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Climate Change and Democracy: Floods and Their Political Implications in Bihar, India

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Abstract

Can democracy solve the issue of climate change? This paper examines floods and relevant democratic politics in the northern Indian state of Bihar on the basis of historical context and field research. As previous studies have pointed out, there are cases in democratic politics where corruption aimed at winning an election hinders effective flood control projects. Meanwhile, it is also democracy that enables people's movements and political choices to correct corruption and demand better flood control projects. The results of the examination in this study show that democracy provides a ground for solving the issue of climate change.

1. The Question

Can democracy solve the issue of climate change? This question can be addressed in the context of the relationship between democracy and environmental issues, as has been examined in the past. There has been a debate between two contrasting positions on the role of democracy in solving environmental issues (Povitkina, 2018).

The first position argues that democracy can contribute to solving environmental issues. According to Payne (1995), there are five factors to be considered. First, because democracy assures individual rights and allows for the free circulation of ideas and information, it enables individuals to become more aware of the environmental issues they face and to urge their governments to take action when such issues arise. The second factor is the government's ability to respond. As governments are created by elections, they need to take public opinions into account. The more public interest in environmental issues increases, the greater the government tends to address environmental issues while suppressing opposition from the business community. The third factor is political learning. In a democracy, it is assumed to be easy for both the government and citizens to learn about other countries'

approaches to environmental issues. The fourth factor is internationalism. Democratic governments tend to more actively participate in international efforts to address environmental issues. The final factor is the free market. This argues that as awareness of environmental issues increases, it is assumed that environment-related businesses will develop, which will have more effective power in solving environmental issues than regulations.

Payne's argument has been amplified and applied to the issue of climate change through theories such as those of Li and Reuveny (2006), who argue that democracy has the effect of reducing the extent of human activity that directly causes environmental destruction, although the process of democratisation indirectly causes environmental destruction, and Bättig and Bernauer (2009), who argue that democracy at least contributes to making policies to solve the issue of climate change, although it is not clear whether democracy can actually solve the issue. Sjöstedt and Jagers (2013), who examined the issue of African fisheries as a case study, also concluded that the more democratic a country is, the more conducive it is to solve environmental issues, although with the reservation of excluding periods of turmoil and rapid political change.

The second position is, on the contrary, the opinion that democracy exacerbates environmental problems, or in a less strong claim, that the contribution of democracy is not clear. As a representative of this argument, 'The Tragedy of the Commons,' authored by Hardin (1968), has been cited by many researchers. Hardin did not directly discuss the relationship between environmental issues and democracy but argued that the population problem needs to be solved to protect the commons. Nevertheless, since Hardin has argued that restrictions on individual rights are necessary to protect the commons, it has been interpreted to be incompatible with democracy, which respects individual rights (Midlarsky, 1998; Arvin and Lew, 2011; and Sjostedt and Jagers, 2013).

Extending from the above discussion is Keefer's discussion of the relationship between democracy, in particular 'young democracies,' and public goods (Keefer, 2007). According to him, in young democracies, where trust in politicians is scarce, politicians focus their efforts not on investment in public goods, which does not lead to votes, but on providing specific and individual benefits to their supporters. Such corruption tends to be overlooked in situations where voters are less interested in politics in general, resulting in a lack of emphasis on investment in public goods. Therefore, the preservation of patron-client relationships in a democratic regime inhibits the provision of public goods. This argument has been extended and understood in terms of environmental issues (Povitkina, 2018). In the context of more industrialized societies, strong resistance to environmental regulation by industry has been viewed as an impediment to the resolution of environmental issues (Midlarsky, 1998: 344).

If not seeing the impact of democracy in a negative light, some studies suggest that the relationship between environmental policy and democracy is not clear. For example, Midlarsky (1998)

identified and examined six environmental indicators and found no certain relationship between democracy and environmental issues. According to his study, deforestation, carbon dioxide emissions, and soil erosion due to flooding have worsened under democratic regimes. Arvin and Lew (2011), who focused on democracy in developing countries, also found that although democracy in developing countries contributes to the improvement of environmental issues, the assessment of the improvement depends on how the targeted environmental issue is measured, and overall, they found no certain relationship between democracy and the solution of environmental issues.

In the context of the abovementioned debate on democracy and environmental issues, Povitkina (2018) has argued that it is the degree of corruption that determines the level of carbon dioxide emissions in democracies. In comparing 144 countries in the period between 1970 and 2011, she concluded that while more democratic countries tend to lower the level of carbon dioxide emissions, relatively uncorrupted systems of bureaucracy, government, parliament, and the judiciary are necessary to ensure lowered emission levels.

Many of the abovementioned theories employed quantitative analysis for verification in deriving general theories. In this paper, the author examines what has been happening in the front-line politics of climate change in consideration of the abovementioned arguments by taking up the case of the northern Indian state of Bihar. The author focuses on water issues created by climate change and relevant flood control issues.

2. Climate Change and South Asia

Disasters caused by global warming have been reported in many parts of the world. The sixth assessment report of the Intergovernmental Panel on Climate Change (IPCC), released this year, clearly states that human-induced climate change manifests itself in extreme weather events such as heat waves, heavy precipitation, droughts, and tropical cyclones (IPCC, 2021: 10). Although climate change is occurring in many parts of the world, South Asia is one of the most significantly affected regions. The Indian subcontinent consists of a unique topography, with the world's highest mountain range, the Himalayas, on the north side and the Indian Ocean surrounding the other three sides. In summer, the southwest monsoon blows from the Indian Ocean and hits the Himalayas to bring large amounts of rainfall, and in winter, the northeast monsoon blows from continental China. Recent studies have revealed that Asian monsoons have a significant impact on global atmospheric circulation, and 'The future behavior of the South Asian monsoon has implications for the whole world.' (Amrith, 2018: 16) Since the Indian subcontinent is the most active region of the Asian monsoon, examining the issue of climate change in South Asia will lead to considering the issue of climate change on a

global scale.[1]

In his latest book, *Unruly Waters: How Rains, Rivers, Coasts, and Seas Have Shaped Asia's History* (Amrith, 2018), historian Sunil Amrith described the most recent 200 years of history in South Asia, and India in particular, from the insightful perspective of how the struggle with water issues brought about by Asian monsoons has shaped the history of Asia. In this section, the author mainly relies on the Amrith book to overview the development of the relationship between the state and society with regard to flood control.

