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Burning Landscapes: Assessing the Concerns and Actualities of Forest Fires in India

| Anusha Arif



Issue Brief

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ISSUE BRIEF

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ABSTRACT

Forest fires have emerged as a critical environmental concern in India, further enhanced by the country's susceptibility to climate-related risks. This paper investigates India's escalating threat of forest fires over the last two decades by examining the interplay between vulnerability, ecological significance and state disparities. A comprehensive analysis of secondary data sources makes a case for urgent examination of the cause and the preventive actions taken by the state and central governments. Insights gleaned from personal interviews with fire professionals with the government and conservation societies provide an in-depth understanding of the on-ground reality of forest fires and its related challenges. In light of these findings, the paper advocates for proactive measures to mitigate the risks associated with forest fires in India. It emphasises the necessity of interventions to regulate the human activities that have involuntarily exposed forests to fires and awareness campaigns for sensitive communities residing in high-risk forest fire zones.

INTRODUCTION: FOCUS ON FORESTS IN INDIA

India has been identified as one of the most vulnerable countries in the world to climate change impacts (Eckstein, 2021) based on the overall socio-economic and environmental impact caused by climate events. The Climate Risk Index that ranks India as the seventh worst-hit country takes extreme weather events into account, such as the surplus rain that contributed to major loss of life and economic damage in 2019 (Mohan, 2021). Other climate-related disasters have intensified over the years, such as cyclones, especially in the eastern parts of the country, floods, droughts and extreme heat waves in many parts of the country. A collaborative study by IIT, Delhi and CCRS Singapore (Mishra, 2020) reveals that India is already facing a climate emergency, which has resulted in the shrinking of the economy by 31%, and further economic losses are predicted with an increase in the occurrences of extreme weather events.

Among the impacts of climate change, an unprecedented rise in forest fires has environmentalists and conservationists echoing their concerns. India has also witnessed an increase in the number and intensity of forest fires in the last two decades. Forest fire or wildfire is an uncontrolled fire that burns in the wildland vegetation, often in rural or semi-rural areas (NatGeo, 2022). The reported rise in forest fires has been significant. In the last two decades, there has been a 10-fold increase in the incidences of forest fires across the country (Mohanty, 2022).

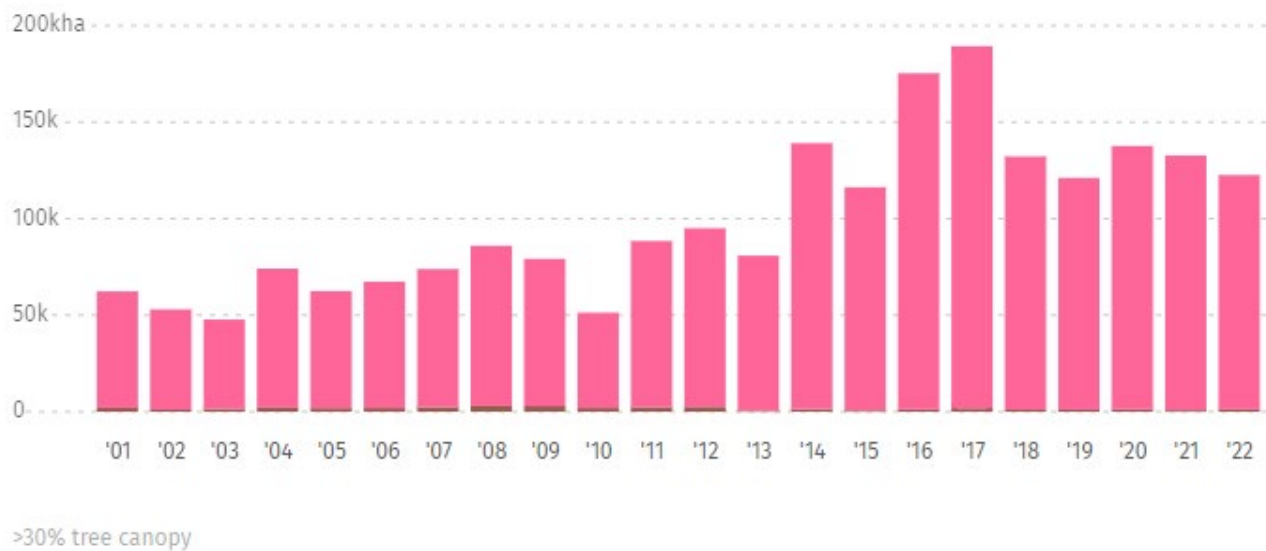
Forests play an important role in the mitigation of climate change. As part of its intentional climate change commitments in 2015, India committed to increasing its forest cover to absorb an additional 2.5 billion to 3 billion tonnes of carbon dioxide equivalent by 2030 (GOI, 2022). However the Indian State of Forest Report (2021) shows a minimal increase of 0.16 million ha (0.2 percent) in the forest cover between 2019 and 2021. A dichotomy arises between the government reports, such as the Forest Survey of India Report of 2021, that claim that forest cover has increased by 1,54,000 hectares from 2019 to 2021 and international reports that claim that India has lost 668,400 hectares of forest cover in the last 30 years (The Hindu, 2023). International reports are supported by expert environmentalists and researchers who contest the claim by the Forest Survey Report by arguing that the definition of “forest cover” in India is flawed by its very nature.

