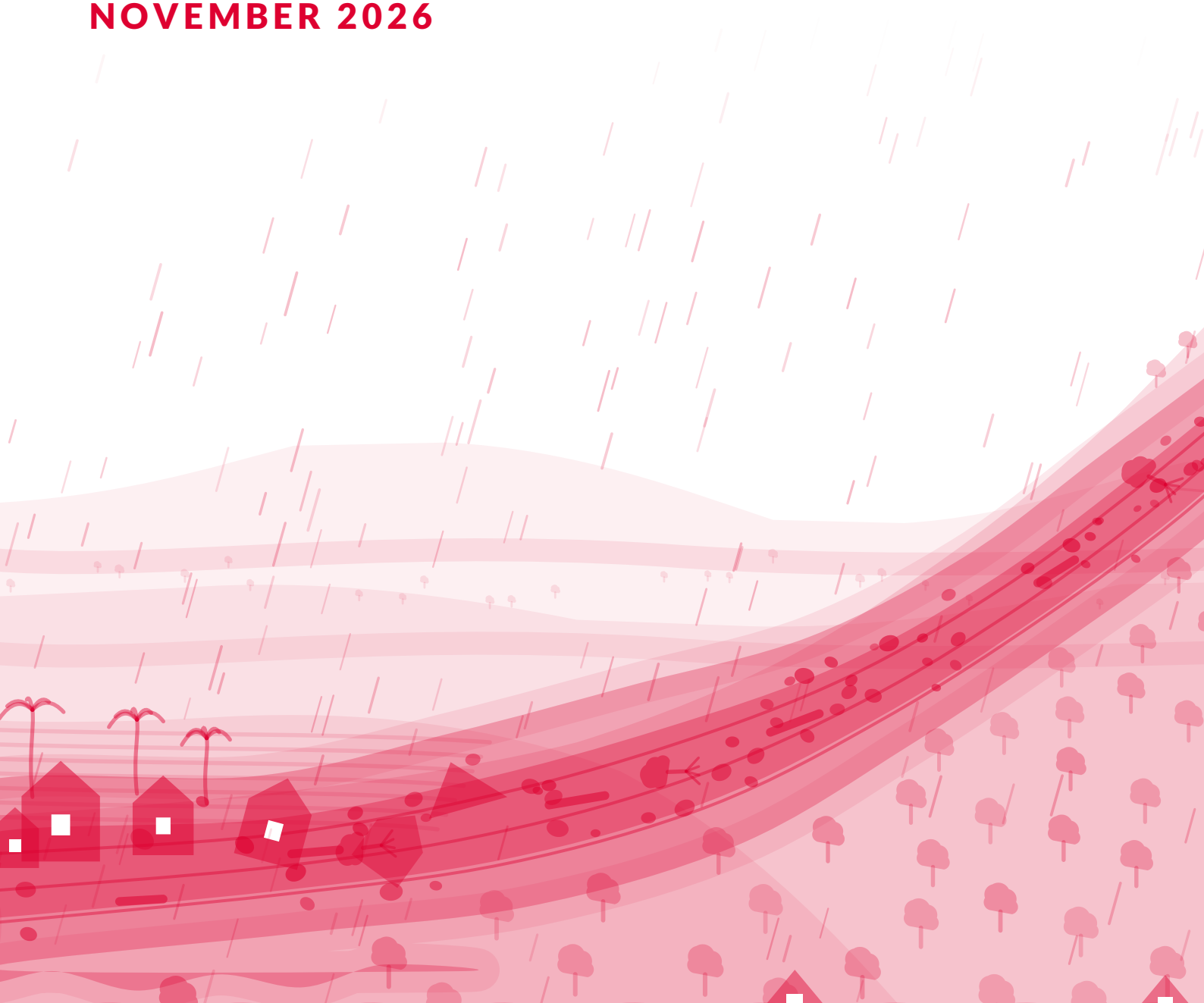
V | D H | Centre for Legal Policy

A Discussion Paper

Climate Risks and the Draft Western Ghats Ecologically Sensitive Area (ESA)

NOVEMBER 2026



CLIMATE RISKS AND THE DRAFT WESTERN GHATS ESA
A Discussion Paper

15th November 2026

This is an independent, non-commissioned piece of work by the Vidhi Centre for Legal Policy, an independent think-tank doing legal research to help make better laws and improve governance for public good.

About the Authors

Anandhu P.M. is a Research Fellow, Climate & Ecosystems at Vidhi.
Debadityo Sinha is a Senior Resident Fellow and Lead, Climate & Ecosystems at Vidhi.
Dr Preeta Dhar is a Senior Resident Fellow, Climate & Ecosystems team at Vidhi.