British colonial period

The Asian monsoon is characterised by an abundance of rainfall that supports people's livelihoods, although it is unstable and uneven in terms of the timing, location, and amount of rainfall (Das, Gupta, and Varma, 2007). This has been a matter of life and death for agriculture, which relies on rainwater. In the second half of the 19th century, famines associated with drought became more frequent, shaking the legitimacy of British colonial rule.

The first major problem was the severe famine that struck the Deccan Plateau in the south and parts of north-western India between 1876 and 1879 (Amrith, 2018: 65-89). Later, the central part of India was hit by famine due to severe drought in 1896 and 1897 and again in 1899 and 1900. As a result, millions of people lost their lives.

This period overlapped with the rise of nationalism among Indians. After the Great Indian Rebellion of 1857, political groups of Indians began to emerge, mainly in urban areas. They included, for example, the Poona Sarvajanik Sabha (1870), the Indian Association (1876), the Madras Mahajana Sabha (1884), and the Bombay Presidency Association (1885) (Sarkar, 1983: 88). Among these, the Poona Sarvajanik Sabha, led by M. G. Ranade, operated actively during the famine of the 1870s, conducting the first social survey in India and reporting the expansion of famine to the Bombay government in late 1876. The organisation then recommended measures such as 'Grains should be imported and sold gratis.' (Amrith, 2018: 67-68)

However, the British colonial government failed to combat the famine, as it was not willing to bear the enormous cost of the measures required. Although a large amount of rainfall was recorded in 1877, precious water was lost because it did not allocate any budget for the management and maintenance of tanks. Nightingale pointed out that '"the order having been issued for the stoppage of all public works in order to reduce the state government's expenses" as a measure to cut government spending. The result: "Millions of tons of precious water so ran to waste," and millions of people starved for want of water.' (Amrith, 2018: 77)

Despite the wasting of irrigation water, the famine could have been able to be remedied if the government had provided food aid following the suggestion by the Poona Sarvajanik Sabha. However,

instead of providing assistance, the colonial government thoroughly trimmed the size of the bailout package prepared by the Madras State government. The officer in charge was Richard Temple, who succeeded in minimising the damage of the Bihar Famine of 1873-1874, which occurred just before the 1876-1878 famine, by providing prompt food aid. The British government, however, condemned Temple's remedies. Attacked anonymously for his policies as 'an economic catastrophe, a culmination of unthrift and unreason,' (Amrith, 2018: 80) Temple drastically cut expenses during the 1876-1878 famine for his own personal advancement. Even the wages paid to those involved in relief work were mercilessly slashed, and this later became known as the notorious 'Temple wage.' (Amrith, 2018: 80)

As the death toll from starvation soared, criticism from Indians inevitably increased. In 1878, in the midst of the great famine, economist and nationalist Dadabhai Naoroji, known for his 'drain of wealth theory,' published his major work, *Poverty of India*, in which he bitterly criticised the British, quoted in Amrith (2018: 78) as below.

> The vast bulk of India's people were "living from hand to mouth," he wrote, so much so that "the very touch of famine carries away hundreds of thousands." Despite this, he argued, the Indian peasantry bore a "crushing" burden of land tax – India essentially paid for its own colonization through the "home charges" remitted each year to Britain. "Every single ounce of rice … taken from the 'scanty subsistence'" of India's people, Naoroji charged, "is to them so much starvation." Heedless of India's suffering, British rule, in contravention of its own state principle, "moves in a wrong, unnatural, and suicidal groove."

Naoroji's 'drain of wealth theory' continued to have a strong influence in subsequent years as an economic argument supporting the independence movement.

As mentioned above, even after experiencing the great famine, famines associated with drought occurred repeatedly. Although the famines of the 1890s did not cause as much loss of life as those of the 1870s because each state had its own famine laws, at least 1 million people lost their lives (Amrith, 2018: 84-86). The last major famine before independence was the Bengal Famine, which was caused by the denial policy conducted by the British as the Japanese troops invaded British Burma and approached the British Indian border (Nakazato, 2007). This famine, which occurred from 1942 to 1943 and resulted in a tremendous death toll from starvation estimated at three million, was caused by a combination of factors, including the disruption of Burmese rice imports following the Japanese occupation of British Burma; devastation caused by cyclones in the winter of 1942; the British Denial Policy, involving the seizure of ships and other means of transportation and the destruction of bridges and other infrastructure to block transportation routes to prevent the invasion of Japanese troops; and delays in relief measures by the British government (Nakazato, 2007; Amrith, 2018: 168-171). Nehru,

who was arrested and imprisoned immediately after the start of the Quit India Movement, which was the last major popular movement before independence, wrote, 'It was a man-made famine which could have been foreseen and avoided.' He harshly accused the government's response by writing, 'in any democratic or semi democratic country, such a calamity would have swept away all the government concerned with it' (quoted in Amrith, 2018: 169-170). As Nehru, Naoroji, Gandhi, and other leaders and participants of the independence movement rightly perceived, the essence of British colonial rule was deprivation from India. The repulsion and resistance of the Indian people against British rule resulted in the development of an independence movement and consequent independence. The hope of overcoming disasters caused by Asian monsoons was then placed in the independence movement and democracy.

