

भारत सरकार
केंद्रीय जल आयोग
आकृति विज्ञान एवं जलवायु परिवर्तन निदेशालय

विंग-1, प्रथम तल, पश्चिम खंड -2
आर पुरम के, नई दिल्ली -110066
ई-मेल: dirmorpho-cwc@nic.in
Tel: 011-29583297
दिनांक: 01/08/2024

To

As per list of Addressees

Sub: Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basin for June, 2024 – Reg..

Sir,

CWC monitors Glacial Lakes and Water Bodies (GLs&WBs) in the Himalayan Region of Indian River Basins for the period June to October every year, since 2011. This enables detection of relative change in water spread area of GLs&WBs as well as identifying the GLs&WBs which have expanded substantially during the monitoring month, from a disaster perspective.

Currently, CWC is monitoring a total of 902 GLs/WBs. High resolution multi-spectral and microwave (SAR) images of foreign satellites (Sentinel 1 & 2) at 10 m resolution have been processed and analysed in open-source cloud computing platform Google Earth Engine using automatic algorithm which has been developed in-house. Visual inspection & manual digitisation has been used to supplement the automatic algorithm to complete the task.

The monitoring report of June 2024 summarizes the change detection of water spread area of 902 Glacial Lakes & Water Bodies with respect to base year (2011) as well as average annual water spread area of last ten years (2014-23), five years (2019-23), two years (2022-23). In addition, Glacial Lakes located in India depicting increase in Water spread area have been identified separately. The report is enclosed for information and necessary action.

This issues with the approval of Competent Authority.

Encl: as above
Sincerely

Yours


विष्णु देव राय
V.D. ROY
निदेशक / Director
केंद्रीय जल आयोग / C.W.C.
भारत सरकार / Govt. of India
नई दिल्ली / New Delhi

(V.D. Roy)
Director

Copy for kind information:

- 1. PPS to Chairman, CWC, Sewa Bhawan, New Delhi..*
- 2. PPS to Member(RM), CWC, Sewa Bhawan, New Delhi*
- 3. Chairman, NDSA, DoWR, RD & GR, Sewa Bhawan, New Delhi*
- 4. Chief Engineer(P&DO), CWC, New Delhi*
- 5. Chief Engineer(FMO), CWC, New Delhi*
- 6. Chief Engineer(DSO), CWC, Sewa Bhawan, New Delhi*
- 7. Chief Engineer(HSO), CWC, Sewa Bhawan, New Delhi*

List of Addressees	
S.No.	Addressee
	National Disaster Management Authority(NDMA)
1.	Member & Head of the Department, NDMA Bhawan, A-1, Safdarjung Enclave, New Delhi - 110029 (rajendra.59@ndma.gov.in)
2.	Advisor (Mitigation), NDMA Bhawan, A-1, Safdarjung Enclave, New Delhi - 110029 (advisor.sar@ndma.gov.in)
	Govt. of Arunachal Pradesh
1.	Chief Secretary, Government of Arunachal Pradesh, Itanagar- 791111 (apcm876@gmail.com / cmoffice-arn@gov.in)
2.	Secretary (WRD) , Government of Arunachal Pradesh, Secretariat Complex, Itanagar- 791 111(dit.ap@gmail.com)
3.	Director, Dept of Disaster Management, Itanagar- 791111
4.	District Collector/ Deputy Commissioner, Lohit District, Tezu, Arunachal Pradesh - 792001 (arun01ddm@gmail.com)
5.	Deputy Commissioner, Lower Dibang Valley District, Roing, Arunachal Pradesh- 792110 (dc-ldvalley-arn@nic.in)
6.	Deputy Commissioner, Tawang Dist., Arunachal Pradesh-790104 (dc-twng-arn@nic.in)
7.	Deputy Commissioner, Dibang Valley District, Anini, Arunachal Pradesh, Pincode- 792101 (anini@nic.in)
	Govt. of Sikkim
1.	Chief Secretary (Sikkim), Government of Sikkim, Gangtok-737101 (cs-skm@hub.nic.in)
2.	Secretary, Water Resources Department, Govt. of Sikkim, Nirman Bhawan, Gangtok-737101 (secy-irrg@skkim.gov.in)
3.	District Collector/ Magistrate, Mangan-737116 (dcnorthsikkim@yahoo.com / dc-northsikkim@sikkim.gov.in)
4.	Joint Director, Land Revenue & Disaster Management Dept., Manan Bhawan, Gangtok-737101 (spo-lr-sik@nic.in)
5.	Superintending Engineer, Water Resources and River Development Department, Nirman Bhawan, Gangtok, Sikkim (sikkimwrd@gmail.com)
	Govt. of Himachal Pradesh
1.	Chief Secretary , Government of Himachal Pradesh, Secretariat, Shimla- 171002 (cs-hp@nic.in)
2.	Principal Secretary, Irrigation & Public Health Department, Govt. of Himachal Pradesh, Secretariat, Shimla- 171002 (iphsecy-hp@nic.in)
3.	Engineer-in-Chief, Jal Shakti Vibhag, Govt. of Himachal Pradesh, Tutikhandi, Shimla-171001(hpirrg@gmail.com , iph-hp@nic.in)
4.	Under Secretary, SDMA, HP Secretariat, Shimla-171002 (cs-hp@nic.in)

5.	Deputy Commissioner, Bilaspur,, Himachal Pradesh, Pincode-174001 (dc-bil-hp@nic.in)
6.	Deputy Commissioner, Chamba District, Himachal Pradesh, Pincode-176310 (ud-hp@nic.in)
7.	Deputy Commissioner, Kangra District, Himachal Pradesh, Pincode – 176001 (dc-kan-hp@nic.in)
8.	Deputy Commissioner, Lahaul & Spiti District, Keylong , Himachal Pradesh, Pincode-175132 (dc-lah-hp@nic.in)
9.	Deputy Commissioner, Mandi District , Himachal Pradesh- 175001 (dc-man-hp@nic.in)
	Govt. of Uttarakhand
1.	Chief Secretary, Government of Uttarakhand, Dehradun-248001 (chiefsecyuk@gmail.com , cs-uttarakhand@nic.in)
2.	Principal Secretary, Govt. of Uttarakhand, Irrigation & Power Department, Sachivalaya, Subhash Road, Dehradun-248001 (secy-power-ua@nic.in)
3.	Executive Director, Disaster Mitigation & Management Centre, 4 Subhas Road, Dehradun-248001 (piyooshrautela@gmail.com)
4.	District Magistrate , Tallital, Nainital, Uttarakhand- 263 002 (dm-nai-ua@nic.in)
5.	Additional District Magistrate(ADM), Pauri Garhwal - 246001, Uttarakhand (dmgarhwal@gmail.com)
6.	District Magistrate, Udham Singh Nagar, Rudrapur - 263153,Uttarakhand (usndm@ua.nic.in)
	Govt. of UT of Jammu & Kashmir
1.	Chief Secretary, Government of J &K, Jammu-180001 (cs-jandk@nic.in)
2.	Commissioner & Secretary (PHE & Irrigation & Flood Control), Govt. of J&K, Secretariat, Jammu-180001(phe-jk@nic.in)
3.	District Dev. Commissioner/Deputy Commissioner/District Magistrate, Budgam, Jammu & Kashmir, Pincode-191111 (anantnag@nic.in)
4.	District Development Commissioner /Deputy Commissioner/District Magistrate, Lal chowk, Anantnag, Jammu & Kashmir, Pin code- 192101 (anantnag@nic.in)
5.	District Development Commissioner/ Deputy Commissioner / District Magistrate, Jammu, J&K-180001 (dcofficejammu@gmail.com)
6.	Deputy Commissioner/District Magistrate, Rajouri, Jammu & Kashmir- 185131 (rajauri@nic.in)
	Govt. of UT of Ladakh
1.	Chief Secretary, Union Territory of Ladakh, Leh-194101 (pstocomsecutl@gmail.com)
2.	Deputy Commissioner/Chief Executive Officer, Ladakh Autonomous Hill Development Council, District Kargil, Jammu and Kashmir, Pin - 194 103
3.	Deputy Commissioner/District Magistrate, District Leh, UT of Ladakh, Pincode-194101 (ticleh1@gmail.com)

Others

S.No	Glacial Lake Monitoring Cell
1.	Secretary, Ministry of Earth Science, Prithvi Bhawan, Lodhi Road, New Delhi-110003 (secretary@moes.gov.in)
2.	Director, National Remote Sensing Centre, Balanagar, Hyderabad- 500625 (director@nrsc.gov.in)
3.	Director General, GSI, N.R. Vasundhara, Sector E, Aliganj, Lucknow-226024 (dg.gsi@gov.in)
4.	Dy. Director, Ministry of Defence, R&D Centre, DGRE, Him Parisar, Sector 37 A, Chandigarh (director@sase.drdo.in)
5.	Director, Himachal Pradesh Geospatial Data Centre, Survey of India, Chandigarh, Dakshin Marg, Sector 32 A (hp.gdc.soi@gov.in)
6.	Director, National Institute of Hydrology, Roorkee-247667 (dir.nihr@gov.in)
7.	Principal/Director, National Institute of Mountaineering & Allied Sports (NIMAS), West Kameng - 900190 (info@nimasdirang.com)
8.	DDGM(H), Hydromet Division, Mausam Bhawan, Lodhi Road, New Delhi-110003 (dggmmet@gmail.com)
9.	Superintendent Engineer, Research Centre, Irrigation Research Centre, Roorkee-247667 (ce@iriroorkee.res.in)
10.	Joint Advisor, NDMA Bhawan, A-1, Safdarjung Enclave, New Delhi-110029 (controlroom@ndma.gov.in)
Central Water Commission	
1.	Chief Engineer, IBO, CWC, Chandigarh, with a request for sharing report with concerned state officials (ceibo-cwc@nic.in)
2.	Chief Engineer, UGBO, CWC, Lucknow, with a request for sharing report with concerned state officials (ceugbolucknow@yahoo.co.in , ceugbo-cwc@nic.in)
3.	Chief Engineer, BBO, CWC, Guwahati, with a request for sharing report with concerned state officials (cebbo-cwc@nic.in)
4.	Chief Engineer, T&BDBO, CWC, Kolkata, for sharing report with concerned state Govt. officials (cetbo-cwc@nic.in)
5.	Superintending Engineer, Hydrological Obs. & Investigation Circle, BBO, Guwahati (secobbo-cwc@nic.in), with a request for sharing report with concerned state officials
6.	Superintending Engineer(HOC), Hydrological Obs. Circle, CWC, Dehradun (sehocdehradun-cwc@nic.in), with a request for sharing report with concerned state officials
7.	Director(M&A), Shimla, CWC (dirmashimla-cwc@nic.in), with a request for sharing report with concerned state officials
8.	Director(M&A), Jammu, CWC (dirmajammu-cwc@nic.in), with a request for sharing report with concerned state officials

9.	<i>Superintending Engineer (Investigation Circle), CWC Gangtok (seicgangtok-cwc@nic.in) , with a request for sharing report with concerned state officials</i>
	Bihar
1.	Chief Secretary, Government of Bihar, Old Secretariat, Patna-800 015 (csbihar@yahoo.com)
	Assam
1.	Chief Secretary, Government of Assam, Block-C, 3rd Floor, Janata Bhawan, Dispur, Guwahati-781006 (psecy_it@assam.nic.in)
	Punjab
1.	Chief Secretary, Government of Punjab, Civil Secretariat Chandigarh-160001 (cs@punjab.gov.in)
	Uttar Pradesh
1.	Chief Secretary, Government of Uttar Pradesh, Lok Bhawan, Lucknow – 226001, U.P. (csup@nic.in)
	West Bengal
1.	Chief Secretary, Government of West Bengal, Shibpur, Howrah-711102 (cs-westbengal@nic.in)
	Haryana
1.	Chief Secretary, Government of Haryana, Haryana Civil Secretariat, Sector-1, Chandigarh (cs@hry.nic.in)

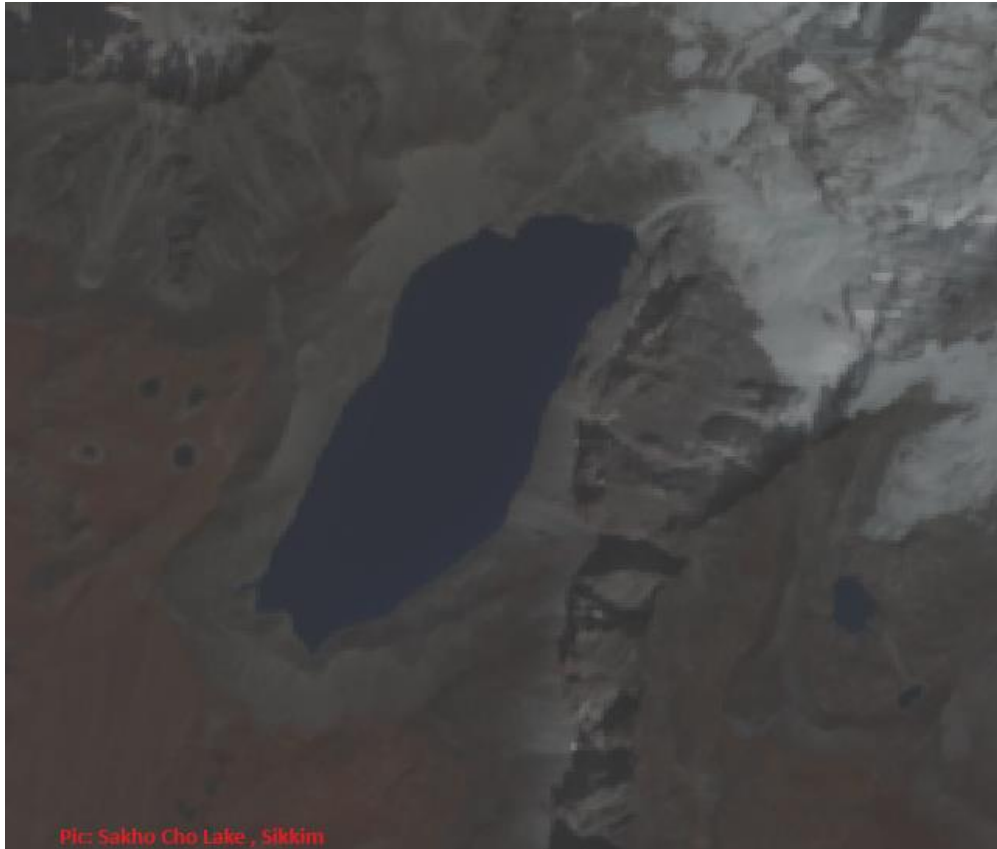


सत्यमेव जयते

Monthly Monitoring Report of Glacial Lakes & Water Bodies in the Himalayan Region of Indian River Basins June 2024

**Central Water Commission
Department of Water Resources,
River Development & Ganga Rejuvenation**

Monthly Monitoring Report of Glacial Lakes & Water Bodies in the Himalayan Region of Indian River Basins-June 2024