Correspondence

For any clarifications/ queries in relation to this submission, please contact:

Vidhi Centre for Legal Policy
IndiQube Grandeur, 2nd Floor,
14, Walton Rd, Shanthala Nagar, Ashok Nagar,
Bengaluru– 560001

environment@vidhilegalpolicy.in

1. Introduction

On 27 July 2026, the Ministry of Environment, Forests and Climate Change (MoEFCC) issued a Draft Notification for declaring the Western Ghats Ecologically Sensitive Area (WGESA) under the Environment (Protection) Act, 1986. This was the seventh such Draft Notification (see Table 1) to initiate the process to demarcate and conserve the WGESA, covering an area of 56,825.7 sq km spread across six States – Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala, with the largest areas falling in Karnataka and Maharashtra (see Table 2). Vidhi, in collaboration with Ashoka Trust for Research in Ecology and the Environment (ATREE), had previously submitted a joint response to the sixth draft notification for the WGESA in September 2024. However, the fate of the WGESA remains uncertain. Although the power to finalise the WGESA rests with the Central Government, reportedly none of the State Governments support it.[1] The Karnataka Legislative Assembly and Council convened a special session to unanimously reject the proposal,[2] and the Kerala Legislative Assembly has passed a resolution to reduce the area of the WGESA in the State and dilute some safeguards.[3] In addition to this lack of political support from the State Governments, misleading narratives about the proposed restrictions continue to fuel public apprehension. As a result, despite the urging of environmentalists and repeated judicial directives,[4] the final Notification of the WGESA remains in limbo.

Table 1: Draft Notifications of the Western Ghats ESA, 2014–2026

Draft notification	Date of publication
First draft	10 March 2014
Second draft	4 September 2015
Third draft	27 February 2017
Fourth draft	3 October 2018
Fifth draft	6 July 2022
Sixth draft	31 July 2024
Seventh draft (S.O. 4106(E))	27 July 2026

Table 2: State-wise Extent of the WGESA proposed in the 2026 Draft Notification

State	Area (sq. km)	Districts	Taluks	Villages
Gujarat	449	3	8	64
Maharashtra	17,340	13	56	2,515
Goa	1,461	2	5	108

[1] Bosky Khanna, 'Western Ghats ESA — Why the Kasturirangan Report Is Still Stuck' *The New Indian Express* (1 October 2026) <https://www.newindianexpress.com/explainers/2026/Oct/01/western-ghats-esa-why-the-kasturirangan-report-is-still-stuck>.

[2] Prathima Nandakumar, 'Karnataka Assembly Unanimously Rejects 7th Kasturirangan Draft, Seeks One-Year Extension' *Deccan Herald* (Bengaluru, 22 September 2026) https://www.deccanherald.com/india/karnataka/karnataka-assembly-passes-resolution-rejecting-kasturirangan-report-in-present-form-4155244

[3] 'Keralam Assembly Passes Resolution Urging Centre to Accept Revised Western Ghats ESA Proposal' *Deccan Herald* (Thiruvananthapuram, 15 October 2026) <https://www.deccanherald.com/india/keralam/keralam-assembly-passes-resolution-urging-centre-to-accept-revised-western-ghats-esa-proposal-4183696>.

[4] The Supreme Court had considered the issue of notifying the WGESA in *TN Godavarman Thirumulpad v Union of India* (IA No 3620/2013 in WP No 202 of 1995) and transferred the matter to the NGT (2016) 13 SCC 586(2). As documented in *Goa Foundation v Union of India*, this was not done, and the NGT directed the MoEFCC to notify the WGESA at the earliest, and no later than six months (2018 SCC Online NGT 1320). The NGT reiterated in 2020 that there was 'no justification for continued delay merely because the States have sought exclusion of area from eco sensitive zone' and directed the MoEFCC to proceed with the final Notification by 31 December 2020 (2020 SCC Online NGT 1653).

State	Area (sq. km)	Districts	Taluks	Villages
Karnataka	20,668	10	33	1,449
Tamil Nadu	6,914	7	28	135
Kerala	9,993.7	12	29	131
Total	**56,825.7**	**47**	**159**	**4,402**

While the impasse continues, environmental and climate change issues in the Western Ghats intensify. In addition to being one of the world's 'hottest hotspots' of biological diversity for supporting endemic and endangered species,[5] the Western Ghats performs important hydro-ecological functions. The range intercepts the south-west monsoon, shapes rainfall across peninsular India, and is the origin of several rivers, including the Godavari, Krishna and Cauvery.[6] These features not only make the Western Ghats ecologically valuable but also make it fragile and susceptible to climate change. This article demonstrates this by examining historical trends and patterns of landslides, floods and droughts in the region. It consolidates official records and geospatial information, analysed at the State and District levels, for the 47 Districts included in the 2026 Draft Notification. The available information indicates that these climate change-associated risks are acute and intensifying in the proposed WGESA. It is therefore urgent to finalise and notify the WGESA to regulate developmental activities and ensure that they are within the carrying capacity of this fragile and sensitive landscape. This is necessary to increase resilience and mitigate the risks of climate-extreme events in this region.