Developments after independence

Even if a country achieves political independence, it cannot be said to be truly independent unless it is economically independent. The Nehru administration's economic policies were formulated from the perspective of how to achieve self-reliance and independence (Nakamizo, 2012). To achieve rapid industrialization, a socialist policy in which the state took responsibility for heavy industry was introduced, whereas the construction of large dams and embankments was emphasised as a flood control project to achieve a stable food supply and prevent famine from ever happening again. Nehru's enthusiasm for dam construction is well known. When Chinese Premier Zhou Enlai visited India in 1956, they together made a tour of the Bhakra Dam under construction in the north-western Indian state of Punjab, and Nehru introduced the dam to the Chinese leader as 'These are the new temples of India where I worship.' (Amrith, 2018: 198)

While the construction of those huge dams proceeded, the number of people sacrificed by the construction increased at an accelerated rate. It is estimated that some 40 million people had to be evicted in the 70 years of independence (Amrith, 2018: 212). This is a tremendous number of people, even accounting for the size of India's population. The mountainous areas where dams were built were mostly inhabited by indigenous mountain tribes, and many of those evicted were such people.[2] To protect their livelihoods, a movement against dam construction began to gain momentum in the 1980s. Symbolic of this was the Save the Narmada Movement, which opposed the Narmada River Development Project and succeeded in stopping the World Bank and the Japanese government from financing the project. However, the Indian government went ahead with its own development plans, and when the Sardar Sarovar Dam in the western Indian state of Gujarat was completed in the fall of 2017 as part of the plans, current Prime Minister Narendra Modi condemned environmentalists as '"anti-development" and purveyors of a "campaign of misinformation" – he took pains to point out that "with or without the World Bank, we completed this massive project on our own."' (Amrith, 2018:

293-294) The Indian government's basic policy of pursuing flood control through huge public works projects has not changed to date.

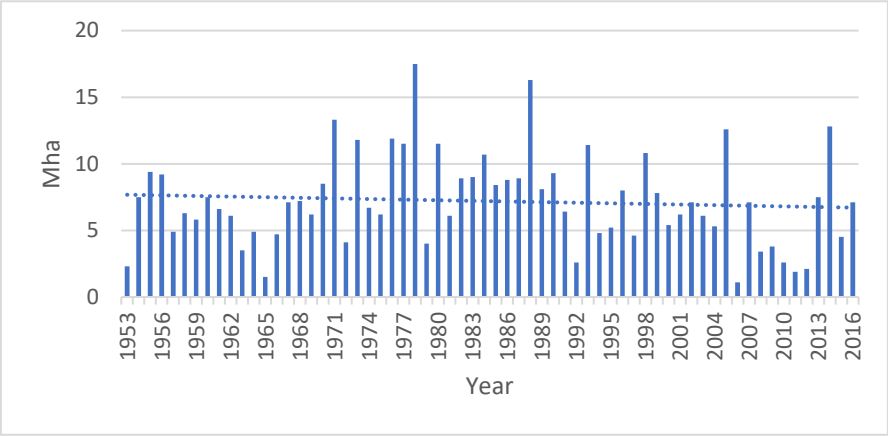
3. Floods and Democratic Politics: Case of Bihar State

Flood damage in independent India

Here is a question: Has the Indian government attempted to control floods by constructing large dams and embankments been successful? In this paper, the author discusses the relationship between democracy and climate change for the case of Bihar State, which has many rivers in the Himalayan riverine system and is considered to be one of the most vulnerable states to the effects of global warming.

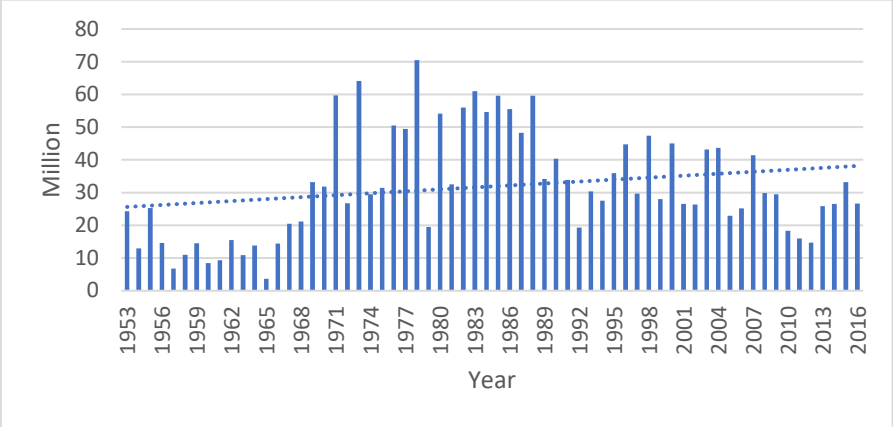
Before considering Bihar, the author overviews the overall trend in India. The area affected by floods and heavy rains is decreasing, although a slight decrease would be a more appropriate description, as shown in Fig. 1. In terms of the number of people affected by floods and heavy rains, the trend is upward, as shown in Fig. 2. Furthermore, the total amount of damage to crops, dwellings, and public facilities has increased markedly, particularly since the 2000s (Fig. 3). Although further analysis is needed to measure the impact of global warming in offsetting the effects of flood control through large public works projects, it is at least clear that the large projects that the Indian government has promoted since independence have failed to sufficiently address the flood damage associated with global warming.

Fig. 1: Area affected by floods and heavy rains (1953-2016 in India)



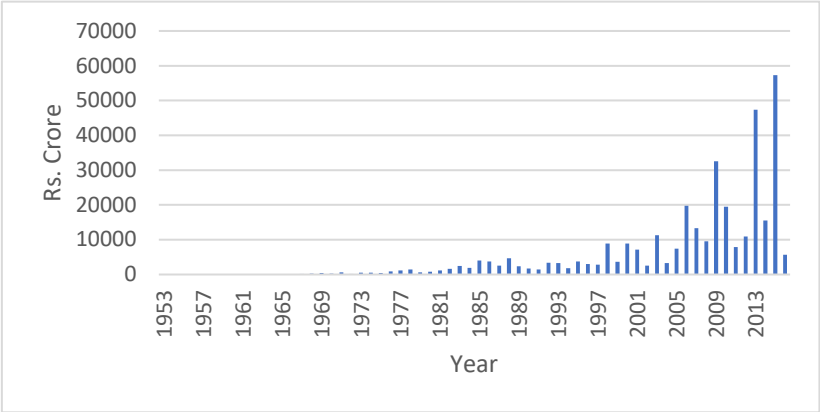
Source: National Remote Sensing Centre (2020: 2-3), Table 1.