Pic: Sakho Cho Lake , Sikkim

**Morphology & Climate Change Directorate
Planning & Development Organisation
Central Water Commission
Department of Water Resources, River Development
&Ganga Rejuvenation
Ministry of Jal Shakti, New Delhi**

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4.	Author(s)	Sh. V.D. Roy Sh. Piyush Kumar Smt. Archa Raj D. Sh. Rohit Kumar Yadav			
5.	Affiliation of authors	Morphology and Climate Change Directorate, CWC, New Delhi			
6.	Project Team	Sh. V.D. Roy Smt. Archa Raj D. Sh. Rohit Kumar Yadav Sh. Chiradip Das Sh. Purshottam			
7.	Scrutiny mechanism	Compiled by Smt. Archa Raj D. Assistant Director Sh Piyush Kumar Deputy Director	Reviewed by Sh. V.D. Roy, Director Smt Shobhika Singh Deputy Director	Controlled by Sh. D.P.Mathuria, Chief Engineer, (P&DO)	Approved by Sh. P. M. Scott, Member (RM), CWC
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Contents

	Executive Summary	vii
1	Introduction.....	1
1.1	Glacial Lakes and Water Bodies.....	1
1.2	Glacial Lakes In Indian Himalayan Region.....	1
1.3	Inventory of Glacial Lakes and Water Bodies 2011.....	1
1.4	Glacial Lake Atlas of Indian Himalayan River Basins In 2023.....	2
1.5	Objectives.....	3
1.6	Assumptions and Limitations.....	3
2	Monitoring of Glacial Lakes & Water Bodies.....	4
2.1	Study Area	4
2.2	Remote Sensing Technology.....	10
2.2.1	Sentinel-2 Multi Spectral Imagery.....	10
2.2.2	Sentinel-1 Synthetic Aperture Radar (Microwave Imagery)	10
3	Methodology.....	11
4	Results.....	14
4.1	Results of Monitoring of Glacial Lakes & Water Bodies.....	14
4.2	Glacial Lakes located in India requiring vigorous monitoring.....	15
7	Conclusion.....	17
8	References.....	94

List of Figures

Figure 2.1	Lake Type Distribution.....	4
Figure 2.2	Index Map of Study Area.....	5
Figure 2.3	Map of Study Area showing Glacial Lakes and Water Bodies being monitored by CWC.....	6
Figure 2.4	Relief Map of the Study Area.....	6
Figure 2.5	Elevation Range of GLs & WBs within Indian Himalayan Region being monitored by CWC.....	7
Figure 2.6	Country-wise Distribution of GLs/WBs in Indian Himalayan Region being monitored by CWC.....	7
Figure 2.7	State-wise Distribution of Glacial Lakes within India being monitored by CWC.....	8
Figure 2.8	State-wise Distribution of Water Bodies being monitored by CWC.....	8
Figure 3.1	Flowchart on Methodology for automatic monitoring of Glacial Lakes & Water Bodies using Satellite Images	15
Figure 4.1	Outcome of Monitoring of GLs & WBs, June 2024	15
Figure 4.2	State-wise distribution of Outcome of monitoring of GLs within India, June 2024	16

List of Tables

Table 1.1	Country-wise details of Glacial Lakes & Water Bodies of Inventory (2011).....	2
Table 1.2	Basin-wise details of Glacial Lakes & Water Bodies of Inventory (2011).....	2
Table 2.1	State-wise and Basin-wise details of the 477 GLs/WBs above 50 Ha (Nos.).....	3
Table 2.2	State-wise and basin-wise details of the 425 GLs/WBs of water spread area between 10Ha to 50ha(Nos.).....	4
Table 2.3	Abstract of State-wise & Basin-wise details of GL&WBs being monitored monthly by CWC.....	5
Table 4.1	Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “More than 40% Increase” in area.....	20
Table 4.2	Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “Increase in area upto 40%”.....	21
Table 4.3	Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “No Change” in area...	33
Table 4.4	Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “Decrease” in area....	35
Table 4.5	GLs & WBs with water spread greater than 50 ha “Not Analysed”.....	51
Table 4.6	Results of analysis of GLs & WBs as per NRSC Inventory (2011) with water spread between 10ha - 50 ha.....	54
Table 4.7	Results of analysis of GLs & WBs identified by SDC (2021) with water spread between 10ha - 50 ha.....	83
Table 4.8	Results of analysis of 15 GLs of size greater than 50 Ha located in India.....	87
Table 4.9	Results of analysis of 85 GLs with size between 10ha to 50ha located in India.....	88

ABBREVIATIONS	
AR	Arunachal Pradesh
CWC	Central Water Commission
DoWR, RD & GR	Department of Water Resources, River Development & Ganga Rejuvenation
DWRIS	Development of Water Resources Information System
GEE	Google Earth Engine
GL(s)	Glacial Lake(s)
GLOF	Glacial Lake Outburst Flood
FCC	False Color Composite
ha	Hectare
HP	Himachal Pradesh
J&K	Jammu & Kashmir
LAT	Latitude
LONG	Longitude
LU/LC	Land Use /Land Cover
NDWI	Normalized Difference Water Index
NDMA	National Disaster Management Authority
NIR	Near-Infrared
NRSC	National Remote Sensing Centre
SAR	Synthetic Aperture Radar
SDC	Swiss Agency for Development and Cooperation
SK	Sikkim
TAR	Tibet Autonomous Region
UID	Unique Identification
UK	Uttarakhand
WB(s)	Water Body(ies)

Executive Summary

The Himalayan Region (HR) is facing important challenges in coping with the adverse effects of climate change. Physically, the shrinking of mountain glaciers and expansion of Glacial Lakes are amongst the most recognizable and dynamic impacts of climate warming in this environment. In combination with this, altered stability of surrounding rock and ice walls, the potential threat from Glacial Lake Outburst Flood (GLOF) is evolving over time. Therefore, under such changing environment, a close watch on the relative change in water spread area of even smaller lakes has become very crucial in this region.

Analysis of worldwide literature on the outburst of glacial lakes and the field and theoretical experience have led to the conclusion that it is not feasible to make a reliable prediction of a specific occurrence on the basis of our existing knowledge. As direct predictions cannot be made, there is an urgent need to monitor a careful selection of prioritized lakes on a regular basis. This should be carried out in collaboration with other institutions, both nationally and internationally.

The work of monitoring of Glacial Lakes/Water Bodies (GLs/WBs) using remote sensing technique was taken up by CWC, DoWR, RD&DR, Ministry of Jal Shakti, during XI Plan period in the year 2009 under DWRIS Plan scheme. The inventory of GLs/WBs was published in June, 2011 in association with National Remote Sensing Centre (NRSC), Hyderabad based on the satellite data of Advanced Wide Field Sensor (AWiFS) of the Indian Remote Sensing Satellite, Resourcesat-2 collected from May-Nov, 2009. This inventory is therefore hereafter referred as *Inventory of Glacial Lakes & Water Bodies (2011)*. As per this inventory, there are 2028 GLs/WBs with size more than 10 ha in the Himalayan Region draining towards India. The country wise & basin wise details of the inventory are given in **Table ES.1**.

Table ES.1: Country wise & Basin wise Distribution of Glacial lakes and Water bodies above 10 Ha (in Nos.)

Country-wise Distribution				Basin-wise Distribution			
Country	Glacial Lakes (>10 Ha)	Water Bodies (>10 Ha)	Total (>10 Ha)	Basin Name	Glacial Lakes	Water Bodies	Total
India	60	448	508	Brahmaputra	294	1099	1393
Bhutan	77	124	201	Ganga	178	105	283
Nepal	57	45	102	Indus	31	321	352
China	309	904	1213	Total	503	1525	2028
Myanmar	-	4	4				
Total	503	1525	2028				

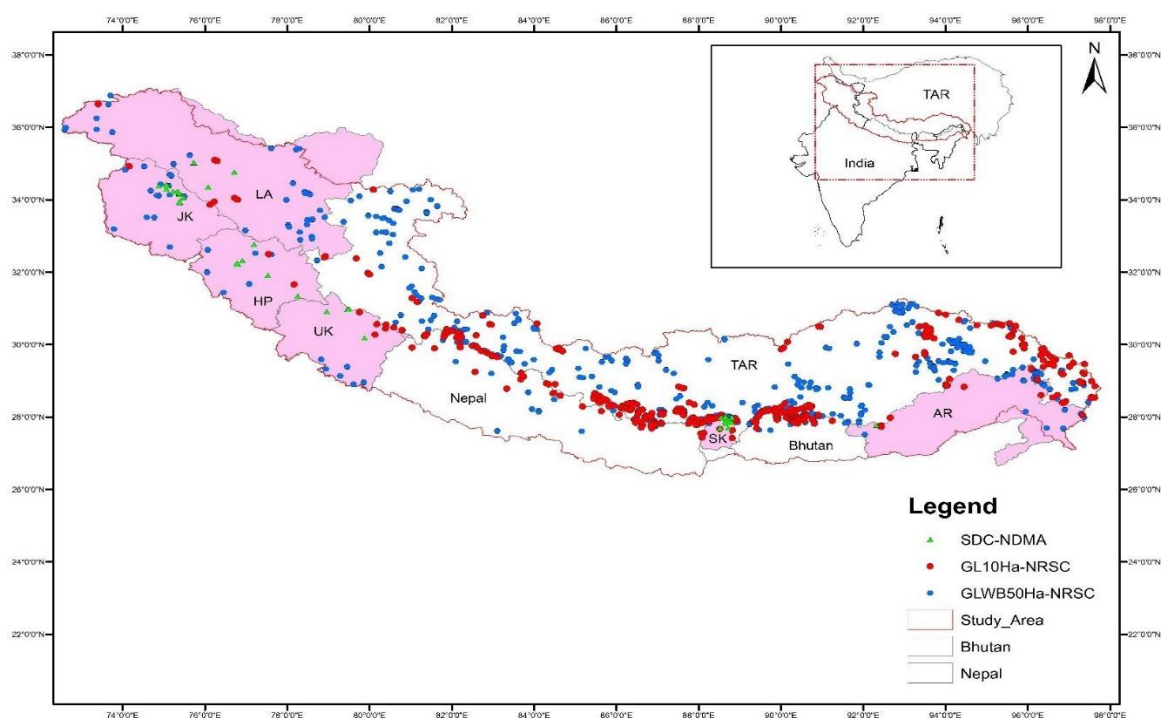
Monitoring of 477 GLs/WBs with size more than 50 ha, sourced from Glacial Lake Inventory 2011, for change in water spread area, was carried out during monsoon season (June to October) every year since 2011. The monitoring activity initiated in NRSC was continued till 2015. CWC has taken up monitoring during 2016 and the work was undertaken by downloading and manually digitising Advanced Wide Field Sensor (AWiFS) Satellite imageries procured/ downloaded from NRSC and processing them in Arc GIS. This continued till 2021. From 2022, monitoring of additional 425 GLs with sizes of 10ha to 50ha was also included. This includes 385 Glacial Lakes with water spread area between 10-50 Ha from Glacial Lake Inventory (2011) and 40 high priority Glacial Lakes identified by Swiss Agency for Development and Cooperation (SDC) for NDMA. Thus, currently CWC

is monitoring a total of 902 GLs/WBs. High resolution multi-spectral and microwave (SAR) images of foreign satellites at 10 m resolution have been processed and analysed in open-source cloud computing platform Google Earth Engine using automatic algorithm which has been developed in-house. Visual inspection & manual digitisation has been used to supplement the automatic algorithm to complete the task. The Monthly Monitoring Report is shared with all stakeholders through email for further necessary action. The reports are also e-published on CWC website for any time access by the concerned (<https://cwc.gov.in/glacial-lakeswater-bodies-himalayan-region>). The abstract of 902 GL/WB is given in **Table ES.2**.

Table ES.2: Abstract of 902 GLs/WBs

Country/ Area	State/ Union Territory	No of Glacial Lakes				No of Water Bodies				Grand Total
		Indus Basin	Ganga Basin	Brahma- putra Basin	Total	Indus Basin	Ganga Basin	Brahma- putra Basin	Total	
India	Ladakh	15	0	0	15	26	0	0	26	41
	Jammu & Kashmir	15	0	0	15	16	0	0	16	31
	Himachal Pradesh	10	0	0	10	5	0	0	5	15
	Uttarakhand	0	9	0	9	0	6	0	6	15
	Sikkim	0	0	42	42	0	0	1	1	42
	Arunachal Pradesh	0	0	9	9	0	0	25	25	35
	Total	40	9	51	100	47	6	26	79	179
	India Total	100				79				179
Transboundary	China	12	110	187	309	49	19	191	259	568
	Bhutan	0	0	71	71	0	0	11	11	82
	Nepal	0	64	0	64	0	9	0	9	73
	Total	12	174	258	444	49	28	202	279	723
	Transboundary Total	444				279				723
Grand Total		544				358				902

Map of Study Area showing Glacial Lakes and Water Bodies being monitored by CWC



Limitations and Assumptions:

Limitations:

- Glacial lake identification can be done either using visual interpretation or automatic mapping methods. The automatic mapping procedures have limitations due to varying terrain conditions such as lakes situated in the shadow portions of mountains, presence of snow cover, cloud cover, lakes being partly frozen, etc. As lake water absorbs the incident radiation making it appear in darker tone and colour in the standard FCC of satellite data, similar response also prevails over shadow region of clouds or mountains on surface, which may lead to incorrect mapping. Moreover, a mountain shadow covering a lake partly/completely within its vicinity, also makes it difficult to accurately map the lake boundary.
- A few Glacial lakes could not be mapped owing to the constraints such as Glacial lakes being under frozen condition, presence of snow or cloud cover over the lakes, lakes under mountain shadow or lakes in dried up condition.

Assumptions:

- Inclusion or exclusion of water pixels near lake boundaries depending on more than or less than certain fraction of its area falling within the lake boundary.

This document presents the analysis and results of monitoring of 902 GL&WBs for June 2024. The lakes are analysed for change in water spread area with respect to area of Inventory 2011 and are categorized into 5 classes.

- (i) increase in water spread area greater than 40%
- (ii) increase in water spread area up to 40%
- (iii) no change in water spread area
- (iv) decrease in water spread area
- (v) change detection not performed due to reasons such as frozen condition, dried up condition, cloud cover etc.

The change detection in water spread area of 477 GLs & WBs greater than 50 Ha have been calculated for the following three cases.

- Difference between the current area of lake and base year area(2011)
- Difference between the current area of lake and Last five years average area(2019-2023)
- Difference between the current area of lake and Last ten years average area(2014-2023)

The minimum of change observed from the above three cases has been adopted to identify increase, decrease and no change in water spread area.

