ratifying the breach of wildlife norms after Oil India Limited had already begun operating in an eco-sensitive zone.

Prior Leaks: In 2005, a blowout at an Oil India Limited well in Dikom in Assam resulted in the evacuation of 500 families. The leak subsequently caught fire, as well. On 3 February 2020 near Naharkatia in Assam, a stretch of the Burhi Dihing river, which is a tributary to the Brahmaputra river, caught fire after a punctured pipeline carrying crude oil from the Oil India Limited headquarters at Duliajan in Assam leaked, covering the water with a film of oil. The fire burned for a period of 48 hours before the leak was repaired and it could be extinguished. Oil India Limited officials stated that a technical error with their instruments had caused shut off valves in a storage tank to close, resulting in pressure building up in a pipeline carrying crude oil. This caused several leaks in the pipeline. Oil India Limited Officials blamed local residents for causing the fire, and stated that a number of leaks had previously occurred, as parts of attempts to steal quantities of crude oil from the delivery pipeline. The Central Pollution Control Board had directed Assam's State Pollution Control Board to investigate the damage to aquatic life and local environment caused by the leak.

Baghjan Oil Well No. 5: The Baghjan Oil Field has 21 active wells, of which 4 produce natural gas, while the remaining produces oil. Baghjan Oil Field's Well No. 5 was established in 2006 and produces natural gas. It drills down to a depth of 3,870 meters, and was producing between 80,000 to 100,000 standard cubic meters of gas per day before the leak. Drilling at the Baghjan 5 well, where the leak occurred, was being outsourced to an Ahmedabad-based firm, John Energy. In May 2020, a new reservoir was being tapped for additional production at a depth of 3,729 meters, with workover operations taking place. In addition, the infrastructure for the previous reservoir was being serviced, due to which production had been temporarily stopped. A device for pressure control, known as a blowout preventer, had been temporarily uninstalled while the extraction assembly was being serviced. In April 2020, following a lockdown caused by the COVID-19 pandemic in India, Oil India Limited suspended drilling at several of the wells in the Baghjan Oil Field, primarily because of the unavailability of employees. On 20 May 2020, before the leak, the Ministry of Environment, Forest and Climate Change announced that they would be authorizing exploration for hydrocarbons under the Dibru-Saikhowa National Park, at seven different locations. Oil India Limited stated that they would be using Extended Reach Drilling (ERD) to explore these wells without entering the National Park itself. Baghjan Oil Well 5, at which the leak occurred, will be one of the bases on which the ERD will extend under the National Park.

3.2.2. Blowout, Leak and Fire or During Disaster Phase:

Initial occurrence: On 27 May 2020, at 10:30 a.m., residents of Baghjan village in Assam reported hearing a loud sound from the nearby Baghjan Oil Field. Reports of the sound of the explosion were also confirmed from residents of Tinsukia town, which is located at a distance of 12 kilometres from the Oil Field. Local newspaper, the Sentinel, reported local accounts indicating that the gushing of natural gas from the well continued to produce an audible sound over the next few days. Although production had been temporarily stopped at Baghjan's Well No. 5 to explore new sand, and to service the well, workers noticed that gas was escaping from the capped well, and had begun to evacuate the Oil Field before the incident. At 10:30 a.m, the blowout occurred, resulted in the leak of natural gas from the well, and causing a complete suspension in operations. Oil India Limited's official statement indicated that the well had "suddenly became very active" while workover operations were ongoing. OIL officials confirmed that the leak occurred from the existing sand which had been capped to allow exploration of the new sand. This resulted in a "fountain of crude oil" from the sand. The leaked gas consisted of a naturally occurring mix of propane, methane, propylene and other gases.