Fig. 2: Number of people affected by floods and heavy rains (1953-2016 in India)



Source: National Remote Sensing Centre (2020), Table 1, p. 2-3.

Fig. 3: Total damage to crops, houses, and public buildings due to floods and heavy rains (1953-2016 in India)



Source: National Remote Sensing Centre (2020), Table 1, p. 2-3.

Note: Rs. 1 crore means 10 million rupees.

Flood damage in Bihar

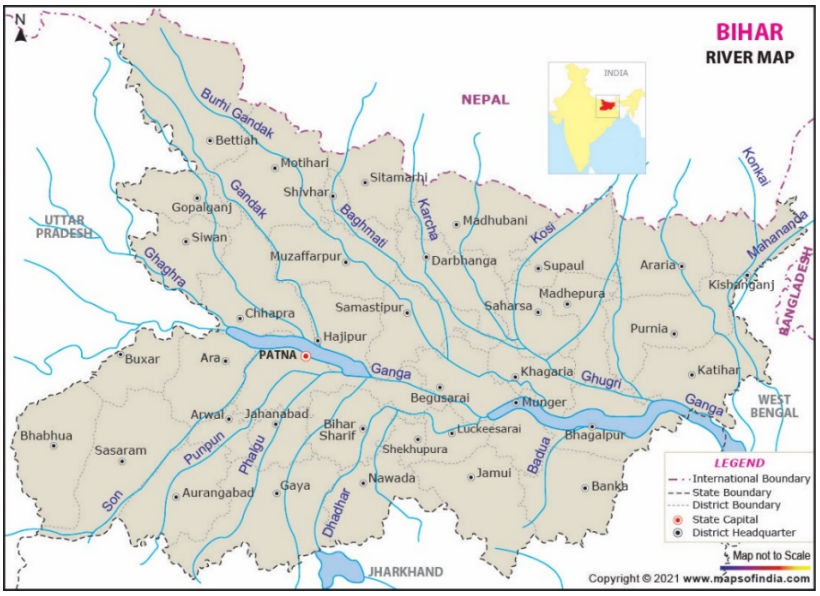
Now, what has been the situation in Bihar? Bihar is a northern Indian state bordering Nepal. When a severe drought struck northern India in 1965-1966, famine was declared for the first time in post-independence India, and it brought about a major opportunity for India's agricultural policy to steer towards the Green Revolution (Nakamizo 2020: 131-137). Today, Bihar is still an agricultural state, with approximately 89% of its population living in rural areas; thus, flood control is of life-and-death importance in supporting livelihoods.

As Fig. 4 shows, Bihar has a number of rivers flowing from the Himalayan mountain range north of the Ganges, which flows through the central part of the state, with 65% of the catchment areas of these rivers being situated in Nepal and the Tibetan Plateau (National Remote Sensing Centre, 2020:

18). Since these rivers flow down through the steep slopes of the highest mountains in the world and into the Ganges, Bihar has been plagued by frequent floods even after independence.

As Fig. 5 shows, Bihar still accounts for 17.2% of the flood-prone areas in the country, and 76% of the population in North Bihar, which is directly affected by the rivers of the Himalayan riverine system, is at risk of flood damage (National Remote Sensing Centre, 2020: 17).

Fig. 4: Rivers flowing through Bihar



Source: *Maps of India* (https://www.mapsofindia.com/maps/bihar/rivers/)

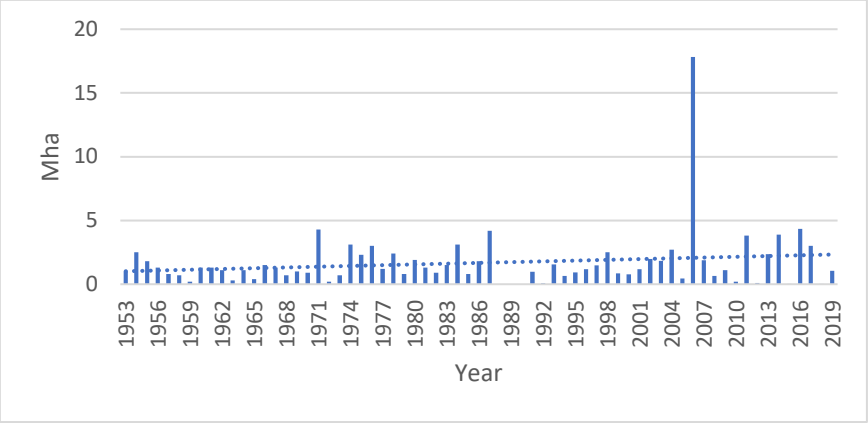
Fig. 5: Flood-prone areas in India

Source: Das, Gupta, and Varma (2007: 181), Figure: Flood-prone areas

In the following, the author examines data pertaining to changes in damage over the time period from 1953 to 2019. As a first aspect, the area damaged by floods is increasing, as shown in Fig. 6. Next, the number of people affected is also on the rise, as shown in Fig. 7. Finally, the total amount of damage also shows a marked increase from the beginning of the 2000s, similar to the trend found in all of India (Fig. 8). In Bihar, as in all of India, it is very likely that the large-scale public works projects that have been developed since independence have not been sufficient to deal with the flood damage caused by global warming. In particular, the three decades since the 1990s have seen frequent flooding, with major floods in 1998, 2004, 2007, 2008, 2012, 2013, 2016, 2017, 2018, and 2019. Namely, major floods have occurred almost every year since 2016.