As the monitoring of 385 GLs with water spread area between 10 Ha & 50 Ha was initiated in 2022, the change detection in water spread area has been calculated for the following two cases

- Difference between the current area of lake and base year area(2011)
- Difference between the current area of lake and last two years average area(2022-2023)

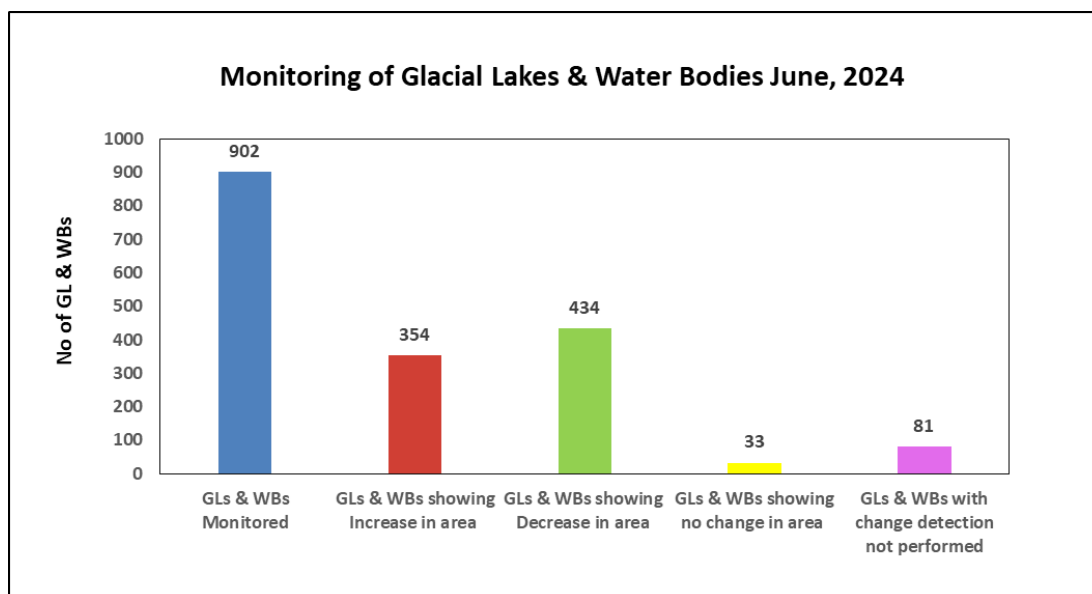
The minimum of change observed from the above two cases has been adopted to identify increase, decrease and no change in water spread area.

For the remaining 40 GLs, as the inventory details (base year 2011) are not available and monitoring data being available only since 2022, the change detection in water spread area has been calculated as the

- Difference between the current area of lake and last two years average area(2022-2023)

The number of lakes in each class has been identified. The lakes showing an increase in water spread area greater than 40% have been identified as those requiring vigorous monitoring for disaster purpose.

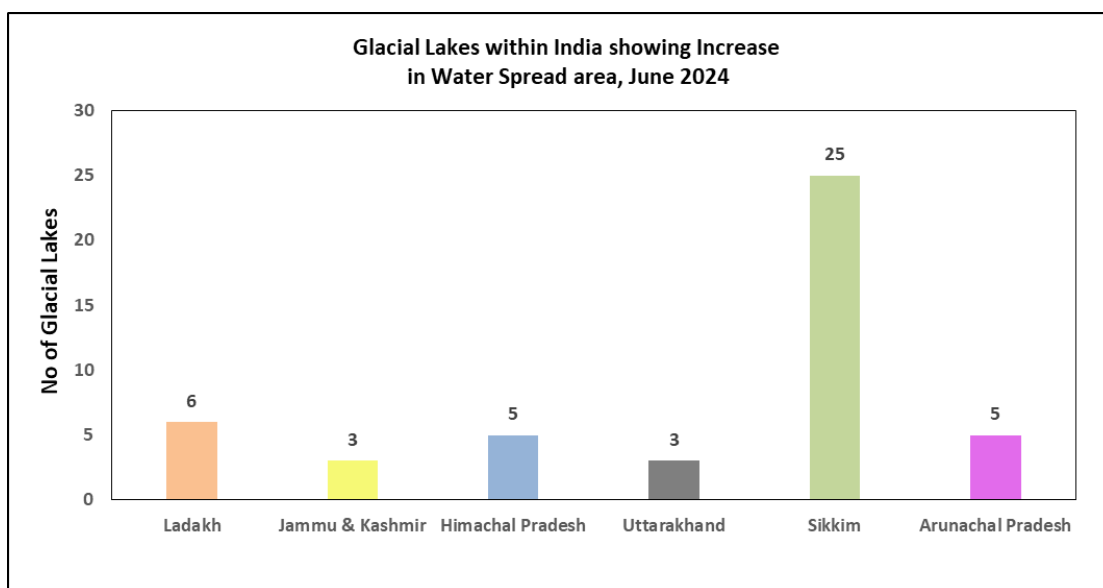
Results:



Conclusions:

- **1 Glacial Lake and 8 Water Bodies (>50Ha area)** show increase in area greater than 40% when change detection was carried out with respect to base year area(2011), average area of last 5 years(2019-2023) & average area of last 10 years(2014-2023). The Glacial Lake is located in China. **1 Water Body is located in India (Ladhak)**. The remaining Water Bodies are located in China(6) and Bhutan(1).
- Five separate Water Bodies(Inventory 2011) of China has joined together to form a single large Water Body
- **8 Glacial Lakes (10 ha-50 Ha area)** show increase in area greater than 40% when change detection was carried out with respect to base year area (2011), average area of last 2 years (2022-2023). 4 Glacial Lakes are located in China. The remaining Glacial lakes are located in India (**Ladhak-1, Sikkim -2, Arunachal Pradesh - 1**).

- The total Inventory area of Glacial Lakes and Water Bodies was 523362 Ha during the year 2011 which has increased to 547541 Ha during the year 2024 (June). There is a **4.62%** increase in area. *(Out of 902 GL & WB, only 795 lakes were considered for this interpretation. This includes 40 SDC lakes which have no inventory details as well as lakes which were not analysed during the year 2023. This is shown in Figure below.)*
- The total Inventory area of Glacial Lakes was 19938 Ha during the year 2011 which has increased to 22948 Ha during the year 2024 (June). There is a **15.1%** increase in area. *(Out of 544 GL, only 474 lakes were considered for this interpretation. This includes 40 SDC lakes which have no inventory details as well as lakes which were not analysed during the year 2023.)*
- The total Inventory area of Glacial Lakes within India was 1754 Ha during the year 2011 which has increased to 2316 Ha during the year 2024 (June). There is a **32%** increase in area. *(Out of 100GL, only 50 lakes were considered for this interpretation. This includes 40 SDC lakes which have no inventory details as well as lakes which were not analysed during the year 2023.)*
- **47 Glacial Lakes** (out of 100) located within India display increase in water spread area and hence demand vigorous monitoring for disaster purpose *(Ladhak-6, Jammu & Kashmir-3, Himachal Pradesh-5, Uttarakhand- 3, Sikkim – 25 & Arunachal Pradesh-5).*



1. Introduction

1.1 Glacial Lakes and Water Bodies

A glacial lake is a body of water with origins from a glacier. It is formed when a glacier erodes the surface before melting and the melt water fills the resulting depression. The water in Glacial Lakes accumulates behind loose naturally formed 'glacial/moraine dams' made of ice, sand, pebbles and ice residue as the glaciers melt. Various types of lakes may have different levels of hazard potential depending upon many factors such as the nature of damming materials, position of the lake, volume of the water, the nature and position of the associated mother glacier, physical and topographical conditions, and other physical conditions of the surroundings. Interaction between the risk factors and triggering processes such as ice avalanches, debris flows, rock fall, earthquake or landslides reaching a lake strongly affect the risk of a lake outburst. Moraine-dammed lakes located at the snout of a glacier have a high probability of breaching with high hazard potential and can breach suddenly leading to catastrophic floods. Such outburst floods are known as Glacial Lake Outburst Flood (GLOF).

A water Body referred in this report is the body of water retained permanently due to obstruction created naturally or artificially but not directly associated with Glaciers.

1.2 Glacial Lakes in Indian Himalayan Region

The Indian Himalayan Region (IHR) contains the world's largest number of glaciers and snow outside the Polar Regions and are aptly called Third Pole of the world. It consist of three major river systems, ie, Indus, Ganga and Brahmaputra stretching over five countries viz. India, China, Nepal, Pakistan and Bhutan.

1.3 Inventory of Glacial Lakes & Water Bodies 2011

The work of monitoring of Glacial Lakes/Water Bodies (GLs/WBs) was taken up by CWC, DoWR, RD&DR, Ministry of Jal Shakti, during XI Plan period in the year 2009, under DWRIS Plan scheme. The inventory of glacial lakes and water bodies of the Himalayan region of Indian river basins published in June, 2011 was done in association with National Remote Sensing Centre (NRSC), Hyderabad based on the satellite data of Advanced Wide Field Sensor (AWiFS) of the Indian Remote Sensing Satellite, Resourcesat-2 collected from May to November, 2009. The inventory consisted of a total of 2028 glacial lakes and water bodies with water spread area greater than 10 Ha. The country-wise and basin-wise details of the Inventory are furnished in **Table No. 1.1** and **Table No. 1.2**

Table 1.1: Country-wise details of Glacial Lakes & Water Bodies of Inventory (2011)

Country	Glacial Lakes >10 Ha (Nos.)	Water Bodies >10 Ha (Nos.)	Total >10 Ha (Nos.)
India	60	448	508
Bhutan	77	124	201
Nepal	57	45	102
China	309	904	1213
Myanmar	-	4	4
Total	503	1525	2028

Table 1.2: Basin-wise details of Glacial Lakes & Water Bodies of Inventory (2011)

Basin Name	Glacial Lakes (Nos.)	Water Bodies (Nos.)	Total (Nos.)
Brahmaputra	294	1099	1393
Ganga	178	105	283
Indus	31	321	352
Total	503	1525	2028

1.4 Objectives

The broad objectives of the study are

- To monitor the spatial extent in terms of water spread area of the Glacial Lakes & Water Bodies from the inventory on monthly basis during June to October.
- To detect temporal changes in water spread area of Glacial Lakes & Water Bodies.
- To share the report with concerned stakeholders including National Disaster Management Authority / State Disaster Management Authority for suitable action.

1.5 Limitations and Assumption

Limitations

- Glacial lake identification can be done either using visual interpretation or automatic mapping methods. The automatic mapping procedures have limitations due to varying terrain conditions such as lakes being situated in the shadow portions of mountains, presence of snow cover, cloud cover, lakes being partly frozen, etc. As lake water absorbs the incident radiation making it appear in darker tone and colour in the standard FCC of satellite data, similar response also prevails over shadow region of clouds or mountains on surface, which may lead to incorrect mapping. Moreover, a mountain shadow covering a lake partly/completely within its vicinity, also makes it difficult to accurately map the lake boundary.
- A few Glacial lakes could not be mapped owing to the constraints such as they being under frozen condition, presence of snow or cloud cover over the lakes, lakes under mountain shadow or lakes in dried-up condition.

Assumptions:

- Inclusion or exclusion of water pixels near lake boundaries depending on more than or less than certain fraction of its area falling within the lake boundary.

2. Monitoring of Glacial Lakes and Water Bodies

2.1 Study Area

The present study area covers the Glacial Lakes & Water Bodies (GLs & WBs) lying in the region of Himalaya and TAR, that drain to India, based on 2011 Inventory of NRSC. The study area extends across the countries of India, Nepal, Bhutan and China.

The Glacial Lakes and Water Bodies taken up for monitoring in the study area are as follows:

- (i) **477** Glacial Lakes/Water Bodies, with water spread area greater than 50Ha which have been sourced from the inventory of Glacial Lakes & Water Bodies in the Indian Himalayan region(2011) (Ref: NRSC Report No. NRSC-RS&GISAA-WRG-CWC-Lakes- May2011-TR255).

The state-wise and basin-wise details of the 477 GLs/WBs above 50 Ha are shown in **Table.2.1**

Table 2.1: State-wise and Basin-wise details of the 477 GLs/WBs above 50 Ha (Nos.)

Country/ Area	State/UT	Glacial Lake>50Ha				Water Body >50Ha				Grand Total
		Indus Basin	Ganga Basin	Brahma- putra Basin	Total	Indus Basin	Ganga Basin	Brahma- putra Basin	Total	
India	Ladakh	3	0	0	3	26	0	0	26	26
	Jammu & Kashmir	0	0	0	0	16	0	0	16	16
	Himachal Pradesh	2	0	0	2	5	0	0	5	7
	Uttarakhand	0	0	0	0	0	6	0	6	6
	Sikkim	0	0	10	10	0	0	1	1	11
	Arunachal Pradesh	0	0	0	0	0	0	25	25	25
	Total	5	0	10	15	47	6	26	79	94
	India Total	15				79				94
Transboundary	China	1	36	40	77	49	19	191	259	336
	Bhutan	0	0	15	15	0	0	11	11	26
	Nepal	0	12	0	12	0	9	0	9	21
	Total	1	48	55	104	49	28	202	279	383
	Total Transboundary	104				279				383
Grand Total		Total Glacial Lakes = 119				Total Water Bodies = 358				477

- (ii) **385** Glacial Lakes, with spatial extent greater than 10 ha, have been taken from the inventory of Glacial Lakes & Water Bodies in the Indian Himalayan region(2011) (Ref: NRSC Report No. NRSC-RS&GISAA-WRG-CWC-Lakes-May2011-TR255).
- (iii) **40** Glacial Lakes, which have been listed as high priority lakes, as per “Synthesis report on GLOF hazard and risk across the Indian Himalayan Region” prepared by Swiss Agency for Development and Cooperation (SDC) for NDMA.

This adds up to a total of **425 Glacial Lakes of water spread area between 10Ha and 50Ha**. The state-wise and basin-wise details of these lakes are shown in **Table No. 2.2**.

Table 2.2: State-wise and Basin-wise details of the 425 GLs/WBs with water spread area between 10Ha and 50 Ha

Country/Area	Glacial Lake of size 10Ha -50 Ha				Grand Total (Nos.)
	State/UT	Indus Basin (Nos.)	Ganga Basin (Nos.)	Brahmaputra Basin (Nos.)	
India	Ladakh	12	0	0	12
	Jammu & Kashmir	15	0	0	15
	Himachal Pradesh	8	0	0	8
	Uttarakhand	0	9	0	9
	Sikkim	0	0	32	32
	Arunachal Pradesh	0	0	9	9
	Total	35	9	41	85
	India Total	85			
Transboundary	China	11	74	147	232
	Bhutan	0	0	56	56
	Nepal	0	52	0	52
	Total	11	126	203	340
	Total Transboundary	340			
Grand Total		425			

Currently, a total of **902 Glacial Lakes and Water Bodies** are being monitored by CWC. Of these, 544 are Glacial Lakes and 358 are Water Bodies. The break-up of Glacial Lakes and Water Bodies is shown in **Figure 2.1**. The abstract of state-wise and basin-wise details of the 902 GLs & WBs being monitored by CWC on monthly basis are furnished in **Table no. 2.3**.