They point out that the definition includes all patches of land where the density of tree canopy exceeds 10% and the area exceeds 1 ha; this includes plantations, orchards and the like (Deshpande, 2021). This leads to a general overestimation of the forest cover in the country and could lead to obvious issues of reduction in a carbon sink for a country which is already struggling to limit its Greenhouse Gas (GHG) emissions. However, the new Forest (Conservation) Amendment Bill proposed does provide some more clarification in what should constitute ‘forest land’ by noting that any tree, tree plantation or reforestation area alongside a railway line or within a distance of one hundred kilometres from an international border or line of control will not be included under the act (Forest Conservation Amendment Bill, 2023). Notably, the expansion of forest cover is also missing from the country’s updated Nationally Determined Contributions (NDCs) under the Paris Agreement (GoI, 2022).

For India, as one of the top emerging emitters in the world, increasing forest cover could have great potential in mitigating its emissions by increasing carbon sink. China, one of the largest emitting

countries, has also focused on expanding its land carbon sink since the 1980s through forest expansion policies. Land ecosystem model simulations reveal a strong carbon sink in the country, contributing to nearly 44 percent of the national terrestrial carbon sink (Yu et al., 2022). The country had adopted significant reforestation policies around the 2000s, especially in its southern regions; these led to more densified forest cover yet there is little data available on other spatial details about China's forest transition (Tong et al., 2023).

While India makes significant progress in renewable energy and transitions, it will likely continue its coal dependency over the next decade or more. To balance its climate commitments and development needs, it must bank on the expansion of its carbon sink capacity. However, currently, India's forests are under substantial pressure both because of physical damage due to forest fires, development activities, and policies that are counter-effective with localised conservation measures.



Source: Land lost due to Forest Fires in India; Global Forest Watch

Amidst this, the alarming rise in forest fires over the last two decades gives multiple reasons for concern. Uncontrolled forest fires have devastated many parts of the country causing severe damage to forests and ecosystems. Between 2013 and 2021, the forest fires detected have increased by 186 percent. Additionally, the land lost to forest fires has fluctuated in the last couple of years since its peak in 2017.