In this paper, the focus is on the politics relevant to the Kosi River, which is one of the most violent rivers in northern Bihar and is known as the 'Sorrow of Bihar.'

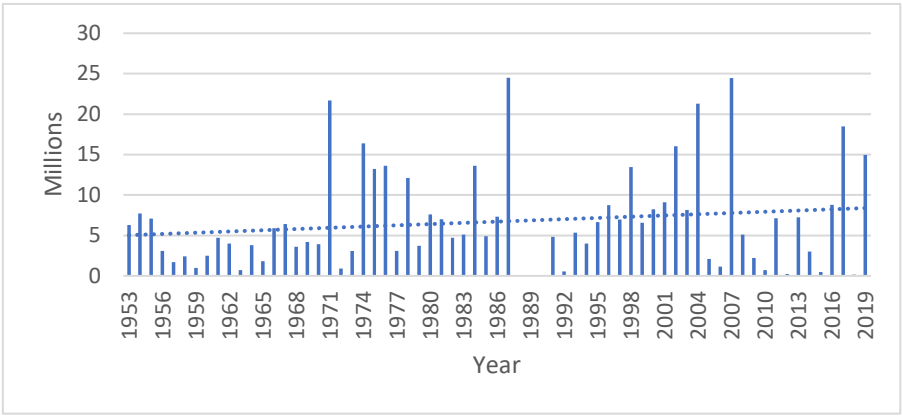
Fig. 6: Area affected by floods and heavy rains (1953-2019 in Bihar)



Source: National Remote Sensing Centre (2020), Table 5, p. 18-19.

Note: Data for the period 1988-1990 are missing and arethus recorded as zero.

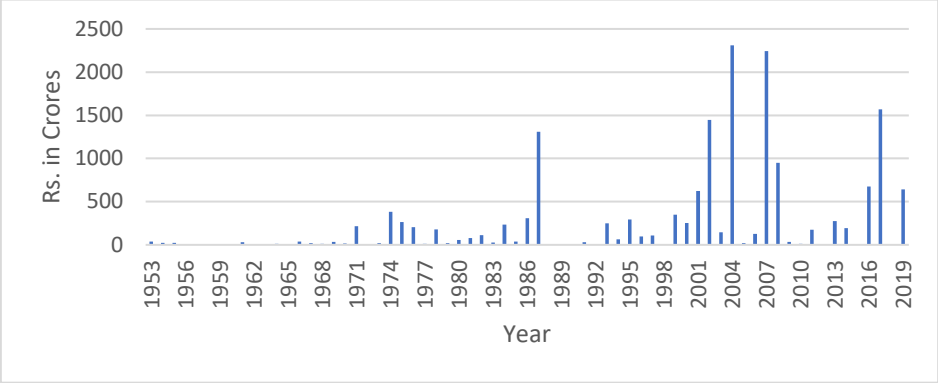
Fig. 7: Number of people affected by floods and heavy rains (1953-2019 in Bihar)



Source: National Remote Sensing Centre (2020), Table 5, p. 18-19.

Note: Data for the period 1988-1990 are missing and arethus recorded as zero.

Fig. 8: Total damage to crops, houses, and public buildings due to floods and heavy rains (1953-2019 in Bihar)



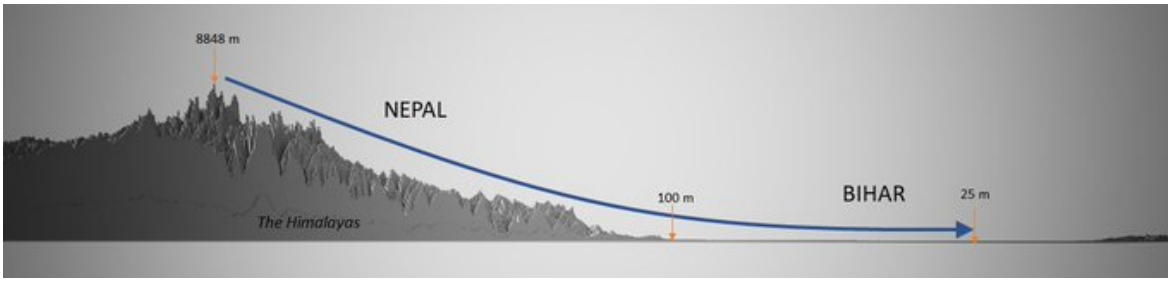
Source: National Remote Sensing Centre (2020), Table 5, p. 18-19.

Note: Rs. 1 crore means 10 million rupees. Data for the period 1988-1990 are missing and are thus recorded as zero.

Politics of the Kosi River: Great Flood of 2008

With its long history, the Kosi River has been perceived as the most difficult river in India to control. The river has Chomolungma, the world's highest mountain, and Kanchenjunga, the third-highest mountain, in its headwaters. As Fig. 9 shows, the river water descends along a stretch of approximately 300 km through a height difference of more than 8,000 metres (Palanichamy, 2020).

Fig. 9: Channel elevation profile of the Kosi River



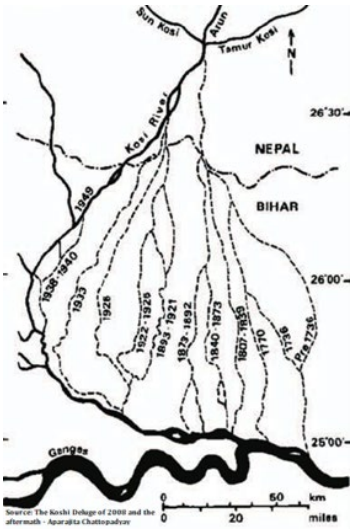
Source: Palanichamy (2020)

In its flow process, the river carries a huge amount of silt, which is said to be the largest scale in the world (Centre for Science and Environment, 1991: 99). The deposition of silt raised the riverbed and caused frequent changes in its course during each flood event. As Fig. 10 shows, the course moved approximately 120 km west during the period of around 200 years between the 18th century and the time when the course was secured by the construction of the Kosi Barrage after independence. Today, the basin where the Kosi River used to run through is called the Kosi

region, which includes the three districts of Saharsa, Supaul, and Madhepura.