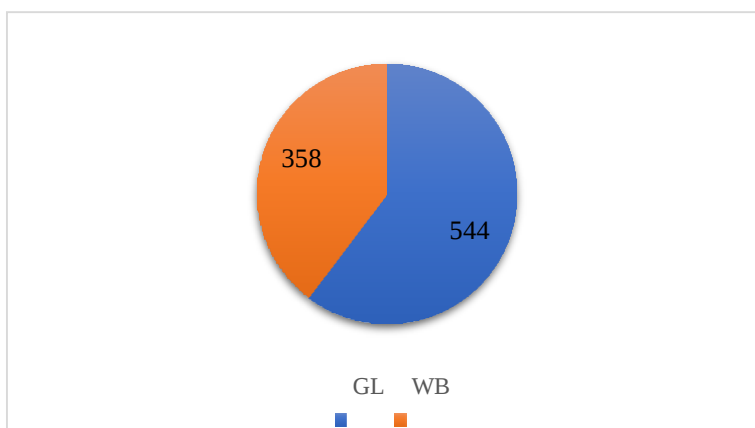


Figure 2.1: Lake Type Distribution

Table 2.3: Abstract of State-wise & Basin-wise details of GLs&WBs being monitored monthly by CWC

Country/ Area	State/ Union Territory	No of Glacial Lakes				No of Water Bodies				Grand Total
		Indus Basin	Ganga Basin	Brahma- putra Basin	Total	Indus Basin	Ganga Basin	Brahma- putra Basin	Total	
India	Ladakh	15	0	0	15	26	0	0	26	41
	Jammu & Kashmir	15	0	0	15	16	0	0	16	31
	Himachal Pradesh	10	0	0	10	5	0	0	5	15
	Uttarakhand	0	9	0	9	0	6	0	6	15
	Sikkim	0	0	42	42	0	0	1	1	42
	Arunachal Pradesh	0	0	9	9	0	0	25	25	35
	Total	40	9	51	100	47	6	26	79	179
	India Total	100				79				179
Transboundary	China	12	110	187	309	49	19	191	259	568
	Bhutan	0	0	71	71	0	0	11	11	82
	Nepal	0	64	0	64	0	9	0	9	73
	Total	12	174	258	444	49	28	202	279	723
	Transboundary Total	444				279				723
Grand Total		544				358				902

The index map of the study area is shown in **Figure. 2.2**, and the location map of the study area showing the glacial lakes and Water Bodies being monitored by CWC is shown in **Figure.2.3**.

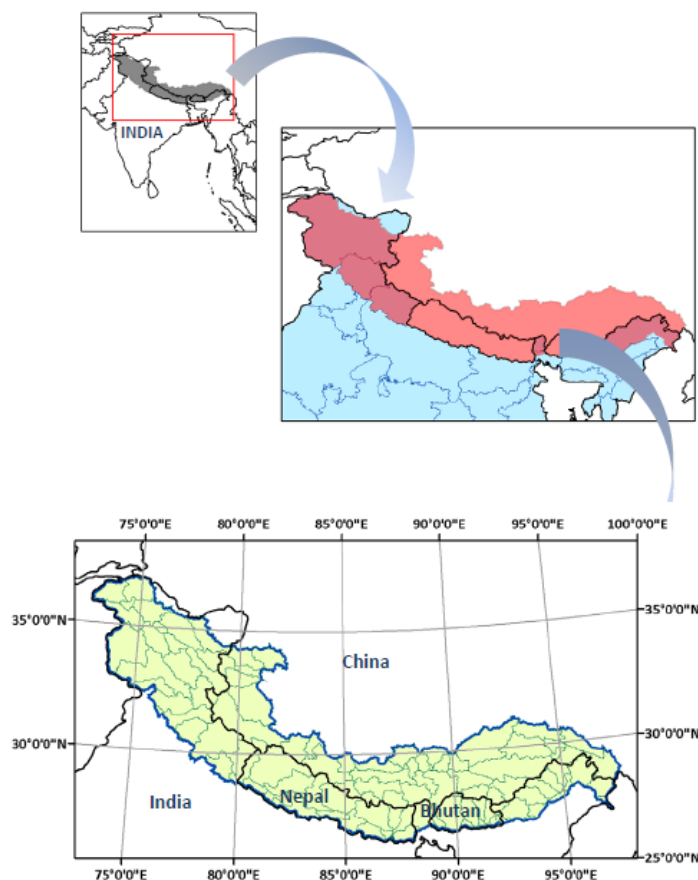


Figure 2.2: Index Map of Study Area

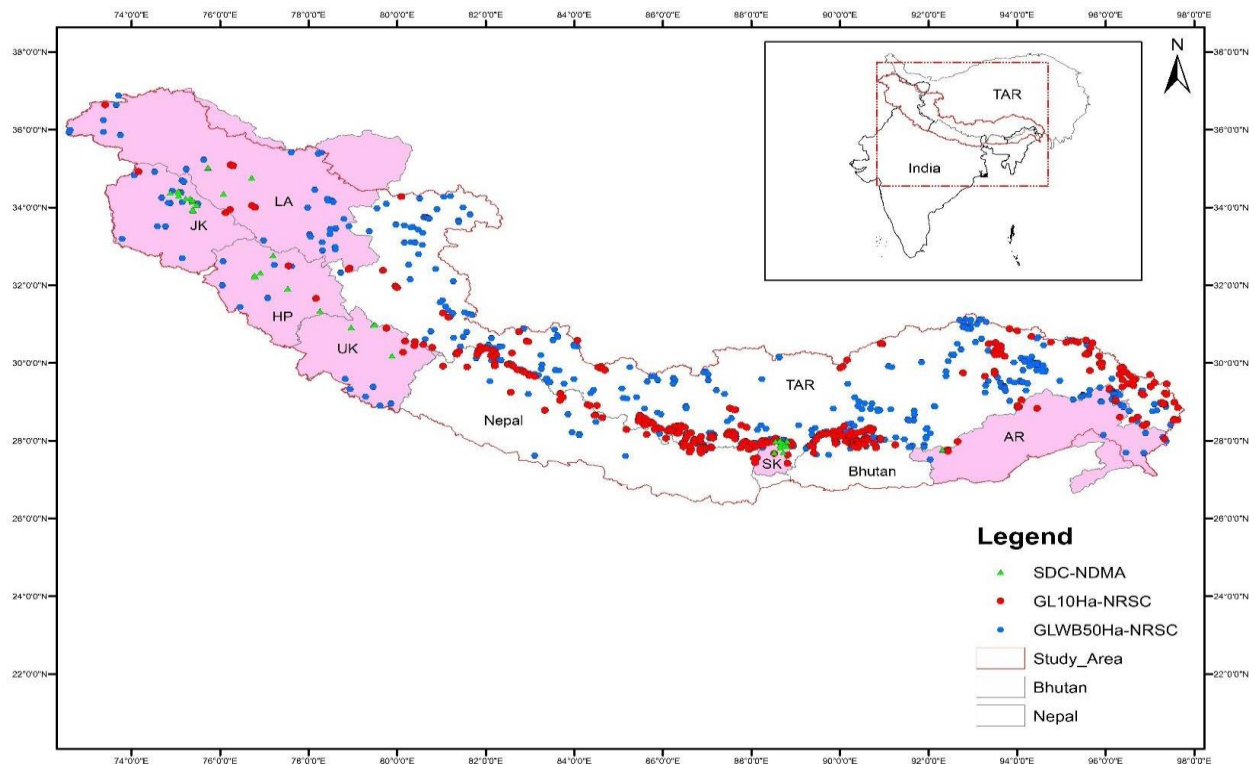


Figure 2.3: Map of Study Area showing Glacial Lakes and Water Bodies being monitored by CWC

The GLs & WBs are mostly located at an elevation range of 3000m to 5000m. A few of them are located above elevation of 5000m and some below 3000m. The elevation of Waterbodies range from 200 m to 5000m. This can be visualized by comparing the location map of study area (**Figure 2.3**) with the relief map of the study area shown in **Figure 2.4**. The elevation range of GLs & WBs being monitored by CWC is shown in **Figure 2.5**



Figure 2.4: Relief Map of the Study Area

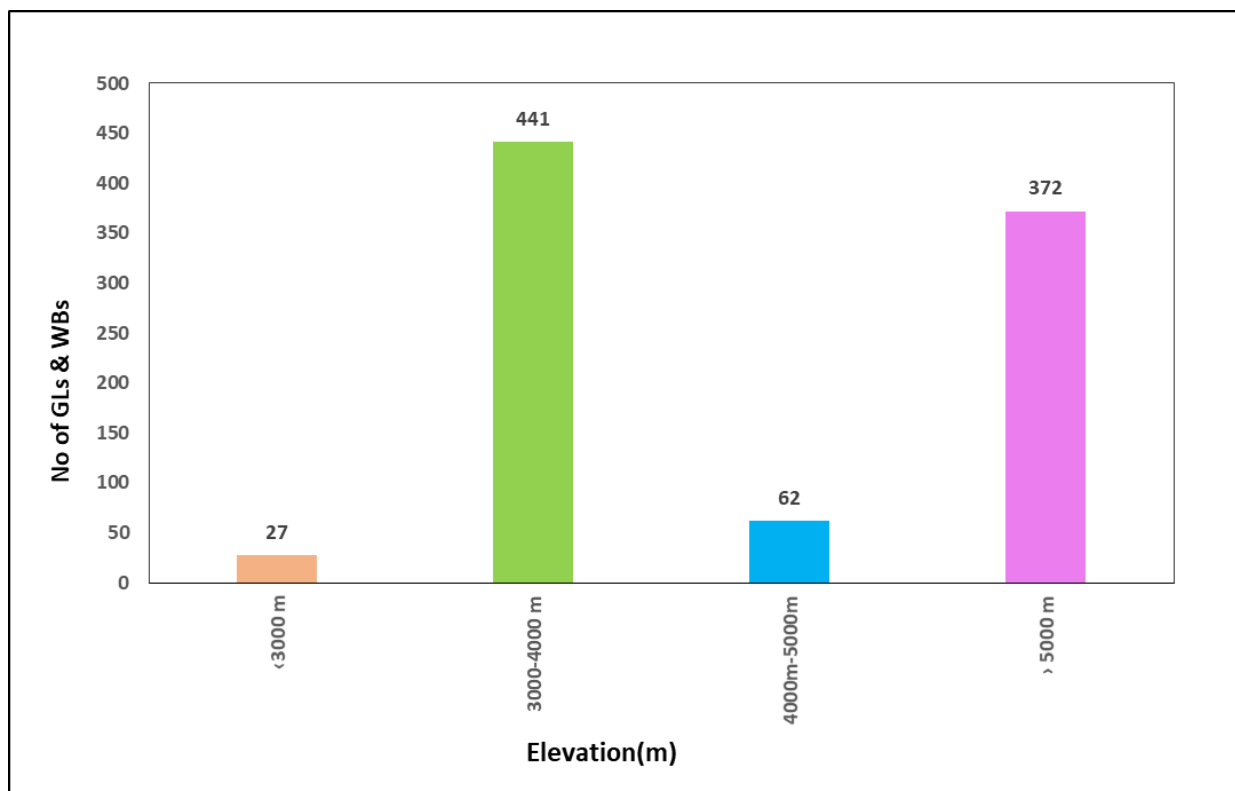


Figure 2.5: Elevation Range of GLs&WBs within Indian Himalayan Region being monitored by CWC

The country-wise distribution of Glacial Lakes & Water Bodiess being monitored by CWC is shown in **Figure 2.6**.

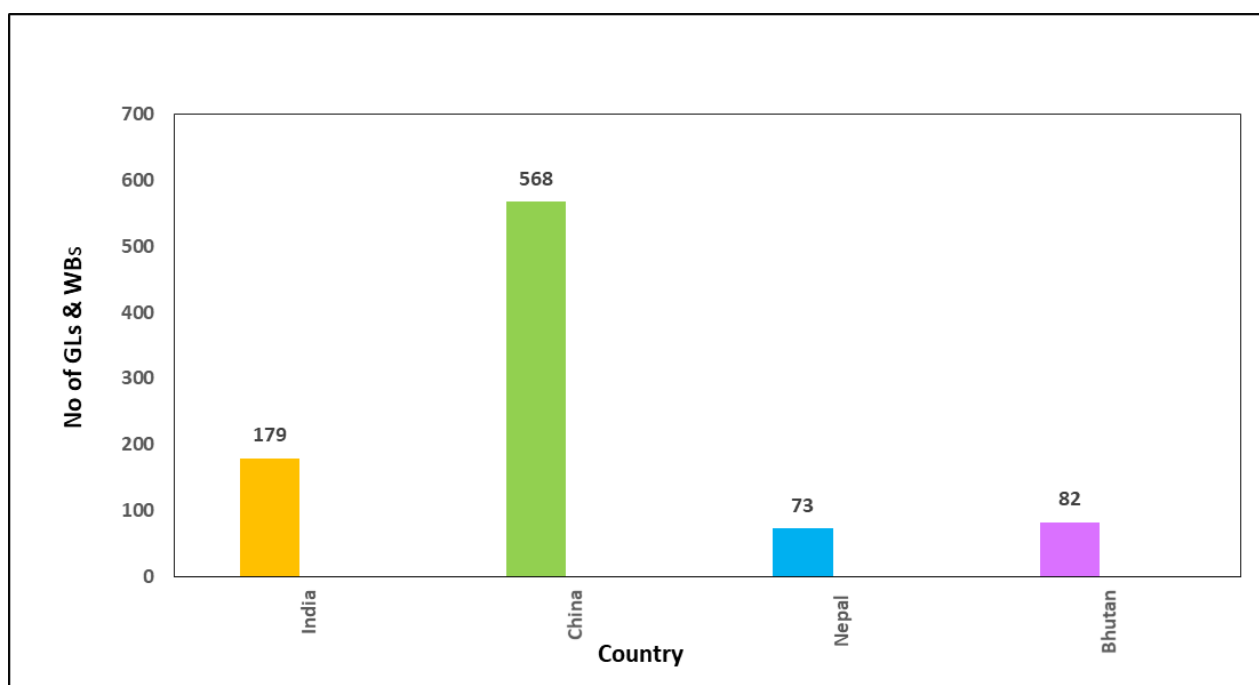


Figure 2.6:Country-wise distribution of GLs & WBs in Indian Himalayan Region being monitored by CWC

The state-wise distribution of Glacial Lakes being monitored by CWC within India is shown in **Figure 2.7**.