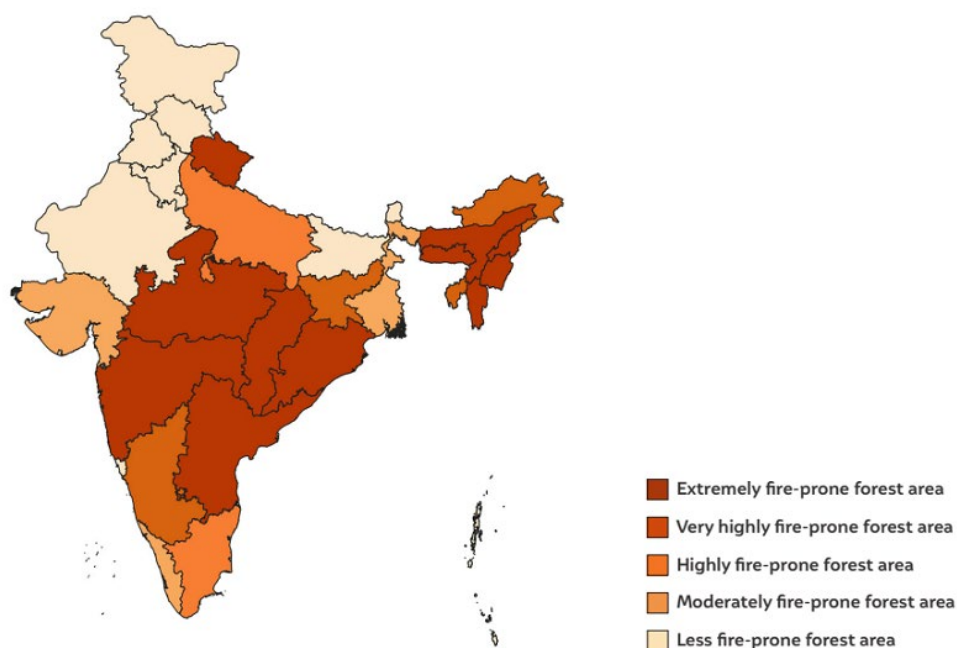
Some states in India are more prone to forest fires than others due to differences in base-level micro-climates, and the reports of forest fire incidences are more from drought hotspots (Mohanty, 2022). Recently, Karnataka recorded the country's worst forest fires between March 18 and 24, according to the Forest Survey of India (FSI) reports. It had 437 forest fire incidents in the third week of March, followed by Odisha (376), Maharashtra (249), Andhra Pradesh (180) and Madhya Pradesh (117) (Prasher, 2023).

Category	Forest Cover(in sq km)	% of total forest cover
Extremely Fire Prone	20 074.47	2.81
Very Highly Fire Prone	56 049.35	7.85
Highly Fire Prone	82 900.1 7	11.61
Moderately Fire Prone	94,126.68	13.19
Less Fire Prone	4 60 638.36	64.54
Total	7,13, 789.03	100.00

Source: PIB, National Action Plan on Forest Fire empowers all stakeholder to reduce vulnerability of forest against fire hazards, March 16, 2023.

The data is based on a spatial analysis carried out by the FSI on the forest fires detected over the past 17 years, between the period of 2004 and 2021.