Due to frequent flooding, the Kosi region suffered from the spread of cholera and other epidemics as well as poverty during the colonial and early independence periods.[3] However, the British colonial government took no action, stating that flooding, which carried silt that enriched the soil, was more of a 'necessary evil.' In 1896-1897, a conference on the pros and cons of embankment construction was held in Calcutta, then the capital of British India, and the Kosi River was a subject of discussion. However, the construction project was rejected for the following reason: 'The proposal was considered to be of doubtful efficacy and it was concluded that no steps were feasible for controlling the course of this big river with its numerous channels and wide and elevated beds, beyond protecting, by short length of embankments, isolated tracts exposed to its floods.' (Centre for Science and Environment, 1991: 102-104) In 1937, this policy was repeated, stating that the construction of embankments would only transfer the problem from one area to another and would be rather harmful. The river course was not secured until after independence, when the Kosi Barrage, constructed in Nepalese territory under the Kosi Agreement between the Government of India and the Government of Nepal, was completed in 1963 and the construction of embankments in Bihar proceeded.[4]

Fig. 10: Changes in the course of the Kosi River



Source: Palanichamy (2020)

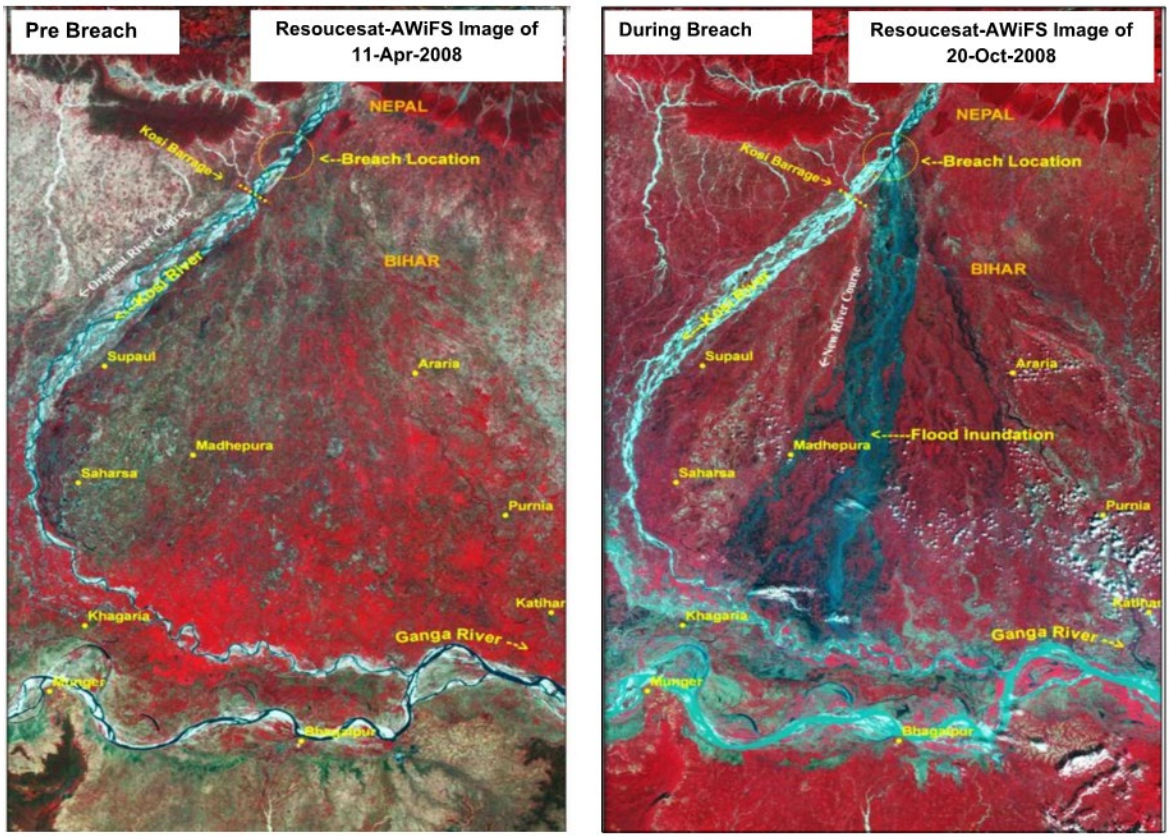
However, as evidenced by post-independence floods, the Kosi project failed to prevent flooding. A report by the Centre for Science and Environment, which is India's leading think tank on environmental issues, declared that the project was simply a 'Grand failure.' (Centre for Science and Environment, 1991: 98-99) The causes are, first, as mentioned earlier, that the Kosi River is one of the rivers that carry the largest amount of silt in the world, which causes the

riverbed to rise; and second, that the embankments of the river are low, have structural problems, and are not well managed. As suggested by the Centre for Science and Environment (1991: 122-125), corruption also is implicated here. That is, by deliberately causing embankments to fail by not repairing them sufficiently, contractors can gain additional profits, and politicians can undertake larger public works projects to gain electoral advantage. Although it is not clear whether corruption was a direct cause, this concern became a reality in the Great Flood of August 2008, following an embankment breach.

This embankment breach occurred in the territory of Nepal on August 18, 2008. As Fig. 11 shows, the damage, which was mainly in the Kosi region, extended to the districts of Purnia, Katihar, Khagaria, and Araria. The districts of Madhepura and Supaul were the most affected.