2. Landslides in the Proposed WGESA Districts

The Geological Survey of India's inventory records 34,207 landslide incidents in India between 1905 and 2024.[7] The 47 Districts of the proposed WGESA account for 7,983 of these, or 23.3%, the third-highest regional share after the North-Western Himalaya (14,445; 42.2%) and the North-Eastern Himalaya (11,702; 34.2%). Almost every landslide recorded in the Western Ghats States falls within a WGESA District, and 13 of the 50 most landslide-affected Districts in India lie in the Western Ghats. This underscores that the 47 Districts in the proposed WGESA are among the most landslide-prone areas in the country.

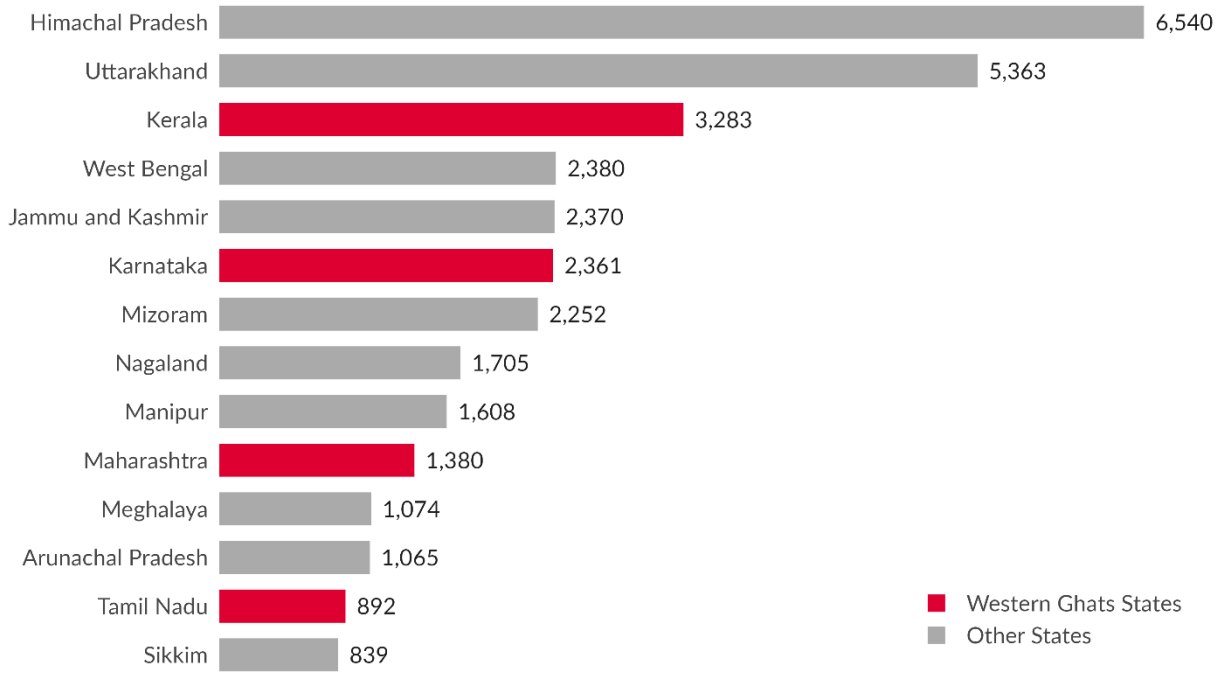
This dataset also indicates that the issue is most acute in Kerala among the six WGESA States. It has the third-highest number of recorded incidents nationally (3,283), following Himachal Pradesh (6,540) and Uttarakhand (5,363) (see Figure 1). District-wise, Idukki, with 1,791 incidents (5.2% of the national total), ranks second only to Darjeeling (1,984; 5.8%).

[5] UNESCO World Heritage Centre, 'Western Ghats' (UNESCO World Heritage Convention) <https://whc.unesco.org/en/list/1342/>.

[6] TV Ramachandra and S Bharath, 'Carbon Sequestration Potential of the Forest Ecosystems in the Western Ghats, a Global Biodiversity Hotspot' (2020) 29 Natural Resources Research 2753 <https://doi.org/10.1007/s11053-019-09588-0>.

[7] Geological Survey of India, *National Landslide Inventory (Bhusanket)* <https://bhusanket.gsi.gov.in/pics/landslide_report.pdf>; Geological Survey of India <https://gsi.gov.in/home/>. All landslide data used in this article are drawn from the National Landslide Inventory. The database provides information on the latitude, longitude, slide name, state, district, subdivision/taluk, material involved, movement type, initiation year, and history date of each recorded landslide.