Figure 1: States with their fire-prone forest area

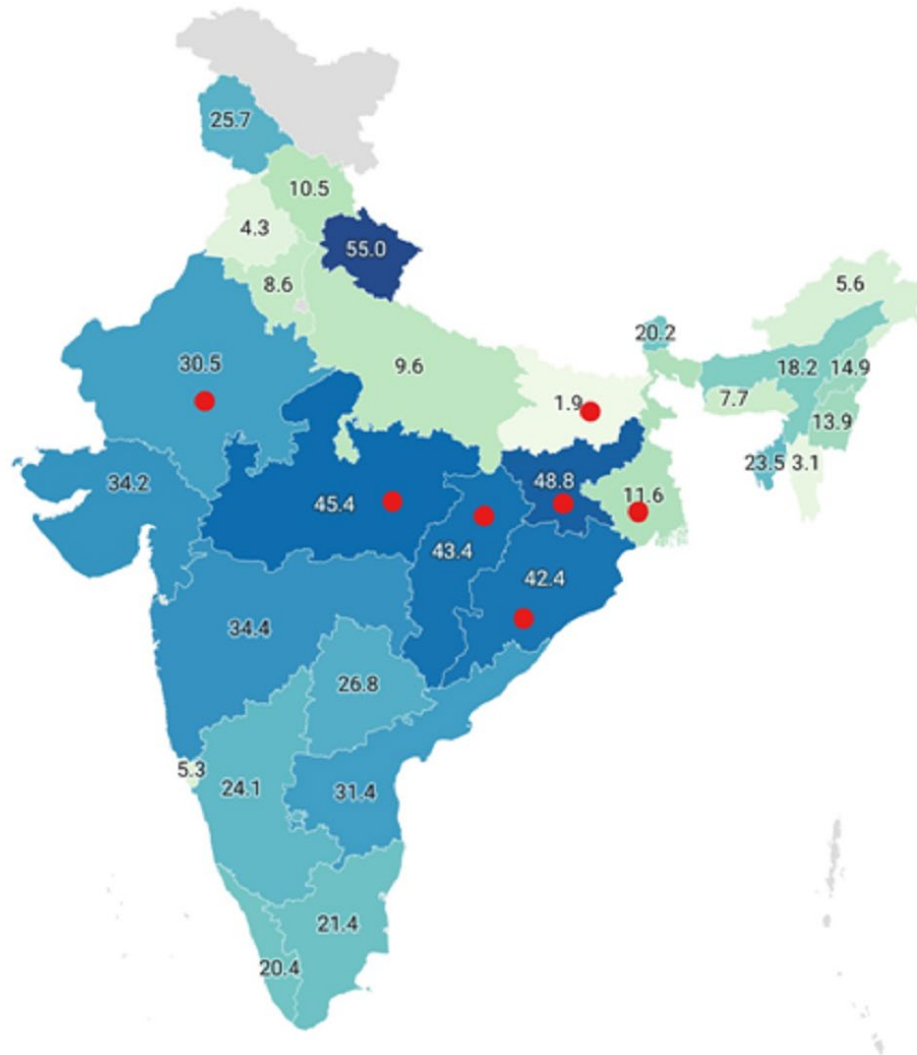


Source: Mohanty A. & Mithal V. (2022, April). *Managing Forest Fires in a Changing Climate*. CEEW

Forest fringe village population as % of total population

Dark color indicates higher value

1.94 55.02



Map based on author's analysis of data from Forest Survey of India (2019) & Population estimates of 2020 by UIDAI.

Map data: © OSM · Created with Datawrapper

In terms of human settlements, the Census of India 2011 revealed that there were nearly 1,70,000 villages located in the proximity of forest areas at the time; these are often termed Forest Fringe Villages (FSI, 1999). There are nearly 154 villages across India, which are merely at a distance of one km from the forest, while there are 14 villages that are located within a forest in the states of Andhra Pradesh (2), Chhattisgarh (5), Gujarat (5) and Himachal Pradesh (2) respectively (FSI, 2019). As of 2019, these villages were home to around 22 percent of the country's total population (Prateek & Punia, 2023). In recent years, less data can be found to show the difference in forest fringe community sizes due to persistent fears of forest fires. Among the many other problems associated with forest fires on a larger scale, it also entails the risk that arises from the proximity of human settlements such as the obvious impact on human health and the destruction of property due to these fires.

UNDERSTANDING FOREST FIRES

Forest fires are not classified as natural hazards, as evidence suggests that anthropogenic factors cause most fires. According to a technical study by the Forest Survey of India almost 95 percent of the forest fires have been linked to some human activity at its origin (Kumar S.,2019). The National Disaster Management Authority does not classify forest fires as a natural disaster due to its link to anthropogenic factors. However, it does take into account the impact they caused, and has conducted some consultative workshops on forest fire management in India. These steps are small and far between in the current scenario.

Furthermore, lightning strikes are among the most common natural factors, the threat of which has escalated due to climate change and the excessive drying up of forest cover. The ecological differences also lead to each zone having different attributable reasons to sudden forest fires.

For instance, the state of Orissa, which has the third highest tribal population (The Hindu, 2022) has been one of the worst affected states by forest fires. In March 2023, the country had raging forest fires in 142 places across various districts (CNBC, 2023). Some of the fires are attributed to human activities; the tribal communities set parts of the forest on fire for shifting cultivation and collection of mahua flowers and kendu leaves (Mohanty, 2023). The mahua leaves are vital for the tribal communities in Odisha, who consume these flowers as food and alcohol and, in many cases, sell them to earn their livelihoods. For cultivation purposes and overall dependence on the mahua flower, the communities often start intentional fires. These cultivation periods coincide with the drier period for forests in general, which enables the spread of these fires more easily. (Abdul S., personal communication). The extinguishing of forest fires poses its own challenges—narrow pathways do not allow water-tankers to pass through. In many cases, the firemen are thus forced to use hand sprays to extinguish the fire and risk their lives in the process.