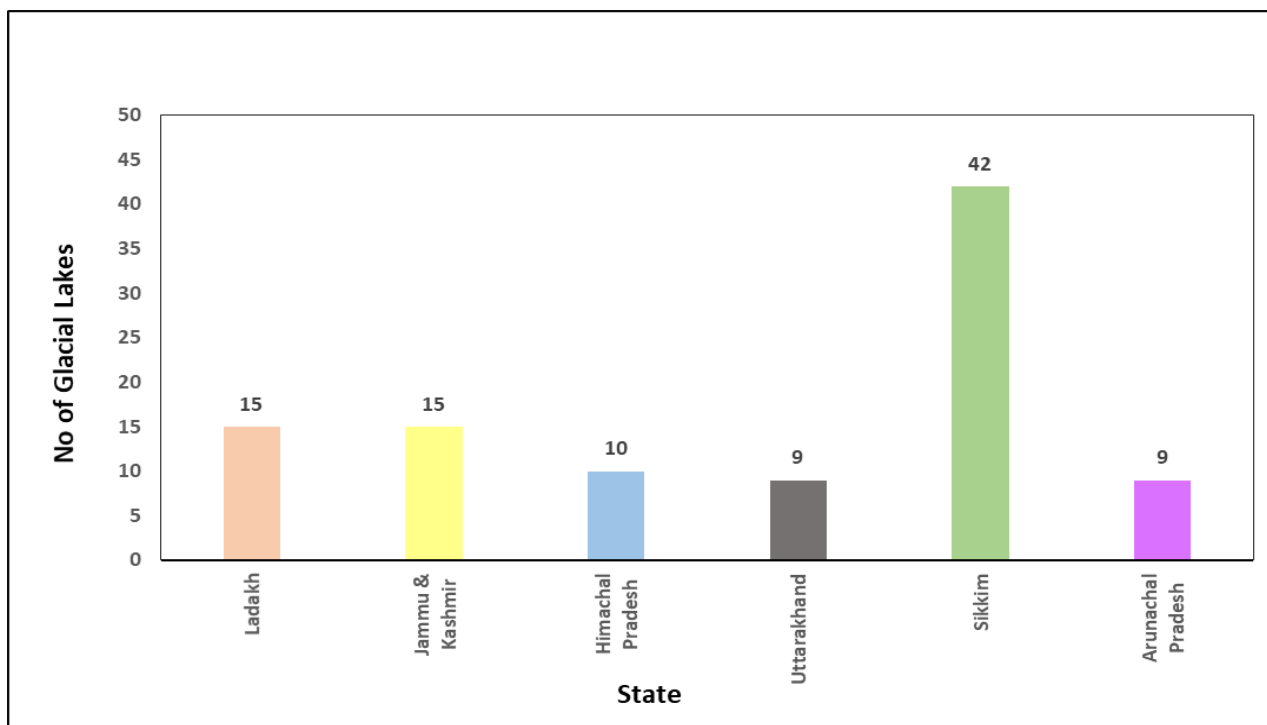


Figure: 2.7: State-wise Distribution of Glacial Lakes within India being monitored by CWC

The State-wise distribution of Water Bodies within India being monitored by CWC is shown in **Figure 2.8**.

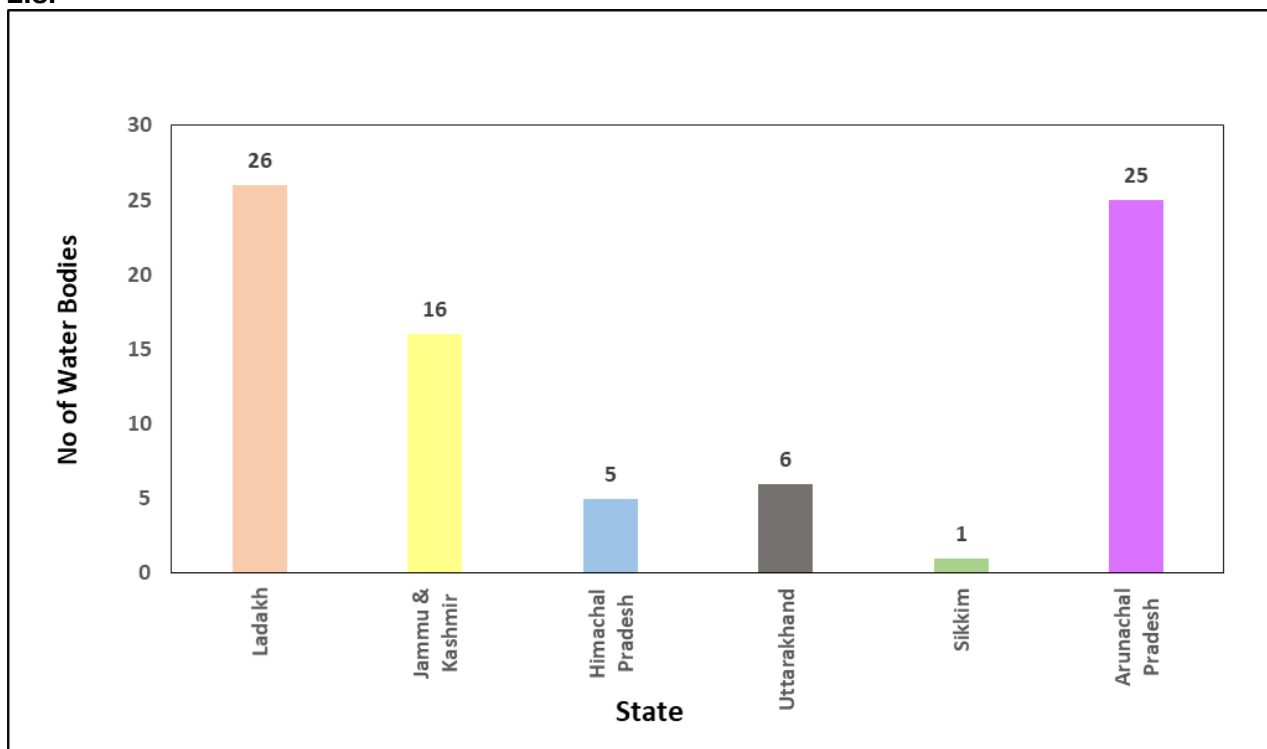


Figure: 2.8 State-wise Distribution of Water Bodies being monitored by CWC

2.2 Remote Sensing Technology

Remote sensing is the science of acquiring information about the Earth's surface without actually being in contact with it. This is done by sensing and recording reflected or emitted energy and processing, analysing, and applying that information. Satellite remote sensing technology has contributed significantly to the acquisition of Earth's resources, thus helping in their better management. They also play a complementary role to the conventional data collection procedures. Satellite remote sensing offers several unique advantages like quick and repetitive data collection, reliability, accuracy, geometric integrity and digital storage, which makes it an ideal tool for mapping, inventorying and monitoring the natural resources.

Monitoring of glacial lakes located in remote mountain areas with rugged terrain and inclement weather by traditional means is very tedious and difficult. Hence Remote Sensing data plays a greater role in generating information on glacial lakes. Satellites with high spatial, spectral and temporal resolution sensors are useful in deriving lake information with better accuracy at regular intervals. Visual and digital image processing and analysis techniques integrated with Geographic Information Systems (GIS) are very useful for the study and monitoring of Glacial Lakes and Water Bodies.

The monitoring was done by downloading and manually digitising Advanced Wide Field Sensor (AWiFS) Satellite imageries procured/ downloaded from NRSC till 2021. High resolution SENTINEL-2 Multi-Spectral Imagery (MSI) and Sentinel-1 Synthetic Aperture Radar (SAR) data (Microwave Imagery) have been utilized for the study., thereafter in Google Earth Engine platform.

2.2.1 Sentinel-2 Multi Spectral Imagery

The Sentinel-2 mission comprises of a constellation of two polar-orbiting satellites placed in the same sun-synchronous orbit, phased at 180° to each other. It is a wide-swath, high-resolution, multi-spectral imaging mission for monitoring of vegetation, soil and water cover, inland waterways and coastal areas. The SENTINEL-2 Multi-Spectral Instrument (MSI) has visible, near infrared and shortwave infrared sensors sampling 13 spectral bands - 4 bands at 10 m, 6 bands at 20 m and 3 bands at 60 m spatial resolution with a swath width of 290 km. The revisit frequency of each single SENTINEL-2 satellite is 10 days and the combined constellation revisit is 5 days. The Green, Red and NIR bands have been utilized for this study.

2.2.2 Sentinel-1 Synthetic Aperture Radar (Microwave Imagery)

The Sentinel-1 mission comprises a constellation of two polar-orbiting satellites, Sentinel-1A and

Sentinel-1B, sharing the same orbital plane. It has C-band synthetic aperture radar (SAR) active sensor. Synthetic Aperture Radar (SAR) has the advantage of operating at wavelengths not impeded by cloud cover or a lack of illumination and can acquire data over a site during day or night time under all weather conditions. SAR actively transmits microwave signals towards the Earth and receives a portion of transmitted energy as backscatter from the ground. The SAR instrument provides radar backscatter measurements influenced by the terrain structure and surface roughness. Generally, the more roughness or structure on the ground, the greater the backscatter. Rough surfaces will scatter the energy and return a significant amount back to the antenna resulting in a bright feature. The C-band imaging operates in four exclusive imaging modes with different resolution (down to 5 m) and coverage (up to 400 km). It provides dual polarisation capability, very short revisit times and rapid product delivery. It can transmit a signal in either horizontal (H) or vertical (V) polarisation, and then receive in both H and V polarisations. For each observation, precise measurements of spacecraft position and altitude are available. The repeat orbit cycle of each Sentinel-1 satellite is 12-day. The backscatter intensity of vertical transmit-vertical receive (X) band (VV band) data has been utilized for the study.

3. Methodology

Google Earth Engine(GEE) has been used to process the Multispectral and Microwave Sentinel image data for the monitoring of Glacial Lakes & Water Bodies. Google Earth Engine (GEE) is a cloud-based geospatial analysis platform that enables users to visualize and analyze satellite images. The Microwave and Multispectral Satellite works on different principle, and hence separate methodology has been adopted to compute the water spread area of GL&WBs in an automatic manner.

Multispectral data consist of visible and infrared bands. The spectral combination of NIR, red & green bands is used to generate false colour composite (FCC). The Normalised Difference Water Index (NDWI) is computed using green and NIR band. The process of calculation of NDWI and FCC is repeated for each GL&WB. The OTSU algorithm is further used to identify the threshold of NDWI for segregating water pixels from other types of features. The detected water pixels are further summed to calculate water spread area in the region of interest.

Microwave data of Sentinel-1 is a phase-preserving dual polarisation SAR system. The backscatter intensity of vertical transmit vertical receive (X) band has been used to distinguish water pixels from other types of features. The OTSU algorithm is further used to identify the threshold of backscatter intensity for segregation. The water spread area of each lake has been calculated by summation of water pixels in the region of interest.

The automated area of the GLs&WBs are then verified manually in GEE. The lakes which show discrepancy in automated area extraction are required to be delineated manually based on the visual interpretation. This is required as the region being monitored has rugged terrain with high mountains and deep valleys, which may lead to effects like foreshortening, layover, mountain shadows etc in the microwave/SAR data. Cloud cover hinders the performance of Multispectral Satellite images. The change detection in water spread area of 477 GLs & WBs greater than 50 Ha have been calculated for the following three cases.

- Difference between the current area of lake and base year area(2011)
- Difference between the current area of lake and Last five years average area(2019-2023)
- Difference between the current area of lake and Last ten years average area(2014-2023)

The minimum of change observed from the above three cases has been adopted to identify increase, decrease and no change in water spread area.

As the monitoring of 385 GLs with waterspread area between 10 Ha & 50 Ha was initiated in 2022, the change detection in water spread area has been calculated for the following two cases

- Difference between the current area of lake and base year area(2011)
- Difference between the current area of lake and last two years average area(2022-2023)

The minimum of change observed from the above two cases has been adopted to identify increase, decrease and no change in water spread area.

For the remaining 40 GLs, as the inventory details (base year 2011) are not available and monitoring data being available only since 2022, the change detection in water spread area has been calculated as the

- Difference between the current area of lake and last two years average area(2022-2023)

Thereafter the GLs & WBs are categorized as those with increase in water spread area greater than 40%, increase in water spread area up to 40%, no change in water spread area, decrease in water spread area and analysis not performed due to limitations in remote sensing technology such as cloud cover, frozen condition, dried up condition etc.

The detailed flow-chart on methodology for automatic monitoring of Glacial Lakes and Water Bodies using satellite images is given below in **Figure 3.1**

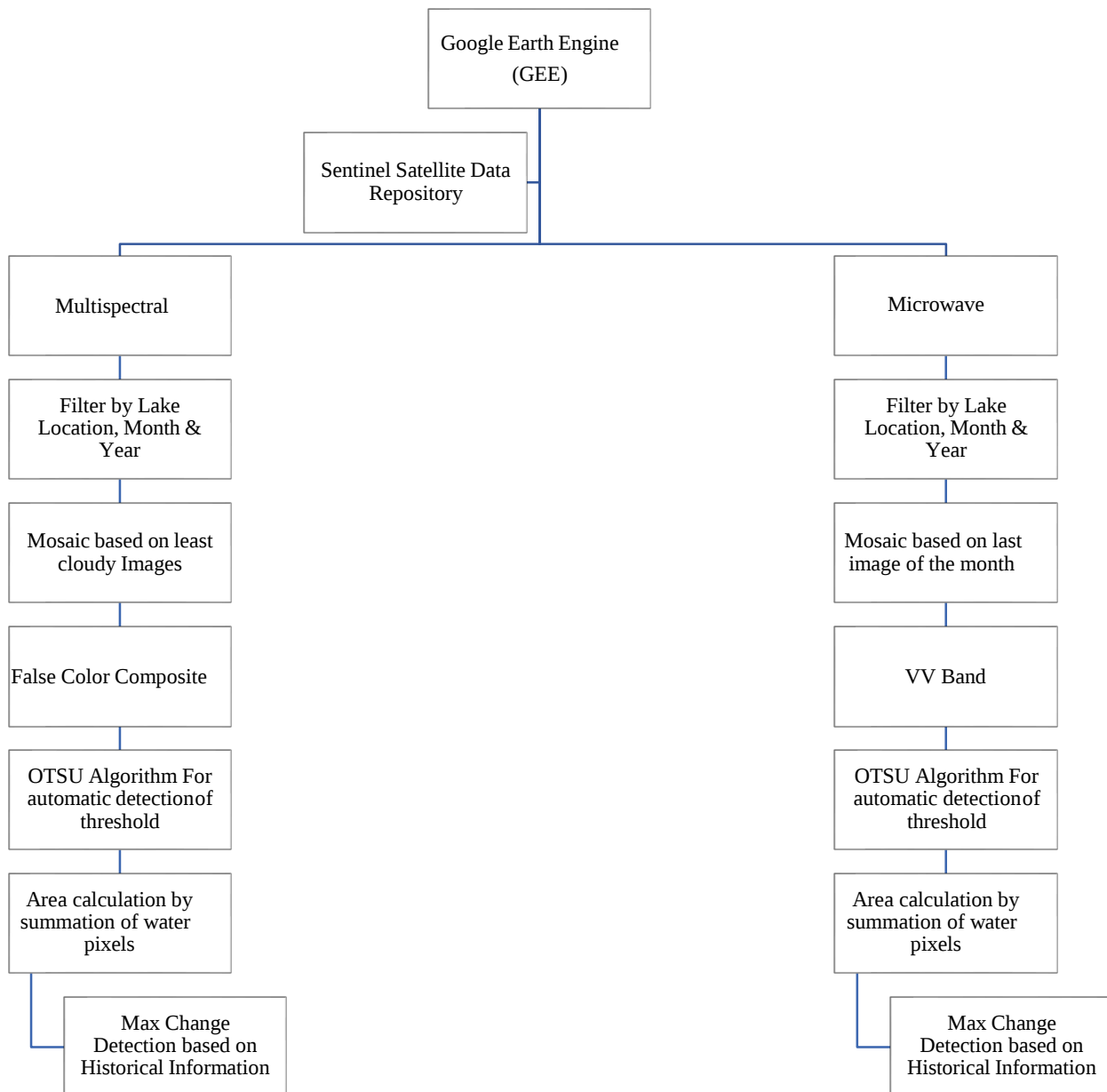


Figure 3.1: Flowchart on Methodology for automatic monitoring of Glacial Lakes & Water Bodies using Satellite Images

4. Results

4.1 Results of Monitoring of Glacial Lakes & Water Bodies

The water spread area of 902 Glacial Lakes & Water Bodies was calculated for the month of June 2024 in an automatic manner and manually digitized wherever required using the methodology described above. It includes **477 GL&WBs** with water spread area greater than 50ha which are being monitored since the year 2011 and **425 GLs** with water spread area between 10 Ha to 50 ha being monitored from the year 2022.