Fires: On 9 June 2020, Well No. 5 caught fire after efforts to cap the leak were unsuccessful. An official from Oil India Limited stated, "We cannot say how and why it happened," in regard to the fire, also noting that fires, in the case of a blowout, were not unexpected. The fire occurred at the plinth of the well while cleaning operations were under way. Following the fire, people who had not yet evacuated from the local area left, as the fire spread to local grasslands. The fire quickly spread to a larger area and burned down nearby trees, crops and houses. 4 persons were injured, and 50 houses destroyed in the resulting fire. The Tinsukia District Collector stated that the condensate from the gas leak in surrounding areas had made the locale more vulnerable to fire and had allowed the fire to spread faster. On 10 June 2020, two firefighters, Durlov Gogoi and Tikheswar Gohain died fighting the fire. Their bodies were recovered from a water body near the site. Recently on 21 July 2020, an explosion occurred at the well number 5 and three foreign experts were injured in the incident.

Evacuation: Following the leak, 1610 local families, consisting of approximately 3000 persons were evacuated to relief camps. A safety zone consisting of a 1.5 km radius around the well was established. The National Disaster Relief Force was deployed to establish the relief camps. In addition to local residents, employees of Oil India Limited and their families were also evacuated from the area. The Indian Air Force and Indian Army also provided assistance.

Environmental damage: State Pollution Control Board officials stated that the leaked gas condensate had affected local agricultural crops and plants, including bamboo, tea, bananas and betel nuts. Wind conditions had carried the leaked gas towards the Dibru-Saikhowa National Park as well. On 29 May 2020, the carcass of a Gangetic dolphin covered in condensate oil was found in the Maguri Motapung Beel, a local wetland, and sent for a post-mortem by the Tinsukia Wildlife Division, to establish the cause of death. Wildlife Division officials noted that because of rain immediately following the leak, local waterbodies had been contaminated by condensate from the leak. On 31 May 2020, Assam Government officials confirmed that the State Pollution Control Board was investigating environmental damage as a result of the leak. Following the leak, the State Forest Department had also asked Oil India Limited to account for its actions after reports of dead fish in local waterbodies. On 5 June 2020, local residents protested near the Maguri Motapung Beel wetland, calling for the protection of the ecologically-sensitive Dibru-Saikhowa National Park, to mark World Environment Day, and called for compensation for their loss of livelihoods as a result of the leak.

3.2.2. Efforts to contain and stem the Leak or Post Disaster Phase:

Initial response: Operations at Baghjan Oil Field were suspended following the blowout and leakage of natural gas. OIL (Oil India Limited) requested assistance from the Crisis Management Team of the Oil and Natural Gas Corporation of India. IOC initially attempted to install a blowout preventer to bring the leak under control. OIL also sprayed the area with water. On 30 May 2020, four days after the initial leak, a spokesperson from Oil India Limited confirmed that "The well control operation is yet to start." Oil India Limited officials also stated that the process of controlling the well would take time, and that they were currently making arrangements to secure a water supply to help mitigate the leak.

Attempts to cap the well:

i.Placing a blowout preventer: In June 2020, Oil India Limited officials stated that they had constructed a temporary reservoir of water in the vicinity of the well, by placing pipes from the Dangori River. Water from the reservoir would be used to spray on to the well area to protect workers while they attempted to place a blowout preventer, using hydraulic devices, followed by injecting mud to completely shut down production of gas, or "kill" the well. Singapore-based Alert Disaster Control experts were called in to assist with the process. Initial efforts to control the leak were delayed because of severe flooding in Assam, which caused widespread damage and resulted in the deaths of 16 persons. Oil India Limited said that because of the floods, working conditions at the Oil Field were temporarily unsafe, as the Dangori River which was being used to pump water to the field, was overflowing. The nearby Doom Dooma-Baghjan Bridge had collapsed due to the flooding, and consequently, access roads to the site were unavailable. There were two failed attempts to place the blowout preventer on Well No. 5. On 22 July 2020, during one such attempt, three Singaporean expert advisors were injured after a fire broke out. On 18 August 2020, a blowout preventer was successfully placed at the well head on a third attempt, but the process of 'killing the well' by injecting mud to completely stop production of natural gas from the well was not successful, and the well continued to leak. Oil India Limited officials stated that the reason for the failure was that a valve in the well casing collapsed.