Figure 1: Recorded Landslides by State



Source: GSI (n7)

In the Western Ghats since 2014, most landslides occurred on highly modified sloped landscapes alongside intense rainfall (see Table 3). Notably, the Pronab Sen Committee had identified slopes as a criterion for identifying 'ecologically sensitive' landscapes which require regulated activities and land-use changes.[8] However, the regulation of activities on such slopes remains inadequate in the Western Ghats.

Table 3: Recent Major Landslide Disasters in the proposed WGESA Districts

Location	Date	Rainfall	Casualties	Notes	Reference
Malin, Pune	30 July 2014	Excessive rainfall	151 dead	Improper drainage, unplanned agricultural activities and deforestation	Shah et al. (2021)[9]
Kavalappara, Malappuram	August 2019	Intense rainfall	About 60 dead	Hilltop cleared for rubber plantations	The New Indian Express (2019)[10]
Pettimudi, Idukki	6 August 2020	309 mm in one day	78 deaths	Plantations and residential structures on slopes	George et al. (2025)[11]
Taliye, Raigad	July 2021	Extreme rainfall	87 deaths, more than 30 houses buried	Improper slope management practices	Peethambaran et al. (2023)[12]

[8] The Pronab Sen Committee Report (2010) had identified steep slopes as a primary criterion, and not-so-steep slopes as an auxiliary criterion for declaring an area to be 'ecologically sensitive'.

[9] CR Shah and others, 'A Hill Slope Failure Analysis: A Case Study of Malingoan Village, Maharashtra, India' (2021) 5(1) Geology, Ecology, and Landscapes 1 <https://doi.org/10.1080/24749508.2019.1695714>.

[10] 'Kerala Floods: How Negligence and Greed Led to the Kavalappara Tragedy' *The New Indian Express* (12 August 2019) <https://www.newindianexpress.com/states/kerala/2019/Aug/12/kerala-floods-how-negligence-and-greed-led-to-the-kavalappara-tragedy-2017928.html>.

[11] KA George and others, 'Landslide Risk Assessment in a Century-Old Tea Plantation Range Following Monsoonal Extremes in the Western Ghats of Kerala, India' (2025) 4 Anthropocene Science 14 <https://doi.org/10.1007/s44177-024-00082-8>.

[12] B Peethambaran, V Nandakumar and K Sweta, 'Engineering Geological Investigation and Runout Modelling of the Disastrous Taliye Landslide, Maharashtra, India of 22 July 2021' (2023) 117(3) Natural Hazards 3257. < https://doi.org/10.1007/s11069-023-05985-0 >

Location	Date	Rainfall	Casualties	Notes	Reference
Shirur, Uttara Kannada	16 July 2024	260 mm on the previous day	7 dead	Slope toe excavated for NH 66	Kundu et al. (2025)[13]
Meppadi, Wayanad	30 July 2024	572 mm in 48 hours	239 dead, 59 missing; 1,555 houses destroyed	Failure along a pre-existing crack, triggered by heavy rainfall	Yunus et al. (2025)[14]
Kalladi, Wayanad	7 July 2026	—	7 dead, 2 missing	Tunnel excavation	Mongabay India (2026)[15]

3. Floods in the Proposed WGESA Districts

The India Flood Inventory-Impacts developed by Saharia et al. ("IFI-Impacts") includes year-wise information on floods in India from 1967 to 2023.[16] This dataset shows a clear pattern of increased flood risks in the proposed WGESA. In 1970–1980, floods affecting WGESA Districts constituted 13.4% of the total number of floods recorded in India.[17] By 2010–2020, this had risen to 28.9% (see Table 4 and Figure 2).

Table 4: Floods in India and in the proposed WGESA Districts by Period, 1970–2020[18]

Period	All India	ESA Districts	ESA share (%)
1970–1980	239	32	13.4
1980–1990	795	145	18.2
1990–2000	1,185	241	20.3
2000–2010	1,134	278	24.5
2010–2020	1,219	352	28.9

Source: IFI-Impacts (n 16)

[13] Priyajit Kundu, Varun Menon, Sreevalsa Kolathayar and Pruthviraj U, 'The Shirur Landslide of July 2024 Triggered by Intense Rainfall and Unchecked Development' (2025) 5(2) Natural Hazards Research 413 <https://doi.org/10.1016/j.nhres.2025.01.005>.