The results of change detection in water spread area of 477 GL & WBs are shown in Table 4.1 to Table 4.5.

It is observed that out of **477 GL&WBs**,

- i. **9** show increase in water spread area greater than 40%
- ii. **167** show increase in water spread area but less than 40%
- iii. **20** show no change in water spread area
- iv. **243** show decrease in water spread area
- v. change detection for remaining **38** could not be performed due to reasons such as like frozen condition, dried up condition, cloud cover etc.

The results of change detection in water spread area of remaining **425 GLs** are shown in Table 4.6 and Table 4.7.

It was observed that out of 425 Glacial Lakes,

- i. **8** show increase in water spread area greater than 40%
- ii. **170** show increase in water spread area but less than 40%
- iii. **13** show no change in water spread area
- iv. **191** show decrease in water spread area
- v. change detection for remaining **43** could not be performed due to reasons such as like frozen condition, dried up condition, cloud cover etc.

The same is shown in Figure.4.1.

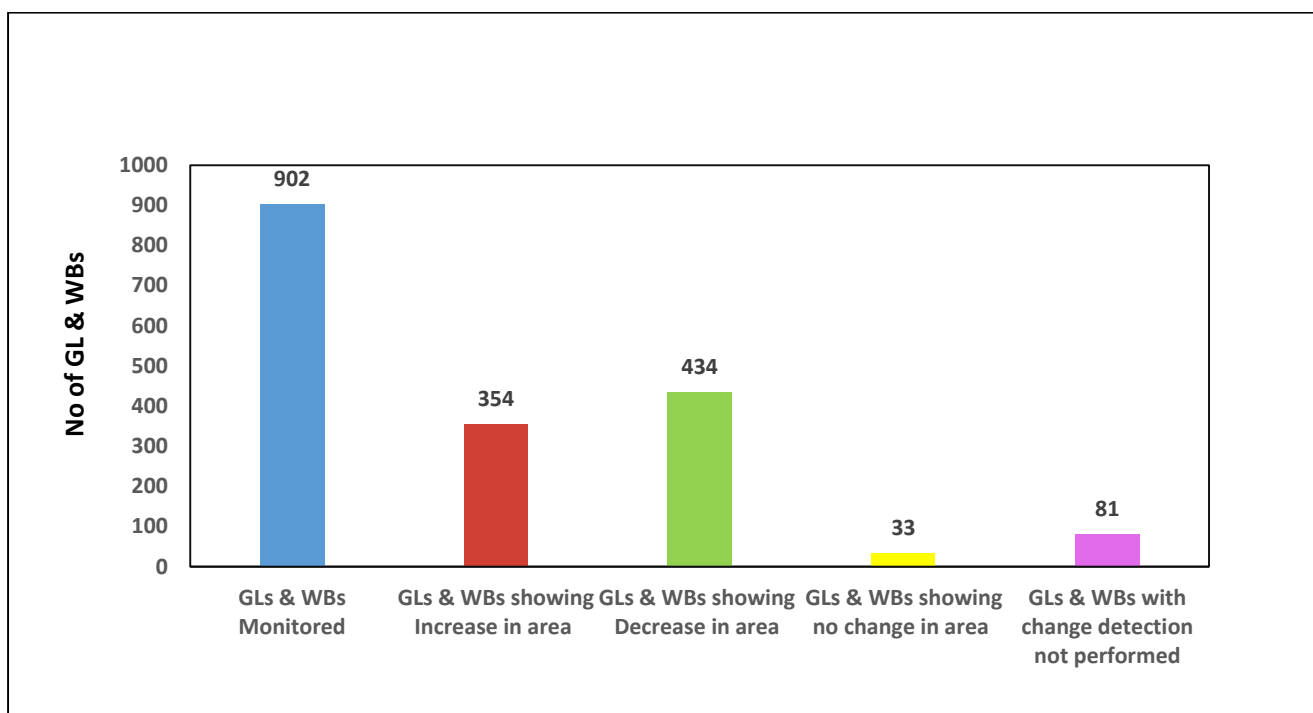


Figure 4.1: Outcome of Monitoring of GLs & WBs, June 2024

4.2 Glacial Lakes located in India requiring vigorous monitoring

Out of the 902 GLs & WBs monitored, 100 Glacial Lakes (15 GLs > 50 Ha & 85 GLs – 10 to 50 Ha) are located in India. The analysis indicates that

Out of **15** GLs

- (i) **9** show increase in water spread area
- (ii) **4** show decrease in water spread area
- (iii) **1** shows no change in water spread area
- (iv) change detection of **1** GL could not be performed

Out of **85** GLs

- (i) **38** show increase in water spread area
- (ii) **20** show decrease in water spread area
- (iii) **1** shows no change in water spread area
- (iv) change detection of **26** GL could not be performed

The results of change detection in water spread area of **15 GLs** (>50Ha) and **85 GLs** (10ha-50ha) are shown in Table 4.8 and Table 4.9 respectively.

The state-wise distribution of Glacial Lakes located in India analyzed for the month of June 2024 is shown in figure. The lakes showing increase in water spread demand vigorous monitoring.

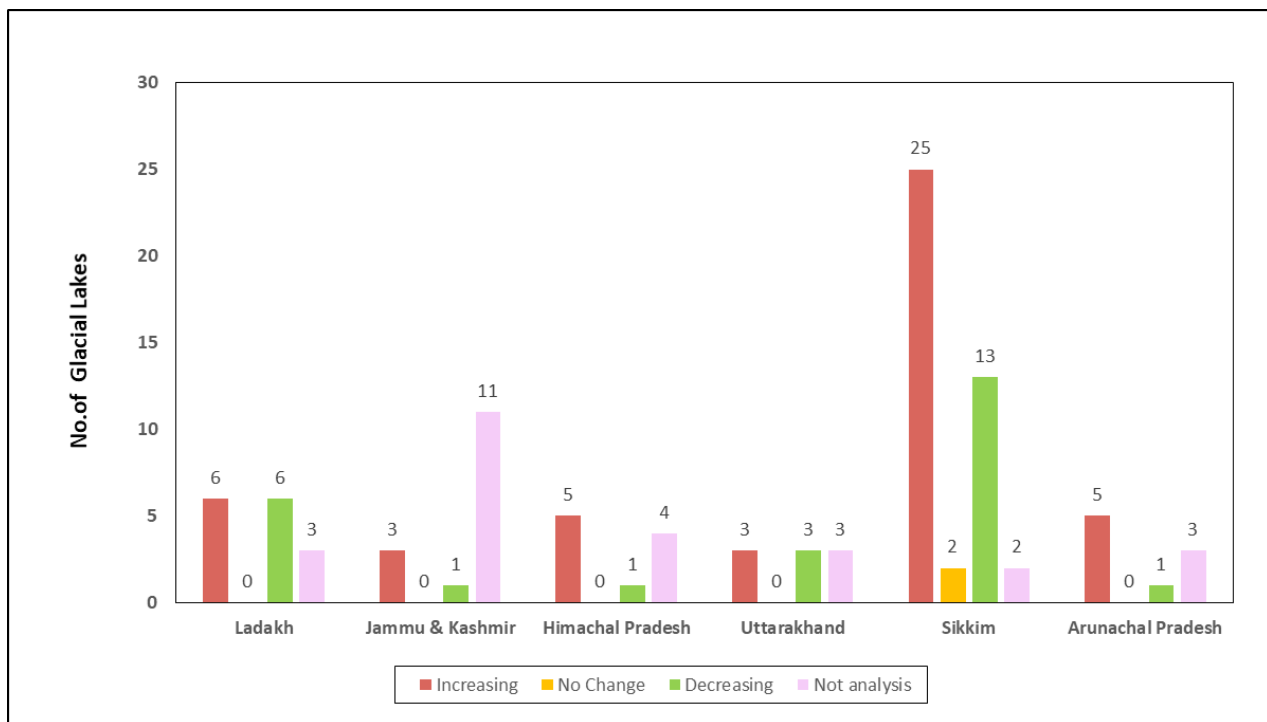
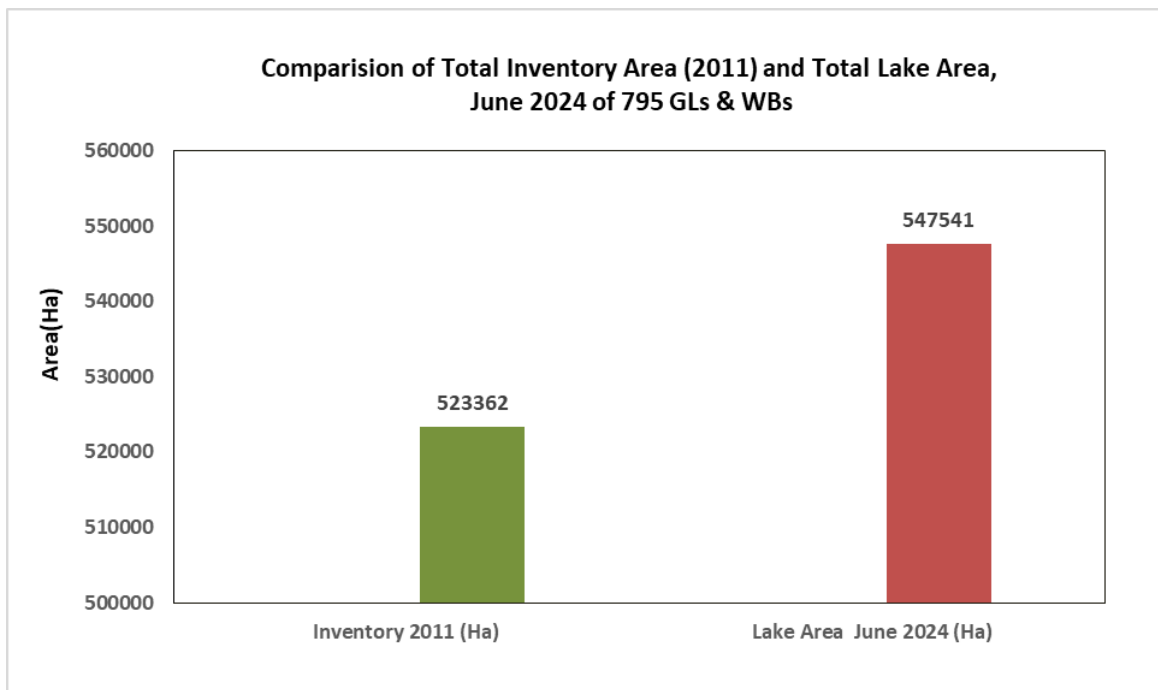


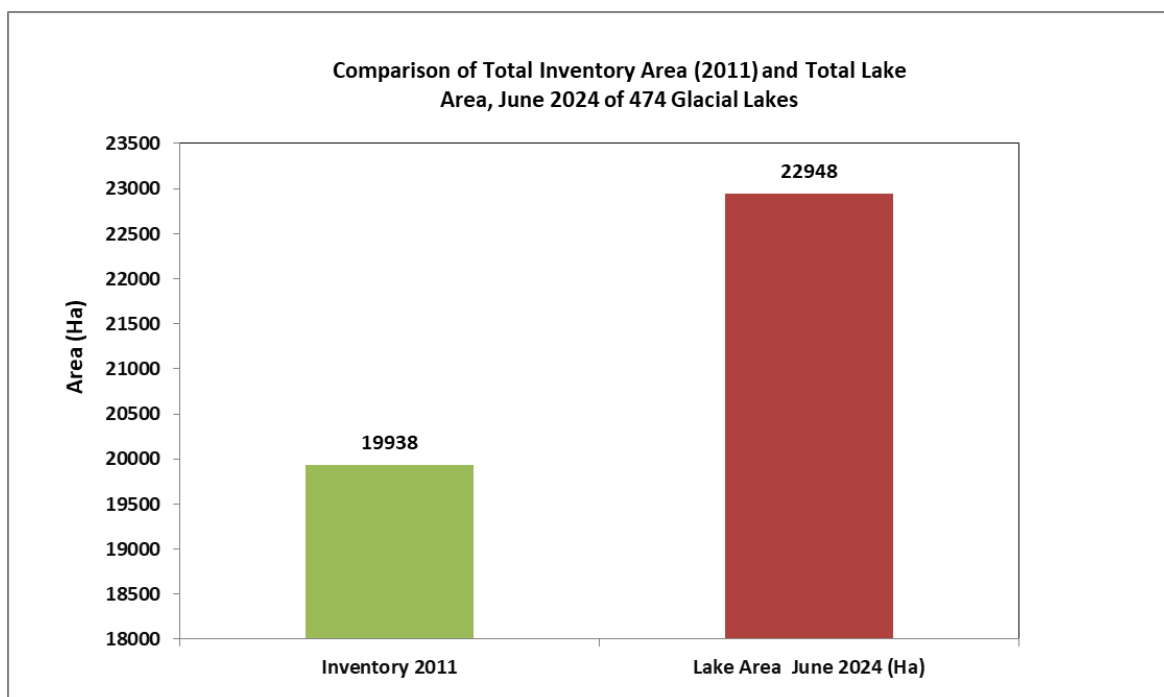
Figure 4.2: State-wise distribution of Outcome of monitoring of GLs within India, June 2024