To control forest fires, the government must take regional measures that focus on anthropogenic and collaborative approaches with the tribal or local population. An organisation based in Pithoragarh, Uttarakhand called the Harela Society (named after the festival in Uttarakhand celebrating prosperity and nature conservation) focuses on filling the gap in advocacy and working with the rural communities on conservation measures and controlling forest fires. Many of the communities in Uttarakhand believe that the government's steps in promoting forest conservation have been futile to a great extent, especially because they have led to an alienation of the community from the forest. Over the years, the dependence of local communities on forests for fuel, wood or fodder has diminished because of a major shift in lifestyle (Matwal, personal communication). The policy framework has further diluted the powers of a pre-existing system of Van Panchayats that was in place in the local ecosystem for conservation efforts in Uttarakhand. Even the Uttarakhand Panchayati Forest Rules, 2001, have strengthened the administrative control of the District Administration and Forest Departments (Negi, n.d.). Although the Van Panchayat have been incorporated under Section 28 of the Indian Forest Act, 1927, the excessive control of the government has decreased the autonomy of the local body, and a resultant weakening of the relationship between the forest and the community living around it has further contributed to the reluctance in partaking in conservation measures.

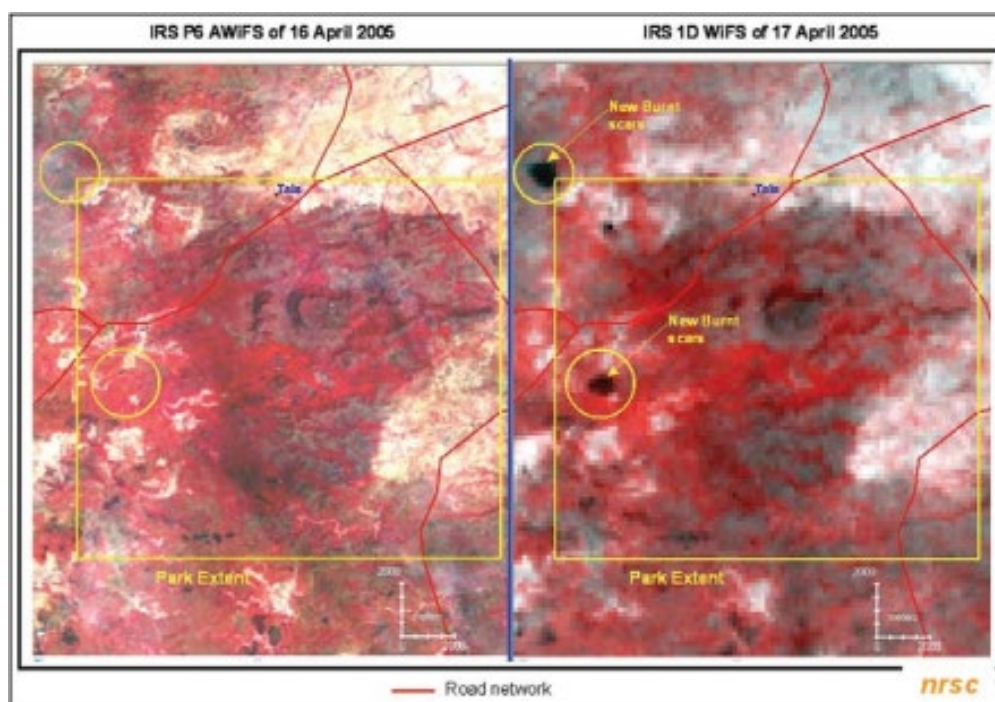
There is also a long history of conflict between the Forest Department and the local population, even

in the state of Uttar Pradesh. The conflict arises from the rights on timber and the dissatisfaction of the latter with the distribution of the rights within the new system (Bahuguna, 2002).