[14] AP Yunus and others, 'Chronicle of Destruction: The Wayanad Landslide of July 30, 2024' (2025) 22(6) Landslides 1891 <https://doi.org/10.1007/s10346-025-02494-y>

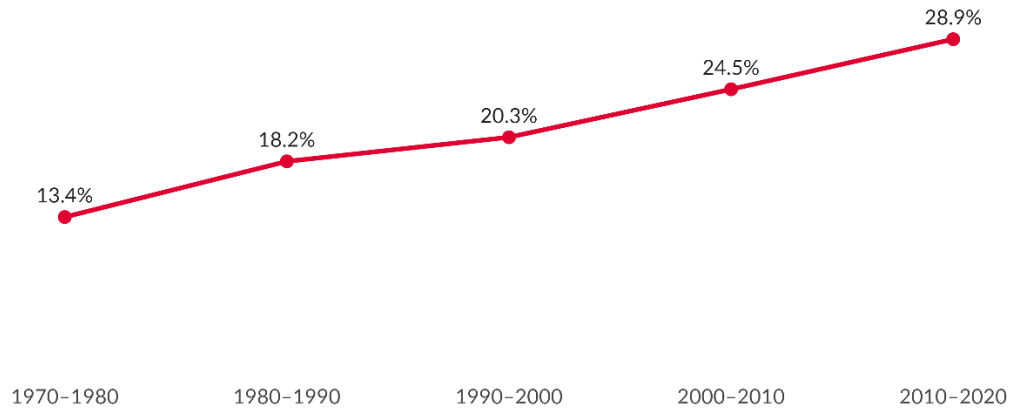
[15] KA Shaji, 'Tunnel Landslide Raises Fresh Questions over Mountain Development' (Mongabay India, 14 July 2026) <https://india.mongabay.com/2026/07/tunnel-landslide-raises-fresh-questions-over-mountain-development/>.

[16] Manabendra Saharia, 'India Flood Inventory-Impacts (IFI-Impacts) [1967–2023]: A Multi-Source National Geospatial Database to Facilitate Comprehensive Flood Research' (Dataset, Natural Hazards, Zenodo 2024) <https://doi.org/10.5281/zenodo.16994648>. All flood data in this article are drawn from this dataset. This information has been published by the authors in peer-reviewed journal articles. See Saharia and others (2025) <https://link.springer.com/article/10.1007/s11069-025-07493-9>; Saharia and others (2021) <https://link.springer.com/article/10.1007/s11069-021-04698-6>.

[17] The analysis uses five ten-year periods, each closed at the lower bound, so that '1970–1980' covers 1970 to 1979. For the convenience of analysis, the part-periods 1967–1970 and 2020–2023 have been excluded. India recorded 22 floods in 1967–1970, of which 3 affected a District in the proposed WGESA, and 2,282 floods in 2020–2023, of which 342 affected a District in the proposed WGESA.

[18] Table 4 counts the number of separate floods. Each flood in the IFI-Impacts dataset has its own ID. A flood is counted once if it affected at least one WGESA District.

Figure 2: Share (%) of India's Floods Affecting the proposed WGESA Districts, 1970–2020



Source: IFI-Impacts (n 16)

The dataset also indicates that the increase in floods in the Western Ghats Districts has been significantly higher than in the rest of India. Between 1970–1980 and 2010–2020, floods across India rose by 410.0%. Over the same period, floods in the WGESA Districts rose by 1,000.0% (see Table 5). Almost all WGESA Districts are affected by floods: all 47 Districts recorded at least one flood in both 1990–2000 and 2000–2010, while 46 Districts recorded floods in 2010–2020 and 41 Districts recorded floods in 1970–1980.

Table 5: Change in the Number of Floods between Periods (%)

Period	All India	ESA districts	Rest of India
1980–1990	+232.6	+353.1	+214.0
1990–2000	+49.1	+66.2	+45.2
2000–2010	–4.3	+15.4	–9.3
2010–2020	+7.5	+26.6	+1.3
1970–1980 to 2010–2020	**+410.0**	**+1,000.0**	**+318.8**

Source: IFI-Impacts (n 16)

Within each State, almost all floods in Goa (94.1%) and Kerala (93.7%) occurred in WGESA Districts. This share is much lower in Gujarat (23.8%), Tamil Nadu (38.8%) and Maharashtra (42.4%), as shown in Table 6. Of the 1,396 floods recorded in WGESA Districts, Kerala accounts for 569 (40.8%), Maharashtra for 430 (30.8%) and Karnataka for 251 (18.0%).

Table 6: State-wise Floods in the proposed WGESA Districts, 1967–2023

State	Floods in the State	Floods in ESA Districts	Share of the State's floods in ESA Districts (%)
Kerala	607	569	93.7
Maharashtra	1,015	430	42.4
Karnataka	496	251	50.6
Tamil Nadu	188	73	38.8
Gujarat	172	41	23.8
Goa	34	32	94.1
Total	**2512**	**1,396**	

Source: IFI-Impacts (n 16)

Two additional aspects emerge from this dataset. First, floods appear to be highly concentrated. The ten WGESA Districts with the highest number of recorded floods account for 43.3% of all District-level flood records in the region (see Table 7). Taken together, recorded floods in these ten Districts rose from 36 in 1970–1980 to 383 in 2010–2020.