ii.Snubbing and diversion: On 3 September 2020, Assam's Commerce and Industry Minister, C. M. Patowary informed the Assam Legislative Assembly that experts from Canada had been brought in to attempt to cap the well again. Oil India Limited's officials stated that they were also considering an attempt to divert the gas produced at Well No. 5 into two separate channels. If successful, this will result the diversion of part of the gas being produced to the Baghjan Early Production System facility, while the remaining gas will be flared. Once the diversion has occurred, an attempt will be made to cap the well at a greater depth, in a process called snubbing. On 13 September 2020, Oil India Limited succeeded in diverting the gas leaking from Well No. 5 to nearby flare pits on a second attempt. The first attempt at such a diversion had been unsuccessful. The well has not as yet been controlled, and on 30 September 2020, Sushil Chandra Mishra, the managing director of OIL stated that it would take two more months to kill the well and stop the leak. On 3 September 2020, Assam's Commerce and Industry Minister, C. M. Patowary stated that it may take another two months to control the leak. On 13 September 2020, Oil India succeeded in diverting some of the leaking gas to flare pits, but has yet to completely control the leak and 'kill' the well. On 5 November 2020, a second attempt to snub the well was initiated.

Fatalities and evacuations: Two firefighters employed by Oil India Limited died on 10 June 2020 while fighting the fire resulting from the gas leak. Four other fire fighters suffered injuries. Local reports indicate that there have been more deaths in the area; an inquiry by a local magistrate is currently investigating these claims. On 10 September 2020, an engineer working with Oil India Limited, Arnab Kishore Bordoloi, died while working at the well site. The cause of death is yet to be established. As of September 2020, 500 persons are currently still residing in relief camps, with the surrounding area still being affected by audible sounds of the gas leak as well as the ongoing fire. Local reports indicate that the sound of the leak can be heard from a distance of 5 kilometres from the site of the leak.

Litigation and compensation: On 25 June 2020, the National Green Tribunal found a prima facie case had been made out against Oil India Limited for damage to the environment and local livelihoods because of the leak. The Tribunal ordered Oil India Limited to deposit a sum of ₹250 million with the District Magistrate of Tinsukia towards compensation, and constituted an expert committee to investigate the disaster and recommend how much compensation was payable to affected persons. The expert committee constituted by the National Green Tribunal recommended that completely damaged houses would result in compensation of ₹ 2,500,000, while those that were severely and moderately damaged would receive ₹1,000,000 and ₹250,000 each. From 24 August 2020 onwards, local residents staged a peaceful protest, establishing a camp in front of the office of the local Deputy Commissioner, to ensure that all persons whose homes were damaged in the fire and leak received more compensation. The Assam Government confirmed to the Assam Legislative Assembly that some families had been issued compensation. Oil India Limited had filed objections to these orders for compensation in the National Green Tribunal, but the Tribunal dismissed their objections on 8 August 2020. OIL announced that they will give ₹30,000 as compensation to all those families who are affected. On 1 October 2020, the Gauhati High Court agreed to hear a public interest litigation petition filed by two local residents, and ordered OIL as well as a number of government authorities, including the Assam Government, the National Board for Wildlife, the State Board for Wildlife, and the State and Central Boards for Pollution Control, to respond to concerns raised about drilling inside the Dibru-Saikhowa National Park.

Internal investigation and criticism: On 30 May 2020, an Oil India Limited spokesperson stated to press that a five-member investigative committee had been established to ascertain the causes of the blowout and leak. On 10 June 2020, Oil India Limited confirmed that two employees had been placed on suspension in connection with the leak. The Indian Oil Workers Union criticized the use of private contractors at Well No.5, calling on Oil India Limited to use only trained corporation employees for such work.