MEASURES FOR FOREST FIRE MONITORING IN THE COUNTRY

Historically, fire has been used as a management tool for the restoration of the natural ecosystem. While not all fires are bad for the forest, it is important to prevent uncontrolled catastrophic wildfires that can lead to loss of life and property and damage to biodiversity. To this end, the Forest Survey of India has developed a Near Real Time Forest Fire Detection System, which uses geospatial point data showing forest fires by the National Remote Sensing Centre (NRSC) (Kumar, 2019).

Figure 2: Near Real Time Damage Assessment in and around Bhandavgarh National Park



Source: Madhya Pradesh Remote Sensing Applications, National Remote Sensing Centre

For monitoring the large forest fires across the country, the FSI launched a beta version of the Large Forest Fire Monitoring Programme in 2019, which is part of its FSI Fire Alert System. The programme also includes post-fire restoration/rehabilitation efforts and damage assessment from the fire in terms of the area, severity of burn, canopy cover loss, etc (FSI, n.d.).

To balance the fight for rights, the government has made policy initiatives such as the Joint Forest Management (JFM), which largely evolved as a top-down approach (FAO, 2017). Further recognising the rights of the forest-dwelling communities, the government gave the scheduled tribes and other traditional forest dwellers rights of self-cultivation, habitation and community rights such as grazing, fishing and access to water bodies in the forests under the Forest Rights Act (FRA) 2006. The proposed Amendment Bill could potentially weaken forest conservation infrastructure in the country by taking away important power from the Village Committee and the FRA, 2006. However, there is a policy limitation for the involvement of fringe communities in the event of a forest fire. Many environmental conservationists now believe that there is a need for the government to involve the communities living in the areas around the forest in the discussion to club scientific methods of safety with traditional knowledge (Mishra, 2023). The involvement of the forest fringe communities may also be a good preventive measure by raising awareness of the potential dangers of settling intentional fires in light of the changing climate that leads to these fires spreading more rapidly. The government's initiatives in regulating the sale of the mahua flowers could indirectly help regulate the setting of intentional fires in the outskirts of states like Orissa.

As a policy measure, the National Action Plan on Forest Fires (NAPFF) was launched in 2018 to minimise and control the increase in forest fires. The action steps proposed under the NAPFF include informing and empowering the forest fringe communities and incentivising them to work with the Forest Departments (PIB, 2023). However, between 2013 and 2021, forest fires detected went up by 186% as per the data from FSI's State of Forest Reports (Dubey, 2022). A fund to support the efforts sponsored by the Central Forest Prevention and Management Scheme, Development of Wildlife Habitats and Compensatory Afforestation Fund Management and Planning Authority has also been set up. However, the utilisation of this fund is often unaccounted for or is used for ambiguous initiatives, such as cycle rallies that serve no real purpose (Garhwal Post, 2023).

Even in the face of the alarming rise of forest fires in the country, major legislations and policies related to forests either remain silent on fire management or have largely been inefficacious. Moreover, in the new proposed amendment Bill, no provisions focus on the controlling elements that have led to an increase in the number of forest fires.

CONCLUSION

The consequences of uncontrolled forest fires are usually felt in multiple ways; it leads to reduction in the air quality, loss of wildlife habitat and, in some cases, even loss of life and property for the communities living around the forests. In a long-term context, the loss of forest cover in the country degrades the carbon sink resources available to the country. However, major forest policy and legislations have still remained somewhat stagnant amid growing concern. The department's actions are limited to achieving the bare minimum by creating wildfire lines and watchtowers to manage these fires.

While the government has taken specific measures for monitoring active forest fires, a comprehensive plan must incorporate elements of preventive measures to combat the situation. Other countries, such as the US (which has also faced severe challenges from forest fires in the past years), have tried to incorporate stricter measures with compliance mechanisms on private property. India can take lessons on focused approaches, but it must devise its own strategy to successfully solve region-specific vulnerabilities. The State Action Plan on Climate Change in many states, including Himachal Pradesh, Kerala and Tripura, have incorporated certain forest fire risk mitigation measures and planning. For instance, the Tripura SAPCC includes the use of a fire risk zone in forest planning, similar to a planning approach taken in Finland to curb the risks of forest fires. It uses gaps in the forest area to disallow the rapid spread of fire from one area to another.