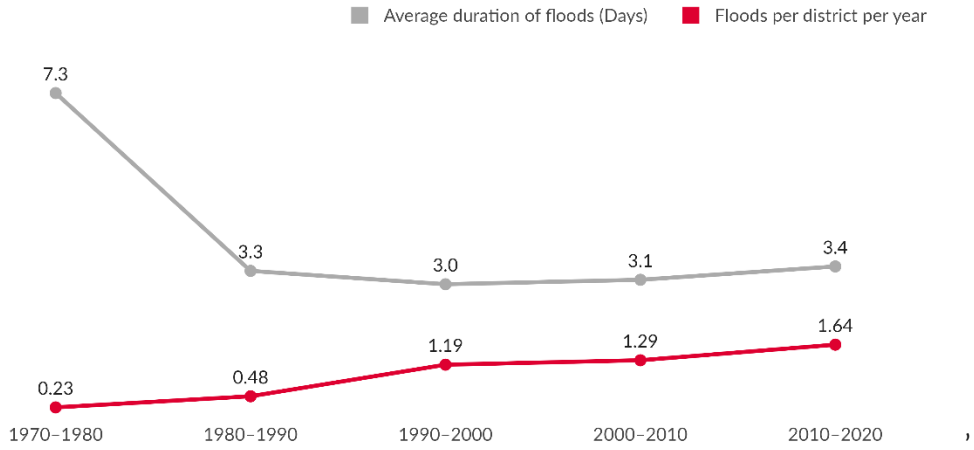
Table 7: Ten Districts in the proposed WGESA with the Highest Number of Recorded Floods, 1967–2023[19]

District	State	Total floods	Share (%)	1970–1980	1980–1990	1990–2000	2000–2010	2010–2020	Average decadal increase (%)
Thiruvananthapuram	Kerala	232	8.1	4	8 (+100%)	40 (+400%)	49 (+22%)	89 (+82%)	+151
Wayanad	Kerala	149	5.2	2	2 (+0%)	11 (+450%)	42 (+282%)	73 (+74%)	+201
Pune	Maharashtra	139	4.9	4	12 (+200%)	30 (+150%)	33 (+10%)	31 (−6%)	+88
Idukki	Kerala	116	4.1	2	10 (+400%)	35 (+250%)	16 (−54%)	38 (+138%)	+183
Kozhikode	Kerala	114	4.0	5	16 (+220%)	27 (+69%)	24 (−11%)	29 (+21%)	+75
Kottayam	Kerala	102	3.6	4	7 (+75%)	26 (+271%)	21 (−19%)	26 (+24%)	+88
Malappuram	Kerala	97	3.4	3	10 (+233%)	24 (+140%)	15 (−38%)	32 (+113%)	+112
Thane	Maharashtra	97	3.4	3	16 (+433%)	21 (+31%)	15 (−29%)	18 (+20%)	+114
Kollam	Kerala	96	3.4	3	7 (+133%)	29 (+314%)	24 (−17%)	21 (−12%)	+104
Kannur	Kerala	92	3.2	6	8 (+33%)	17 (+112%)	17 (+0%)	26 (+53%)	+50

Second, floods in the Western Ghats Districts have become shorter and more frequent, which leaves little time for warnings or evacuations. While the average flood lasted 7.3 days in 1970–1980, this fell to 3.4 days in 2010–2020. At the same time, the number of floods per District per year in the WGESA Districts has increased (see Figure 3). On average (i.e., the total number of recorded floods divided by 10), a District in the proposed WGESA recorded 0.23 floods in a year in 1970–1980. This rose to 0.48 in 1980–1990, 1.19 in 1990–2000, 1.29 in 2000–2010, and 1.64 in 2010–2020 – a 7.1-fold increase

[19] Table 7 counts how many times each District recorded a flood. A flood that affected several Districts is counted once under each of them.

Figure 3: Average Duration of Floods and Floods per District per Year in the proposed WGESA Districts, 1970–2020



Source: IFI-Impacts (n 16)

4. Droughts in the Proposed WGESA Districts

Districts in the Western Ghats are also affected by erratic rainfall patterns. When there is insufficient rainfall during cropping seasons, droughts are declared by State Governments. The Union Ministry of Agriculture and Farmers Welfare has compiled these declarations for 2011–12 to 2025–26.[20] According to this dataset, over the last 15 years a total of 1,178 such declarations have been made across the Kharif and Rabi seasons in 474 Districts in 18 States and Union Territories. An overview is provided in Table 8.