3.3. Government investigations and environmental damage

3.3.1. Assam Government: The initial leak at the Baghjan Oil Field resulted in the contamination of water bodies in the nearby Maguri Motapung Beel wetland, as well as in the Dibru-Saikhowa National Park. Days after the leak, local forest officials reported seeing a layer of gas condensate on water bodies in the Dibru-Saikhowa National Park. An Environmental Impact Assessment Report is currently being prepared to assess the damage caused by the leak and fire. On 12 June 2020, the Assam state government ordered an investigation into the environmental impact of the leak, and asked for a report within a month. An expert committee was formed by Assam's Forest Department to investigate the environmental impact. On 21 June 2020, Assam's State Pollution Control Board (SPCB) ordered Oil India Limited to shut down all production at the Baghjan Oil Field, following an investigation that revealed that the company had begun drilling operations there without obtaining prior environmental clearances. The SPCB also found that the company had failed to comply with continuing reporting and certification requirements under environmental laws. Oil India Limited objected to this notice of closure, stating that it could potentially result in more blowouts at the wells. The closure notification was withdrawn three days after it was issued.

3.3.2. Union Government: The Indian Government's Ministry of Petroleum and Natural Gas has also ordered an investigation into the gas leak. On 2 August 2020, the Wildlife Institute of India, which operates under the Ministry of Environment, Forest and Climate Change, issued a report in which they stated that Oil India Limited had failed to address security concerns after two previous leaks in Dikom and Naharkatia in Assam. Their report indicated that between 60 to 70 hectares of land had been damaged by the leak, and noted particular concerns about the biodiversity in the Tinsukia district. The Wildlife Institute of India's report stated that the leak would have "....prolonged ill effects on all life forms, including humans," in the area.

3.3.3. National Green Tribunal: On 26 June 2020, the National Green Tribunal constituted an expert committee headed by a former judge, A.P. Katakey to investigate the reasons for, and the impact, of the gas blowout. The expert committee was constituted after a preliminary report requested by the Tribunal revealed that there were errors in internal safety procedures that resulted in the incident. The preliminary report indicated that compliance with these safety procedures could have prevented the blowout. The Katakey Committee reported in November 2020 that Oil India Limited had repeatedly violated provisions of the Air (Prevention and Control of Pollution) Act, 1981, the Water (Prevention and Control of Pollution) Act, 1974, and the Environment Protection Act 1986. The Committee also found that Oil India Limited had failed to obtain the necessary clearances for the Baghjan Oil Field, and had not conducted Biodiversity Impact Assessment Study before beginning operations, which had been made mandatory by a Supreme Court order.

4. BAGHJAN: A PHENOMENOLOGICAL PERSPECTIVE

Although, the incident is now spoken of in the past, its effects and after effects are still deeply imprinted on the area and its inhabitants. The villagers, who were evacuated to relief camps promptly, now complain of anxiety, damage to their ears, and respiratory illnesses. Moreover, the rare Maguri-Motapung wetland and Dibru Saikhowa National Park, located next to the blowout site, have suffered long-lasting damage. According to OIL, seismological studies have not shown any surface deformity in the region, but researchers say the public sector unit is downplaying the disaster that affected hundreds of families. Last week, the Gauhati High Court stayed OIL plans to further explore oil wells in seven spots within the Dibru Saikhowa National Park. Earlier, the National Green Tribunal (NGT) had directed the state's Pollution Control Board to take legal action against OIL, besides revising compensation to affected families, on the recommendation of the Tinsukia deputy commissioner.