The government's reaction was slow. It was not until two days later, on August 20, that Nitish Kumar, the Bihar Chief Minister, who was leading the coalition government of the Janata Dal (United) and the Bharatiya Janata Party, visited the affected areas. At this stage, relief by the military had not yet begun.[5] It was not until August 27, 10 days after the breach, that Nitish Kumar met Prime Minister Manmohan Singh of the central government to seek the central government's support,[6] and it was not until the following day, August 28, that Singh toured the affected areas with Sonia Gandhi, president of the Indian National Congress, and others and declared the disaster as a National Calamity, announcing a 10.1 billion rupee aid package.[7] Although relief efforts by the military got into full swing, the support did not go far enough, and on August 31, an official announcement was made that 90 people had died.[8] The slow progress of relief work frustrated the victims, and it has been reported that the state minister in charge (Minister of Water Resources Development) was sued by farmers.[9]

Fig. 11: Flood of the Kosi River in 2008



Source: National Remote Sensing Centre (2020), Fig. 18. Pre- and post event changes due to breach in the Kosi River embankment, p. 25.

While relief efforts failed to advance, exchanges of political accusations ensued. The Deputy Minister of Water Resources Development in the central government, who belonged to the Rashtriya Janata Dal, which was Bihar's opposition party and a ruling party of the central government, said the disaster could have been prevented if Nitish's state government had taken measures against floods, stressing that the state government was responsible.[10] The Rural Development Minister of the central government, who also belonged to the Rashtriya Janata Dal, accused the Nitish administration of not taking relief work seriously.[11] In response to these accusations, the Minister of Water Resources Development in the Nitish administration reciprocated by saying that the opponents were playing dirty politics with the tragedy.[12] Nevertheless, the relief efforts did not go ahead. In the end, the number of people affected was estimated to be between 3 million and 3.5 million.[13]

State assembly elections in 2010: Case of Madhepura constituency

The Kosi region has been a particularly poor and underdeveloped region, as mentioned, and used to be riddled with epidemics, even in one of the poorest states of India, Bihar.[14] Politically, it has

been the strong base of socialist parties since independence (Nakamizo, 2020: 110-116). The proportion of backward castes is high in the Kosi region, particularly in the Madhepura District, whose proportion of backward castes is the highest in Bihar. In the 1962 parliamentary (Lok Sabha: the House of the People) elections, the strength of socialist forces was symbolized in the Saharsa constituency by the victory of socialist B.N. Mandal over L.N. Mishra, a big-name politician of the ruling Indian National Congress who had been said to have made a fortune by contracting the Kosi project.[15] In the 1967 general elections, B.P. Mandal, a Samyukta Socialist Party candidate, won in the Madhepura Lok Sabha constituency, and in 1968, he became the first chief minister of Bihar from the backward castes, symbolizing the political rise of the backward castes (Nakamizo, 2020: 93-97). Again, the region became one of the centres of the JP movement, an anti-Congress movement that began in 1974. From the 1977 state assembly elections to the present, socialist parties have continued to occupy the seat, while competing with each other among the socialist hold.

It was mentioned above that Madhepura was the district most severely affected by the 2008 Great Flood of the Kosi River. The author now takes a look at how local politicians acted in the wake of the catastrophe and how the voters evaluated them.

The topic addressed here is the state assembly constituency of Madhepura, which is central to the Madhepura District. At the time of the flooding, the incumbent state legislator was M.K. Mandal, who belonged to the Janata Dal (United), the ruling party in the state. As the third son of the aforementioned B.P. Mandal, a big-name backward caste politician, M.K. Mandal fought the elections as a successor after the retirement of B.P. Mandal from politics. However, he was defeated in both the 1980 and 1990 state assembly elections, in which he ran, and finally achieved his first victory in the 2005 state assembly election. It took him 25 years to this end, since he had inherited the electoral ground from his father.

The Mandal family, into which M.K. Mandal and his father B.P. Mandal were born, was a large zamindar family and a traditional ruling elite during the British period (Nakamizo, 2020: 66-72). When B.P. Mandal won the first state assembly election after independence, running for the Indian National Congress, his election had an aspect of institutionalization of the rule of the traditional elite. The villagers of Murho, where the head Mandal family resided, also supported B.P. Mandal, but when he was succeeded by M.K. Mandal, the support fell away. The victory of M.K. Mandal in the 2005 state assembly elections was more in part due to the unpopularity of his rival candidate from the Rashtriya Janata Dal than support for himself (Nakamizo 2020: 299-304). The Great Flood of 2008 took place in this context.

When the author interviewed Murho villagers during the 2010 state assembly elections, they severely criticised the handling of the Great Flood of 2008 by M.K. Mandal. According to

them, when the flood occurred, M.K. Mandal did not carry out any relief work and quickly evacuated to a safe place in the state capital of Patna. When the floodwater receded and M.K. Mandal returned to his home, the villagers blocked the road from protesting against him and demanded compensation.[16] When the author interviewed M.K. Mandal himself, he handed the author a small pamphlet containing a photo of him on a boat touring a flooded shopping area in Madhepura, suggesting that the allegation of his evacuation quickly without doing anything was a misconception.[17] However, the villagers' perception was that the then-incumbent legislator, who should have taken the lead in the relief work, had failed to discharge his responsibilities, so that the blame was straitly directed at M.K. Mandal. Ultimately, in the 2010 state assembly elections, he failed to obtain a party ticket from Janata Dal (United) and retired from politics. The winner was a candidate of the rival party Rashtriya Janata Dal.

4. Climate Change and Democracy

At the outset of this paper, the author posed a question of whether democracy can solve the issue of climate change. Previous studies have developed various academic theories about the effects of democracy on the basis of two opposing views. The author has examined historical developments from the British Indian era to the present day, as well as the Kosi project and the democratic politics surrounding it in the Bihar State of India, and has come to the conclusion that democracy provides a ground for solving the issue of climate change.