Table 8: Year-wise Drought Declarations in ESA Districts and other Districts in India

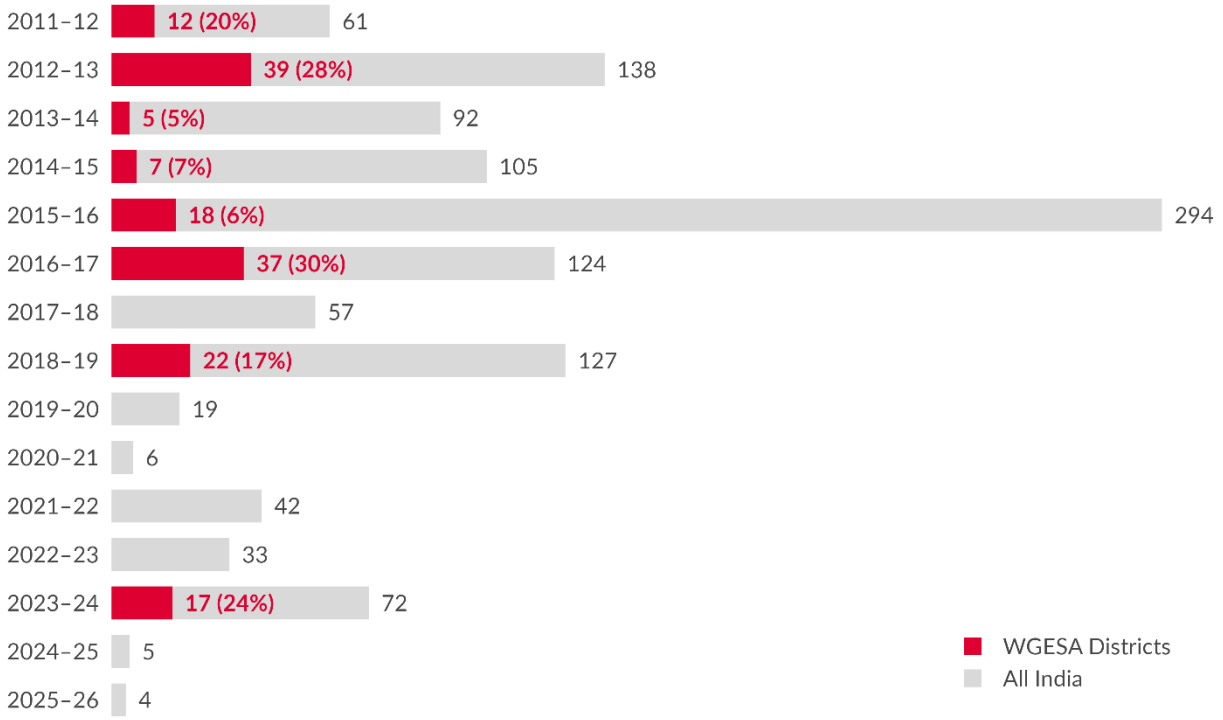
Year	All India	ESA Districts, Kharif	ESA Districts, Rabi	ESA Districts, total	ESA share of India (%)
2011-12	61	12	0	12	20
2012-13	138	23	16	39	28
2013-14	92	5	0	5	5
2014-15	105	7	0	7	7
2015-16	294	15	3	18	6
2016-17	123	27	10	37	30
2017-18	57	0	0	0	0
2018-19	127	12	10	22	17
2019-20	19	0	0	0	0
2020-21	6	0	0	0	0
2021-22	42	0	0	0	0
2022-23	33	0	0	0	0
2023-24	72	17	0	17	24
2024-25	5	0	0	0	0
2025-26	4	0	0	0	0

Source: National Crisis Management Plan for Drought, 2026, Appendix-4 (n 20)

[20] Department of Agriculture and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, *National Crisis Management Plan for Drought* (2026) <https://agriwelfare.gov.in/Documents/CMP_2026_FOR_DROUGHT.pdf>.

The occurrence of droughts in the Western Ghats does not coincide with the national pattern. To illustrate, the national peak was in 2015–16 (294 declarations), but only 18 WGESA Districts were affected that year. The years in which the WGESA Districts were worst affected, i.e., 2012–13 and 2016–17, were years of moderate drought nationally (see Figure 4).