It had previously taken note of a report by the Wildlife Institute of India (WII), an autonomous institution under the Ministry of Environment Forest and Climate Change, which said no "restorative process" has been put in place. In accordance with the NGT direction, the state government has proposed relief of Rs 25 lakh to 161 families and Rs 20 lakh to 439 families to affected families in Baghjan, said Assam Chief Secretary Jishnu Barua. In the interim, the CM has directed compensation of Rs 15 lakh to 161 families and Rs 10 lakh to 349 families. OIL has deposited an amount of Rs 68.5 crore, which is being released to the affected people. The local people expressed their concerns by saying the Government of Assam is most sympathetic towards the citizens affected by the unfortunate incident of the well blowout at Baghjan and regains full commitment to mitigating the suffering caused by the same. But, the troubles faced by villagers in this region go beyond just damaged homes and lost crops. The WII report dated 15 July said the sound of the blowout travelled to 12 km and beyond. While sound up to 60 decibels (db) is safe for humans and animals, the blowout raised levels to between 72 and 112 db, thereby disrupting wildlife, birds and humans. Apart from all this, the real and concrete after-effects of the disaster can be understood when we see it from a different perspective, which is a phenomenological perspective. This draws the attention to the perception, response and recovery of the local survivors and how disasters are mostly affective in the immediate environment or in the local level. To bring into a gendered perspective, the lives of three women in the affected area are taken into account. Data and information is generated from the participants by conducting unstructured interviews and an observatory-conversational method. Conversations were audio-recorded with open-ended questions after getting consent from the participants and the names are changed for ethical reasons. Field notes of observations of the context and non-verbal clues (e.g. posters, charts, gestures, etc.) are also recorded and the conversations were either staged (interview type) or prompt (talk type). These three experiences gives us an understanding of the disaster in a more personalised manner and throw light on how a single disaster can create different aftermaths with respect to difference in gender, class, caste, vulnerabilities, risk, risk perception and economic, social, political and cultural backgrounds. And these different conditions give rise to difference in response and recovery measures taken by the survivors.

Story 1: Kalyani with her Sick husband

Though almost a year has passed, Kalyani still remembers the terror of the incident and said she had to take the responsibility of her family, as her husband was almost bed-ridden due to sickness and bad drinking habits. She was earning the little bit of money to sustain her family by selling tea and betelnut from the betelnut and tea plantations that her family owned. They had their rice-fields which was just enough for the whole year. But her homestead being just 45 metres away from the area of incident, the fire burned down her house, the entire plantations of tea, rice and betelnut, and her whole family had to evacuate to save just their lives. After the fire was put out and the area was safe for them to return, they came back to just ashes and land with grease and oil. "The air smelled of gas and burnt items", she said, "Only the frame of the house was there, everything else turned to ashes." After receiving the compensation, they slowly have built their houses but have no other livelihood options. She haven't been able to enrol her kids at school for this year's session and having a hard time trying to meet ends and look after her family. When asked about the present livelihood options, she said "A betelnut tree takes almost 7 to 8 years to grow and bear nuts. What am I supposed to sell now?" And she talked about how there were rumours going on about all the people who were now staying there and breathing the poisonous air would die soon of cancer and said "I hope that happens soon and we can be put out of this misery". She said she has nightmares of the incident and cannot sleep at night worrying about her husband and her kids' future.

Story 2: Roopali with her three daughters and a son

Roopali's house was just 50 metres away from the oil well. They have been living there for ages and she said she had never imagined even in her wildest dreams that a fire could change their lives to this extent. Even after the loud outburst, she was confident that they were not in danger and while remembering that day she says, "while my husband was yelling at me to pack our belongings and run for our lives, I scolded him and said that I won't leave the house without having lunch, as I had cooked fish that day for me and my kids after a long while." But they could not wait any longer as the fire spread very quickly and burned everything in its way. She had to send her son and daughters off to their relatives' house residing in the nearby villages while she and her husband stayed in the relief camps for almost a year. She said the separation from her kids worried her but she was at relief as they did not have to live in relief camps with not even the basic facilities. After they returned home, she said, "Everything was there, just the way we left them, clothes, utensils, books, but all were burnt to ashes. If you touch them they vanish." She had prepared jewellery, traditional utensils and saved up money for her elder daughter's marriage. Everything was burned down. The books of her children and other valuable items such as silk clothes were all lost to the fire. They had a huge betelnut plantation in and around their house which too was completely destroyed. Now, they are slowly re-building their house with the compensation money and are trying hard to meet ends. Her husband has taken to daily labour to feed the family. They are cultivating rice in their fields but are not sure if they will bear grain. "We had sown lentils in our fields. The plants looked good and had luxurious growth. But they did not bear any seeds. We planted cucumber trees, they too grew well and high, but they did not bear even a single fruit." They are now sceptical about their rice cultivation too and are worried for the near future.