5.0 Conclusion

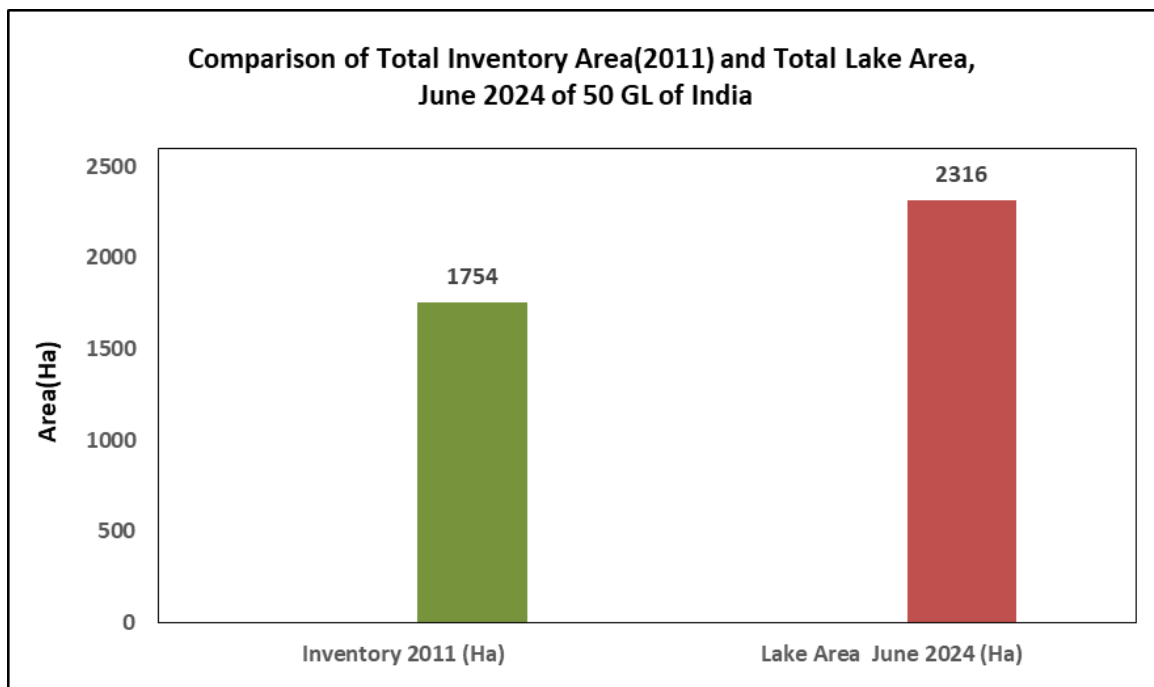
- **1 Glacial Lake and 8 Water Bodies (>50Ha area)** show increase in area greater than 40% when change detection was carried out with respect to base year area(2011), average area of last 5 years(2019-2023) & average area of last 10 years(2014-2023). The Glacial Lake is located in China. **1 Water Body is located in India (Ladhak)**. The remaining Water Bodies are located in China(6) and Bhutan(1).
- Five separate Water Bodies(as per Inventory 2011) of China has joined together forming a single large Water Body.
- **8 Glacial Lakes (10 ha-50 Ha area)** show increase in area greater than 40% when change detection was carried out with respect to base year area (2011), average area of last 2 years (2022-2023). 4 Glacial Lakes are located in China. The remaining Glacial lakes are located in India (**Ladhak-1, Sikkim -2, Arunachal Pradesh - 1**).
- The total Inventory area of **Glacial Lakes and Water Bodies** was 523362 Ha during the year 2011 which has increased to 547541 Ha during the year 2024 (June). There is a **4.62%** increase in area. *(Out of 902 GL & WB, only 795 lakes were considered for this interpretation. This includes 40 SDC lakes which have no inventory details as well as lakes which were not analysed during the year 2023. This is shown in Figure below.)*



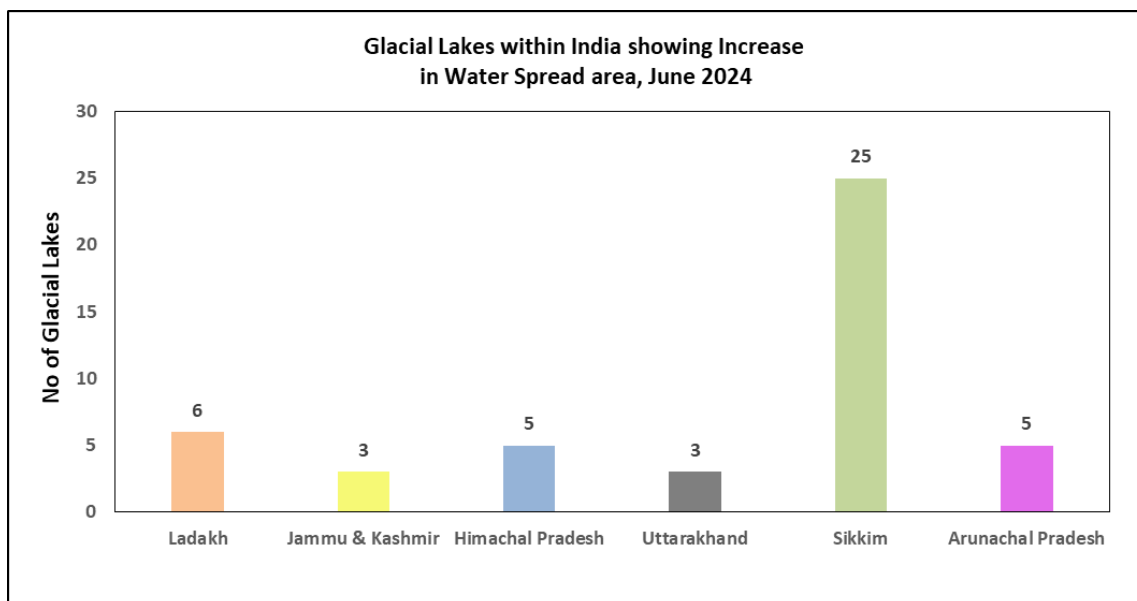
- The total Inventory area of **Glacial Lakes** was 19938 Ha during the year 2011 which has increased to 22948 Ha during the year 2024 (June). There is a **15.1%** increase in area. *(Out of 544 GL, only 474 lakes were considered for this interpretation. This includes 40 SDC lakes which have no inventory details as well as lakes which were not analysed during the year 2023.)*



- The total Inventory area of **Glacial Lakes within India** was 1754 Ha during the year 2011 which has increased to 2316 Ha during the year 2024 (June). There is a 32% increase in area. *(Out of 100GL, only 50 lakes were considered for this interpretation. This includes 40 SDC lakes which have no inventory details as well as lakes which were not analysed during the year 2023.)*



- **47 Glacial Lakes** (out of 100) located within India display increase in water spread area and hence demand vigorous monitoring for disaster purpose (*Ladhak-6, Jammu & Kashmir-3, Himachal Pradesh-5, Uttarakhand- 3, Sikkim – 25 & Arunachal Pradesh-5*).



- Use of a combination of Microwave satellite images in conjunction with multispectral satellite images (MSI) has largely overcome the short-comings due to obscurity from cloud cover and this has led to almost all-time and all-weather monitoring of all 902 Lakes. This has increased availability of satellite images at shorter frequency interval and will facilitate in reducing the monitoring interval in future.
- The use of Sentinel satellite images has brought the improvement of spatial resolution from 56m to 10m leading to enhancement of monitoring accuracy. Sentinel images have also aided in improving temporal resolution.
- Most of GLs & WBs exhibiting 40% or more increase in water spread area, are located in transboundary region.

Table 4.1: Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “More than 40% Increase” in area

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
1	01_61C_004	NRSC			4495	WB	33°45'16.2"	80°38'37.68"	Indus	Indus	China	3099	21	#	#	14375
2	01_61C_010	NRSC		CH_38	4495	WB	33°43'28.92"	80°41'25.08"	Indus	Indus	China	3099	88	145	148	1988
3	01_61C_005	NRSC		CH_33	4495	WB	33°44'54.96"	80°38'29.76"	Indus	Indus	China	3099	139	449	335	590
4	01_61C_011	NRSC		CH_39	4494	WB	33°43'13.44"	80°43'16.68"	Indus	Indus	China	3099	403	597	515	420
5	01_61C_002	NRSC		CH_30	4494	WB	33°45'3.96"	80°35'51.72"	Indus	Indus	China	3099	685	851	800	264
6	01_52G_001	NRSC		JK_189	5008	WB	33°59'57.12"	77°58'44.04"	Indus	Shyok	India	127	45	41	41	185
7	03_82F_010	NRSC		CH_735	5030	GL	30°28'13.08"	93°31'59.52"	Brahmaputra		China	108	44	17	14	145
8	03_77P_005	NRSC		CH_576	4619	WB	28°45'55.08"	91°40'30"	Brahmaputra		China	221	112	96	96	97
9	03_78I_085	NRSC		BH_166	4764	WB	27°47'58.56"	90°13'50.16"	Brahmaputra	Puna Tsang Chhu	Bhutan	122	70	69	58	74

*Note: G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability,
“-” Inventory Data not available , “#” indicates frozen/ dried lakes.*

Table 4.2: Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “Increase in area upto 40%”

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
1	02_71L_034	NRSC	89G	CH_188	5095	GL	28°2'0.96"	86°29'46.32"	Ganga	Sun Kosi	China	80	46	62	56	29
2	03_77H_003	NRSC		CH_478	4714	WB	28°24'1.8"	89°3'41.04"	Brahmaputra		China	280	220	192	164	27
3	03_77H_018	NRSC		CH_488	4699	WB	28°10'50.52"	89°32'3.84"	Brahmaputra		China	102	80	81	75	26
4	02_71H_012	NRSC		CH_132	5379	GL	28°33'49.68"	85°36'14.76"	Ganga	Arun Kosi	China	159	89	127	118	25
5	01_43J_022	NRSC		JK_100	1583	WB	34°7'11.28"	74°49'50.52"	Indus	Jhelum	India	75	60	62	60	21
6	03_82B_014	NRSC		CH_640	4825	WB	30°29'36.96"	92°38'35.88"	Brahmaputra		China	188	157	150	140	20
7	02_78A_003	NRSC	24G	CH_269	5522	GL	27°56'46.68"	88°4'30.72"	Ganga	Arun Kosi	China	192	124	160	140	20
8	03_82K_020	NRSC		CH_876	4364	WB	29°53'47.76"	94°27'41.4"	Brahmaputra		China	96	77	80	71	20
9	02_71P_016	NRSC		CH_204	4182	WB	28°29'56.76"	87°27'7.92"	Ganga	Arun Kosi	China	163	137	133	132	19
10	01_52J_005	NRSC		JK_201	5430	WB	34°11'9.96"	78°30'28.08"	Indus	Shyok	India	51	44	44	40	17
11	01_61F_004	NRSC		CH_61	4814	WB	34°1'19.92"	81°36'47.88"	Indus	Indus	China	43578	36392	37961	37980	15
12	02_71P_029	NRSC	43G	CH_217	5045	GL	28°10'42.24"	87°33'41.4"	Ganga	Arun Kosi	China	122	80	106	93	15
13	01_52J_009	NRSC		JK_205	5576	WB	34°9'2.16"	78°33'11.52"	Indus	Shyok	India	67	57	58	54	15
14	02_71H_035	NRSC		CH_155	4366	WB	28°10'57"	85°55'22.44"	Ganga	Sun Kosi	China	51	45	43	42	14
15	03_91C_024	NRSC		CH_1075	3977	GL	29°17'53.16"	96°48'59.04"	Brahmaputra		China	340	262	298	283	14

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
16	03_62O_040	NRSC		CH_385	4896	WB	29°34'56.64"	83°21'20.16"	Brahmaputra		China	135	107	118	114	14
17	01_52J_001	NRSC	8I	JK_197	5311	GL	34°27'27.72"	78°8'6.36"	Indus	Shyok	India	111	65	98	90	14
18	02_78A_004	NRSC	194G	CH_270	5603	GL	27°55'58.08"	88°4'0.48"	Ganga	Arun Kosi	China	123	84	109	99	13
19	03_77D_005	NRSC/SDC	/Very High Risk	SK_5	5249	GL	28°0'32.76"	88°41'52.44"	Brahmaputra	Teesta	India	114	88	101	86	13
20	03_82K_037	NRSC		CH_893	4147	WB	29°49'40.08"	94°27'43.2"	Brahmaputra		China	62	55	52	47	13
21	03_82G_023	NRSC		CH_784	4377	WB	29°30'45"	93°37'11.64"	Brahmaputra		China	94	84	83	79	12
22	01_61C_018	NRSC		CH_46	4291	WB	33°22'1.2"	80°33'11.16"	Indus	Indus	China	2208	1779	1974	1883	12
23	02_71P_025	NRSC		CH_213	4807	WB	28°12'51.12"	87°28'5.88"	Ganga	Arun Kosi	China	148	104	132	125	12
24	03_82N_004	NRSC		CH_975	4290	GL	30°36'3.96"	95°10'59.16"	Brahmaputra		China	138	92	123	102	12
25	02_71L_010	NRSC	185G	CH_165	5387	GL	28°20'54.96"	86°13'30"	Ganga	Sun Kosi	China	66	47	59	52	12
26	03_62O_032	NRSC		CH_377	5012	WB	29°41'21.48"	83°11'24.36"	Brahmaputra		China	59	49	53	52	12
27	03_82G_045	NRSC		CH_806	4523	WB	29°24'19.44"	93°42'28.44"	Brahmaputra		China	81	71	72	68	12
28	01_61C_022	NRSC		CH_50	4339	WB	33°5'51.36"	80°23'34.08"	Indus	Indus	China	1752	1420	1580	1481	11
29	03_82J_014	NRSC		CH_844	3703	WB	30°10'24.6"	94°20'44.52"	Brahmaputra		China	203	183	183	167	11
30	03_78A_021	NRSC		SK_26	5431	GL	27°49'28.2"	88°14'57.12"	Brahmaputra	Teesta	India	87	56	78	56	11

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
31	03_78I_023	NRSC		BH_104	5055	GL	27°56'22.56"	90°32'5.28"	Brahmaputra	Manas Chhu & Mangde Chhu	Bhutan	60	51	54	45	11
32	03_62K_002	NRSC		CH_306	4858	WB	29°58'48.36"	82°35'17.16"	Brahmaputra		China	55	45	50	47	11
33	03_78E_007	NRSC		BH_60	5008	GL	27°56'29.04"	89°55'48"	Brahmaputra	Puna Tsang Chhu	Bhutan	70	61	63	56	11
34	03_82F_008	NRSC		CH_733	4828	WB	30°32'5.64"	93°3'29.16"	Brahmaputra		China	96	83	87	81	10
35	03_78E_026	NRSC		CH_613	5161	GL	27°48'31.32"	89°13'37.2"	Brahmaputra	Amo Chhu	China	58	36	53	51	10
36	03_77H_023	NRSC		CH_492	5313	WB	28°8'14.64"	89°32'5.28"	Brahmaputra		China	52	47	45	44	9
37	02_72I_027	NRSC	41G	NP_80	4977	GL	27°45'17.28"	86°57'28.8"	Ganga	Sun Kosi	Nepal	89	82	81	72	9
38	03_62K_009	NRSC		CH_313	5079	GL	29°50'25.8"	82°47'0.6"	Brahmaputra		China	318	250	291	284	9
39	03_82B_008	NRSC		CH_634	4928	WB	30°53'45.96"	92°54'35.28"	Brahmaputra		China	294	254	271	255	9
40	02_71L_004	NRSC	5G	CH_159	5518	GL	28°23'40.92"	86°22'45.12"	Ganga	Arun Kosi	China	128	79	118	101	9
41	03_78I_051	NRSC		BH_132	5074	GL	27°53'26.16"	90°17'24.36"	Brahmaputra	Manas Chhu & Mangde Chhu	Bhutan	128	103	118	102	9