Figure 4: Year-wise Drought Declarations in ESA Districts and other Districts in India



Source: National Crisis Management Plan for Drought, 2026, Appendix-4 (n 20)

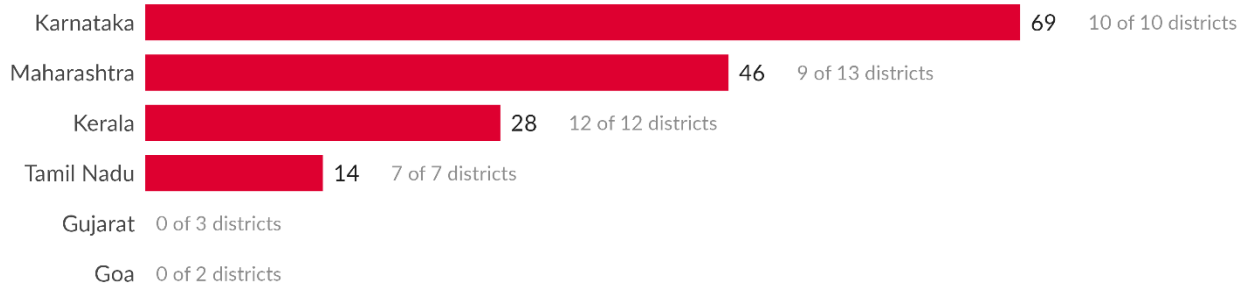
The Western Ghats region, however, is distinctly and acutely affected by drought. Of the 47 WGESA Districts, 38 have been declared drought-affected at least once. The available information also suggests that droughts occur more frequently in the WGESA. While the drought-affected WGESA Districts constitute only 8.0% of the total number of drought-affected Districts in India, they account for 13.3% of the total number of drought declarations. Further, on average, droughts were declared 4.1 times in drought-affected WGESA Districts, as against an average of 2.3 times in the other drought-affected Districts in India (see Table 9).

Table 9: Drought Declarations in WGESA Districts and other Districts in India

Group	Districts	Districts declared at least once	Declarations	Average per declared district
47 Ecologically Sensitive Area districts	47	38	157	4.1
All other declared districts in India	438	438	1,021	2.3
All India	**476**	**476**	**1,178**	**2.5**

Within the six Western Ghats States, droughts are felt most intensely in Karnataka and Maharashtra. All 10 WGESA Districts in Karnataka have been declared drought-affected, with a total of 69 declarations – the highest in the region. In Maharashtra, 46 drought declarations were made in 9 of its 13 WGESA Districts. All 12 WGESA Districts in Kerala (28 declarations) and all 7 WGESA Districts in Tamil Nadu (14 declarations) have also been declared drought-affected. To date, none of the WGESA Districts in Goa and Gujarat has been declared to be drought-affected (see Figure 5).

Figure 5: Drought Declarations in WGESA Districts by State, 2011–12 to 2025–26



Source: National Crisis Management Plan for Drought, 2026, Appendix-4 (n 20)

5. Way Forward

The Western Ghats is a fragile landscape that is vulnerable to climate change. It is important for water security – not only for the region but also for large portions of the southern peninsula. This article shows how water-related climate-change risks like landslides, floods and droughts are acutely experienced in this region – particularly in the 47 Districts proposed to be included in the 2026 Draft Notification. This suggests that risks are increasing and the resilience of the landscape appears to be under strain – both from extreme climate events and from the modification of the landscape, which affects essential ecological functions. Impacts of climate-extreme events are exacerbated when ecological functions of drainage, recharge of surface water bodies, groundwater and riverbeds are disrupted or diminished. While human developmental needs are important, it must be ensured that they are compatible with this sensitive and fragile landscape, and that its ecological functions are maintained. This is especially important in the Western Ghats and adjacent regions where a large section of the population is dependent on agriculture, plantations and forests for livelihoods.

This research establishes the need to act urgently to protect the ecosystem's resilience and functioning. The ESA regulations become effective only after the WGESA is notified. Until then, many activities remain unregulated or under-regulated. At present, projects tend to be undertaken without accounting for the carrying capacity of, or cumulative impacts on, the landscape,[21] and large-scale constructions and mining are carried out without the necessary environmental safeguards.[22] The Central and State Governments need to work together to generate awareness and build consensus on notifying the WGESA, and to effectively protect this fragile landscape and the communities living in it.

---

[21] Chiranjeevi Kulkarni, 'Karnataka: 10 Years after NGT Order, Projects Get Nod sans Carrying Capacity Check' *Deccan Herald* (Bengaluru, 3 March 2026) <https://www.deccanherald.com/india/karnataka/karnataka-10-years-after-ngt-order-projects-get-nod-sans-carrying-capacity-check-3918026>.

[22] *Lalita Sandip Shinde v Chief Executive Officer, Trimbakeshwar Municipal Council* 2024 SCC OnLine NGT 3985 <https://www.greentribunal.gov.in/gen_pdf_test.php?filepath=L25ndF9kb2N1bWVudHMvbmd0L2Nhc2Vkb2MvanVkZ2VtZW50cy9QVU5FLzIwMjQtMDctMjkvMTcyMjMyNzY2ODg2NjgzMTk3NjY2YThhMjc0ZjNiOTMucGRm>.

V | D H | Centre for Legal Policy

A-232, Ratanlal Sahdev Marg,
Defence Colony, New Delhi-110024
011-43102767/43831699

www.vidhilegalpolicy.in