These actions, clubbed with socio-economic measures and awareness generation on a localised level through community radios, workshops and mobile campaigns, can help build a long-term plan for the mitigation of forest fires in the country.

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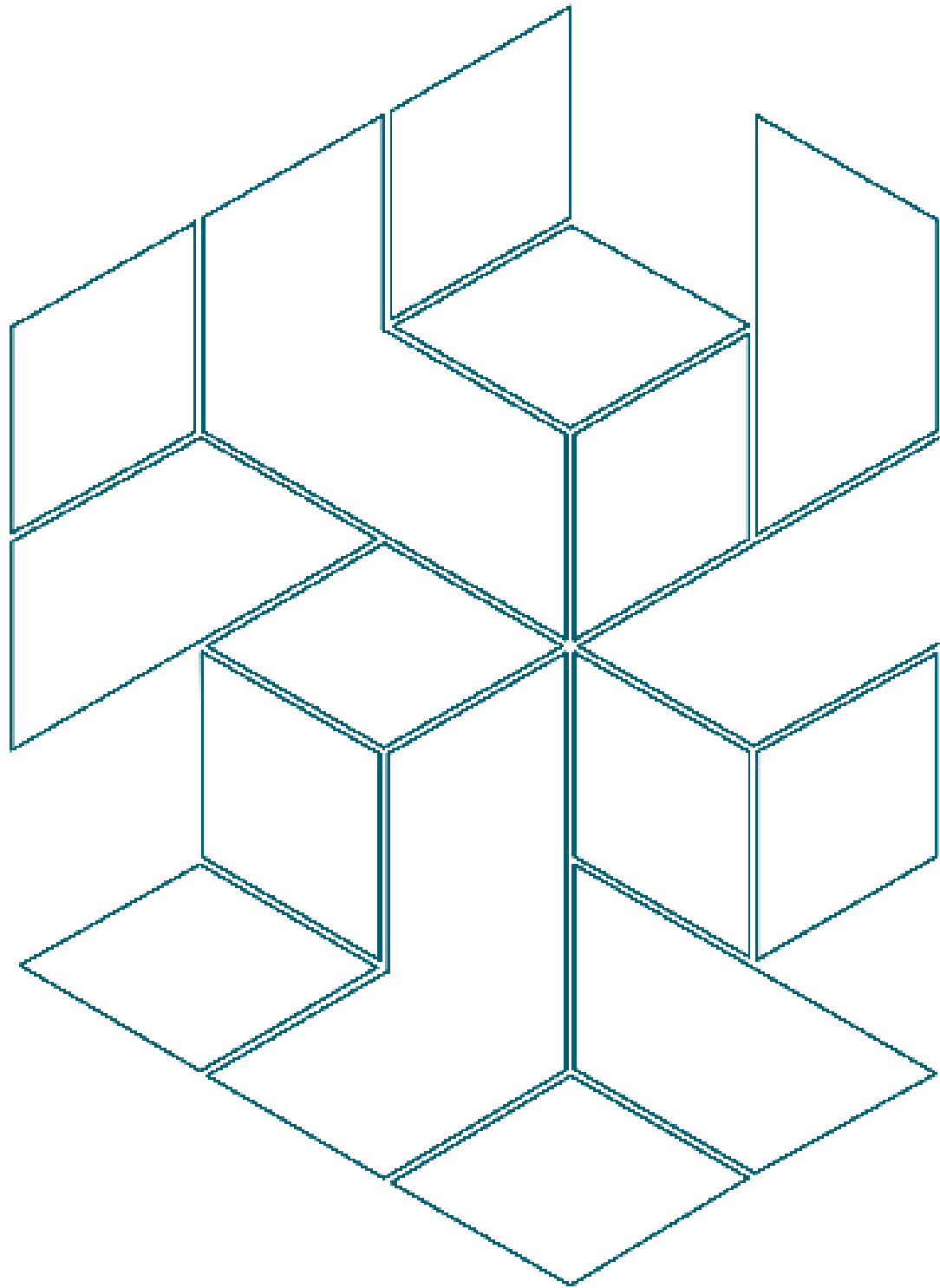
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