The British colonial rule, which was essentially based on the deprivation of India, never earnestly approached the issue of controlling floods caused by unstable monsoon conditions. Rising up against repeated famines, the Indians developed an independence movement and expelled the British. It goes without saying that the goals of independence were rich in content and not limited to the issue of water management. Nevertheless, overcoming hunger through water management was certainly one of the important goals. This was truly an attempt to solve the issue of water management through democratisation.

After independence, the government of India, which emerged as a democratic nation, believed that modern technology could solve the issue of water management and thus the food problem and pushed ahead with public works projects to build large dams and embankments. However, as the data in this paper show, while the amount of flood-affected areas has hardly decreased, the number of people affected has risen, and the total amount of damage has increased rapidly in the 2000s. In Bihar State, which has a number of rivers in the Himalayan riverine system, the area of damage, the number of people affected, and the total amount of damage have all

continued to rise.

With the effectiveness of large-scale public works projects in doubt, the number of people forced to leave their homes as a result of dam construction has risen to approximately 40 million, centering on the scheduled tribes who mainly reside in forest areas. Since the 1980s, environmental movements to protect their livelihoods and oppose the construction of large dams have gained momentum. This movement, for example, against the Narmada River Development Project, has had some success and continues to this day, even though Prime Minister Modi has accused them of 'being anti-development and purveyors of a "campaign of misinformation."' It is certain that democracy has enabled this movement.

During the 2008 Great Flood of the Kosi River, the state administration was severely criticised, and the state legislators were the direct targets of protests for failing to provide adequate relief. Although the Nitish administration won the 2010 state assembly elections, the incumbent legislator from the Madhepura constituency, which was directly affected by the floods, was forced to retire from politics. This is one good example of how political leaders can be punished in elections when they mismanage a crisis. Here, we can see one of the functions of democracy.

As Keefer has pointed out, the problem of ineffective implementation of flood control policies under democratic regimes due to corruption associated with patron-client relationships certainly exists in India. At the same time, Indian democracy ensures an opportunity to raise objections against rulers for the resulting flood damage. As global warming progresses further, flooding is likely to increase. At any rate, the ground provided by democracy is used to prevent floods and prepare means to provide quick relief. In this sense, democracy has the potential to solve the issue of climate change.

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[1] In the coming decades, South Asia is expected to experience more extreme rainfall, higher average air temperatures, higher Indian Ocean water temperatures, rising sea levels, and more frequent and larger cyclones in the Arabian Sea. Refer to Dhara and Koll (2021).

[2] As these people were placed at the bottom rank of Indian society, they were subject to affirmative action under the Constitution and covered under the reservation system as scheduled tribes.

[3] Interview with Professor P. C. Mandal at Murho, Madhepura District, Bihar State, February 15, 2004.

[4] 'The Sorrow of Bihar', *eGov Magazine*, October 1, 2008,

(https://egov.eletsonline.com/2008/10/the-sorrow-of-bihar/ Last accessed on August 16, 2021)

[5] Refer to 'Army to join flood relief operations', *The Hindu*, August 21, 2008. (https://www.thehindu.com/todays-paper/tp-national/tp-otherstates/Army-to-join-flood-relief-operations/article15286358.ece Last accessed on August 17, 2021)

[6] Refer to 'Nitish seeks Central Aid', *The Hindu*, August 28, 2008. (https://www.thehindu.com/todays-paper/tp-national/Nitish-seeks-Central-aid/article15290810.ece Last accessed on August 17, 2021)

[7] Refer to K. Balchand, 'Rs. 1,010-crore flood relief package for Bihar', *The Hindu*, August 29, 2008. (https://www.thehindu.com/todays-paper/Rs.-1010-crore-flood-relief-package-for-Bihar/article15291691.ece Last accessed on August 17, 2021)

[8] Refer to K. Balchand, 'No let-up in flood situation', *The Hindu*, August 31, 2008. (https://www.thehindu.com/todays-paper/No-let-up-in-flood-situation/article15293037.ece Last accessed on August 17, 2021)

[9] Refer to K. Balchand, 'Flood situation deteriorates in north Bihar, Lower Assam districts', *The Hindu*, September 1, 2008. (https://www.thehindu.com/todays-paper/Flood-situation-deteriorates-in-north-Bihar-Lower-Assam-districts/article15295091.ece Last accessed on August 17, 2021)

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[12] 'Bihar rejects Union Minister's allegation over Kosi breach', *The Hindu*, September 1, 2008. (https://www.thehindu.com/todays-paper/tp-national/tp-otherstates/Bihar-rejects-Union-Ministerrsquos-allegation-over-Kosi-breach/article15294760.ece Last accessed on August 17, 2021)

[13] R. Krishnakumar, 'A snake in knots', *Frontline*, September 26, 2008, pp.113-118. 'The Sorrow of Bihar', *eGov Magazine*, October 1, 2008, (https://egov.eletsonline.com/2008/10/the-sorrow-of-bihar/ Last accessed on August 16, 2021)

[14] In addition to the aforementioned interview with Professor P.C. Mandal, interviews with Professor Satchidanand Yadav (February 4, 2004) and Professor S.K. Yadav (February 5, 2004) in Madhepura City. The situation has not changed significantly in recent years. According to Table 4 of Pandey (2020: 15), although Saharsa ranked 11th out of 40 districts in terms of average per capita gross district production between fiscal 1999/2000 and fiscal 2011/2012, the Madhepura and Supaul Districts both ranked 30th.

[15] Refer to Centre for Science and Environment (1991: 123). L.N. Mishra later assumed the important post of Railway Minister in the Indira Gandhi administration but was assassinated in 1975. The constituency was taken over by his younger brother, Jagannath Mishra, who had a strong influence in Bihar politics, serving as Chief Minister three times in the 1970s and 1980s.

[16] Interview with Yadav farmers, Murho village, Madhepura District, Bihar State, October 23, 2010.

[17] Interview with Mr. M.K. Mandal in Murho Village, Madhepura District, Bihar State, October 21, 2010.

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