Story 3: Deepti and her memory of Disaster

Deepti, a young girl in her early twenties, says her family was amongst the worst hit. "On the night of the incident, we couldn't understand what this noise was as we could barely hear ourselves in our own homes... OIL officials evacuated us to camps nearby, and kept us away from our homes for nearly two weeks," she said. Their family owned an orange plantation, a small tea garden and a fishery, and then all were burned down. While OIL has offered his family the highest compensation of Rs 25 lakh so far, she said her father worries about how they will get back their livelihoods. She also worries about her mother's poor health. "My mother suffers from ache in the joints and severe headaches ever since... Medical care was basic and we haven't understood why she gets these terrible pains..." They haven't come back to their home ever since. When asked of the reason she said, "We can't think of going back there now. Without our home, the plantations, the bird songs, animals and life that flourished around our home, how we can live there?" They currently rent a home in Makum sub-division. She also talks about her not being able to go and re-join college as she has to look after her sick mother and her siblings. She wanted to study but she feels caring about her family in these tough times is her utmost priority. She also said how she and her friends were proud of their place as it had the rare Maguri-Motapung wetland and Dibru Saikhowa National Park — a rich biodiversity zone. But now, because, these were next to the blowout site, the only visuals that are left of here are burnt trees of betel nuts, burnt bamboo trees, and burnt tea gardens, natural ponds overrun by black muddy peat, no green vegetation, and just a few birds and the whole ground is covered in soot. She wishes for all this to disappear like a bad dream but instead this has been carved in their minds and will be alive in their memories as a fire that never stopped burning.

5. DISCUSSIONS AND CONCLUSION

From the above observations we can understand that Disasters have their greatest impact at the local level which is now becoming more complex and diversified due to the intersectionality between Natural and Human-induced Disasters, Vulnerability, Risk, Risk Perception, Resource Distribution, Social categorizations such as Class, Caste and Gender and Government fronts. Therefore, the involvement and mobilising of the affected local communities has always and now more than ever, been an essential component of the whole Cycle of Disaster Management. Communities are a source of strength, experience and knowledge of living and adapting to the prevailing disasters in their own different ways. There are references to many incidences when local people predicted impending earthquakes or cyclones by observing natural sciences such as animal behaviours, changes in characteristics of ground water sources and abnormal weather phenomena¹. But in case of Baghjan, the local communities were not prepared for such a disaster as they were never accustomed to or warned of such unforeseen incidents. They were never given any training, or awareness on how they should practice resilience and preparedness being communities that reside among active

oil wells and natural gas outlets. And moreover, there is a growing realisation that community participation is the most effective element for achieving sustainable and long term results in disaster management and risk reduction. The government and the existing disaster management authorities have often failed to handle every end of the various disaster dynamics especially without the active participation of the people. There have been numerous instances where the top-down disaster management approach has not been affective according to their full potential and has created a gap between policy and practice. As a consequence, it was felt that it is high time to adopt a new strategy that will involve vulnerable people directly in planning and implementation of mitigation, preparedness, response, and recovery measures¹. Community participation, in particular, is gaining significance as communities are becoming increasingly vocal and keen for policy makers to "hear" the voice of their experience.² When the communities are included in the entire process involving sequential stages of disaster management, a decentralized, bottom-up, intensive, micro and local level approach comes into being which decreases the gap between the affected community and the existing institutionalised disaster management frameworks. Incorporating indigenou knowledge and practices pertaining to Disaster Preparedness, Early Warning Systems, Resilience and Risk Reduction can be considered as one of the significant ways of community based frameworks.

7. REFERENCES

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