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
42	03_71O_006	NRSC		CH_442	4738	WB	29°33'21.6"	87°1'39"	Brahmaputra		China	123	104	113	109	9
43	03_77K_015	NRSC		CH_517	4455	WB	29°7'3.36"	90°20'9.24"	Brahmaputra		China	119	108	109	105	9
44	03_78A_013	NRSC		SK_19	5470	GL	27°55'7.68"	88°9'39.6"	Brahmaputra	Teesta	India	88	67	80	79	9
45	03_82B_015	NRSC		CH_641	5124	WB	30°20'56.4"	92°44'7.08"	Brahmaputra		China	88	75	81	73	9
46	03_82E_007	NRSC		CH_725	5043	WB	31°0'14.4"	93°5'16.08"	Brahmaputra		China	76	71	68	66	8
47	03_77D_004	NRSC/SDC	/Very High Risk	SK_4	5287	GL	28°0'25.56"	88°42'46.08"	Brahmaputra	Teesta	India	130	106	120	111	8
48	02_71P_043	NRSC	18G	CH_231	5206	GL	28°5'36.6"	87°38'15"	Ganga	Arun Kosi	China	84	67	78	68	8
49	03_82L_009	NRSC		CH_971	3893	GL	28°51'14.04"	94°0'0.72"	Brahmaputra		China	70	54	65	55	8
50	03_82K_080	NRSC		CH_936	4530	WB	29°28'21.72"	94°14'10.68"	Brahmaputra		China	52	47	48	42	8
51	02_72E_001	NRSC		NP_57	1554	WB	27°36'6.48"	85°9'25.2"	Ganga	Bagmati	Nepal	171	158	148	141	8
52	01_61D_004	NRSC		CH_56	4991	WB	32°9'24.84"	80°18'11.88"	Indus	Indus	China	586	550	540	509	7
53	01_61G_002	NRSC		CH_63	4663	WB	33°40'21.72"	81°22'16.32"	Indus	Indus	China	1448	1134	1356	1281	7
54	01_61C_014	NRSC		CH_42	4279	WB	33°29'57.12"	80°20'60"	Indus	Indus	China	328	286	307	295	7
55	01_43M_003	NRSC		JK_120	2663	WB	35°13'54.84"	75°37'49.44"	Indus	Shigar (Indus)	India	233	187	212	217	7
56	01_43K_010	NRSC		JK_111	3946	WB	33°31'8.4"	74°35'1.32"	Indus	Jhelum	India	72	66	67	63	7
57	01_62F_010	NRSC	9I	CH_101	5250	GL	30°23'11.04"	81°55'47.64"	Indus	Sutlej	China	71	45	66	59	7

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
58	02_71L_026	NRSC	73G	CH_181	5057	GL	28°11'8.52"	86°31'54.12"	Ganga	Sun Kosi	China	70	59	65	59	7
59	03_82J_025	NRSC		CH_855	4038	WB	30°0'17.64"	94°23'1.68"	Brahmaputra		China	63	59	57	53	7
60	03_82O_061	NRSC		AP_54	3811	WB	29°0'40.32"	95°53'5.64"	Brahmaputra	Dibang	India	60	54	56	48	7
61	03_77L_010	NRSC		CH_526	4457	WB	28°48'40.68"	90°29'34.44"	Brahmaputra		China	50	47	47	43	7
62	02_71D_008	NRSC		NP_49	639	WB	28°9'13.68"	84°6'43.56"	Ganga	Trishuli	Nepal	105	98	97	91	7
63	03_71K_009	NRSC		CH_432	4750	WB	29°33'26.28"	86°15'58.68"	Brahmaputra		China	246	230	219	194	7
64	03_82G_062	NRSC		CH_823	4925	WB	29°14'25.08"	93°16'33.6"	Brahmaputra		China	61	58	56	53	6
65	03_82E_002	NRSC		CH_720	5008	WB	31°7'53.4"	93°10'36.48"	Brahmaputra		China	741	659	697	633	6
66	02_71H_003	NRSC		CH_123	4649	WB	28°41'10.32"	85°57'15.12"	Ganga	Arun Kosi	China	233	166	219	208	6
67	02_71P_040	NRSC	126G	CH_228	4962	WB	28°6'50.04"	87°39'19.08"	Ganga	Arun Kosi	China	153	126	144	133	6
68	02_72I_025	NRSC	66G	NP_78	4884	GL	27°46'44.4"	86°36'48.96"	Ganga	Sun Kosi	Nepal	144	108	135	114	6
69	02_71L_023	NRSC	39G	CH_178	5106	GL	28°11'50.64"	86°34'54.12"	Ganga	Arun Kosi	China	136	116	129	119	6
70	02_71D_004	NRSC	16G	NP_45	4064	GL	28°29'19.68"	84°29'8.52"	Ganga	Trishuli	Nepal	104	74	99	90	6
71	02_71P_047	NRSC	81G	CH_235	5614	GL	28°4'9.48"	87°2'53.88"	Ganga	Arun Kosi	China	96	80	90	84	6
72	03_62O_042	NRSC		CH_387	4964	WB	29°29'56.04"	83°25'40.44"	Brahmaputra		China	64	57	60	57	6

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
73	03_77L_030	NRSC		BH_12	5305	GL	28°16'43.32"	90°13'32.88"	Brahmaputra		Bhutan	92	79	87	82	6
74	01_62E_010	NRSC		CH_85	5233	WB	31°16'26.76"	81°35'41.64"	Indus	Indus	China	165	156	151	145	6
75	02_72M_005	NRSC	139G	CH_251	5141	GL	27°56'57.12"	87°55'51.96"	Ganga	Arun Kosi	China	80	71	76	69	6
76	03_77O_002	NRSC		CH_565	3806	WB	29°53'58.56"	91°10'0.12"	Brahmaputra		China	95	91	67	73	5
77	03_77L_014	NRSC		CH_530	5289	WB	28°26'19.32"	90°10'24.96"	Brahmaputra		China	50	48	44	43	5
78	03_82O_054	NRSC		CH_1046	3311	WB	29°7'41.88"	95°26'17.88"	Brahmaputra	Dibang	China	54	51	46	44	5
79	03_82J_020	NRSC		CH_850	3852	WB	30°3'1.08"	94°14'53.52"	Brahmaputra		China	461	439	418	395	5
80	02_72I_004	NRSC	9G	CH_244	5074	GL	27°56'45.96"	86°26'47.4"	Ganga	Sun Kosi	China	205	121	194	178	5
81	03_71G_007	NRSC		CH_416	5153	WB	29°39'14.4"	85°48'31.68"	Brahmaputra		China	200	191	191	186	5
82	03_77L_051	NRSC		BH_22	4548	GL	28°5'31.2"	90°17'60"	Brahmaputra	Puna Tsang Chhu	Bhutan	169	143	161	143	5
83	01_52H_004	NRSC		HP_5	4155	GL	32°29'47.04"	77°33'5.76"	Indus	Chenab	India	154	46	146	132	5
84	03_62K_012	NRSC		CH_316	5368	GL	29°44'7.8"	82°58'26.04"	Brahmaputra		China	92	73	88	77	5
85	02_72M_009	NRSC	51G	NP_86	4932	GL	27°52'13.08"	87°52'3.36"	Ganga	Tamor Kosi	Nepal	68	65	65	61	5
86	02_77D_007	NRSC	244G	CH_262	5215	GL	28°1'23.88"	88°21'16.2"	Ganga	Arun Kosi	China	60	55	57	56	5
87	01_52D_001	NRSC		HP_1	780	WB	32°36'52.92"	76°1'53.76"	Indus	Ravi	India	792	725	729	757	5

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
88	02_71P_054	NRSC		CH_242	4859		#N/A	#N/A	Ganga	Arun Kosi	China	104	-	100	87	4
89	03_82B_010	NRSC		CH_636	4990	WB	30°52'42.24"	92°52'50.16"	Brahmaputra		China	54	52	48	45	4
90	03_77N_004	NRSC		CH_563	3890	WB	30°0'32.4"	91°51'39.24"	Brahmaputra		China	1346	1296	1220	1175	4
91	01_62E_015	NRSC		CH_90	5415	WB	31°10'56.28"	81°11'40.2"	Indus	Sutlej	China	53	51	47	44	4
92	03_82C_010	NRSC		CH_665	4921	WB	29°46'44.04"	92°23'17.16"	Brahmaputra		China	159	153	151	138	4
93	02_71L_006	NRSC	3G	CH_161	5365	GL	28°22'26.76"	86°18'16.56"	Ganga	Arun Kosi	China	405	379	390	359	4
94	03_82A_002	NRSC		CH_621	4905	WB	31°7'12.36"	92°49'59.52"	Brahmaputra		China	403	319	389	361	4
95	01_43K_014	NRSC		JK_115	3521	WB	33°30'47.16"	74°46'6.96"	Indus	Jhelum	India	140	111	135	129	4
96	03_77D_003	NRSC		SK_3	5098	WB	28°0'47.52"	88°45'20.88"	Brahmaputra	Teesta	India	104	84	100	94	4
97	03_62J_032	NRSC		CH_304	4857	GL	30°4'42.6"	82°20'32.28"	Brahmaputra		China	93	81	89	83	4
98	03_78A_009	NRSC		SK_16	5044	GL	27°56'51.72"	88°19'52.68"	Brahmaputra	Teesta	India	64	55	62	58	4
99	02_71P_028	NRSC		CH_216	4997	GL	28°12'21.6"	87°3'7.56"	Ganga	Arun Kosi	China	62	50	59	60	4
100	03_82C_016	NRSC		CH_671	4679	WB	29°39'59.76"	92°23'36.6"	Brahmaputra		China	56	54	47	47	4
101	03_82A_004	NRSC		CH_623	5008	WB	31°6'9"	92°41'55.68"	Brahmaputra		China	50	46	48	46	4
102	02_71H_015	NRSC		CH_135	5367	GL	28°31'58.8"	85°36'30.96"	Ganga	Arun Kosi	China	556	515	537	484	4

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
103	03_82B_009	NRSC		CH_635	4963	WB	30°54'21.96"	92°49'1.56"	Brahmaputra		China	181	156	175	161	4
104	03_82J_005	NRSC		CH_835	4134	GL	30°37'34.68"	94°26'42"	Brahmaputra		China	76	67	73	66	4
105	03_77P_004	NRSC		CH_575	4452	WB	28°48'36"	91°8'42.72"	Brahmaputra		China	206	143	194	198	4
106	03_77L_077	NRSC		BH_45	5136	WB	28°0'54.36"	90°12'37.08"	Brahmaputra	Puna Tsang Chhu	Bhutan	54	51	52	44	4
107	03_82O_042	NRSC		AP_49	3093	WB	29°10'36.48"	95°36'56.16"	Brahmaputra	Dibang	India	46	44	39	37	3
108	03_82N_019	NRSC		CH_990	4877	WB	30°28'24.6"	95°34'30.36"	Brahmaputra		China	57	55	51	44	3
109	03_71K_007	NRSC		CH_430	4752	WB	29°34'46.2"	86°15'39.6"	Brahmaputra		China	102	99	81	76	3
110	01_52O_001	NRSC		CH_4	4242	WB	33°45'0"	79°14'23.93"	Indus	Shyok	China	70453	65825	68537	67080	3
111	01_61C_001	NRSC		CH_29	4526	WB	33°57'12.6"	80°54'12.96"	Indus	Indus	China	12012	11154	11659	11512	3
112	01_62E_006	NRSC		CH_81	5055	WB	31°17'31.2"	81°14'40.92"	Indus	Indus	China	543	524	528	493	3
113	02_71H_029	NRSC	1G	CH_149	5098	GL	28°19'14.16"	85°50'21.12"	Ganga	Sun Kosi	China	539	413	524	474	3
114	03_62O_041	NRSC		CH_386	4963	WB	29°30'39.6"	83°26'39.48"	Brahmaputra		China	216	206	208	209	3
115	03_77L_066	NRSC		BH_34	4896	GL	28°1'21.36"	90°42'29.88"	Brahmaputra	Manas Chhu & Mangde Chhu	Bhutan	173	148	168	144	3
116	02_72I_011	NRSC	1G	NP_64	5034	GL	27°53'58.2"	86°55'15.96"	Ganga	Sun Kosi	Nepal	173	107	167	134	3

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
117	03_77P_009	NRSC		CH_580	5086	WB	28°32'46.68"	91°31'31.8"	Brahmaputra		China	108	94	105	102	3
118	03_77L_017	NRSC		CH_533	5340	WB	28°23'8.52"	90°19'9.12"	Brahmaputra		China	81	74	78	69	3
119	02_71P_027	NRSC	82G	CH_215	5389	GL	28°11'40.2"	87°38'26.52"	Ganga	Arun Kosi	China	53	49	51	52	3
120	03_91D_010	NRSC		AP_109	3323	WB	28°55'8.4"	96°22'58.8"	Brahmaputra	Dibang	India	52	46	51	45	3
121	03_82O_064	NRSC		AP_57	3689	WB	29°3'41.76"	95°15'45"	Brahmaputra	Dihang	India	48	44	47	40	3
122	03_62J_013	NRSC		CH_285	4934	WB	30°25'8.04"	82°18'7.92"	Brahmaputra		China	951	854	927	901	3
123	03_71P_001	NRSC		CH_448	5302	WB	28°49'56.64"	87°33'36"	Brahmaputra		China	133	112	129	122	3
124	02_72I_023	NRSC	227G	NP_76	5232	GL	27°46'59.16"	86°57'24.84"	Ganga	Sun Kosi	Nepal	84	81	72	67	3
125	02_71P_022	NRSC	34G	CH_210	5439	GL	28°13'45.84"	87°35'27.6"	Ganga	Arun Kosi	China	84	80	82	76	3
126	03_77L_001	NRSC		CH_520	4443	WB	28°57'20.52"	90°42'39.6"	Brahmaputra		China	57142	55435	55508	54765	3
127	02_71L_003	NRSC		CH_158	5324	WB	28°49'55.92"	86°31'21"	Ganga	Arun Kosi	China	277	258	269	254	3
128	02_71H_017	NRSC		CH_137	5314	GL	28°29'43.44"	85°38'9.24"	Ganga	Arun Kosi	China	506	493	491	443	3
129	01_52K_016	NRSC		JK_224	4675	WB	33°6'22.32"	78°18'12.96"	Indus	Sutlej	India	524	507	497	482	3
130	03_77L_012	NRSC		CH_528	5014	WB	28°33'58.68"	90°23'47.04"	Brahmaputra		China	29861	28771	29192	29023	2
131	01_61C_024	NRSC		CH_52	4323	WB	33°2'6.72"	80°34'51.96"	Indus	Indus	China	5295	4486	5185	4958	2

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
132	02_71H_002	NRSC		CH_122	4650	WB	28°43'24.96"	85°52'46.56"	Ganga	Arun Kosi	China	2564	2152	2525	2391	2
133	03_77L_033	NRSC		BH_13	5176	GL	28°15'56.88"	90°4'7.68"	Brahmaputra		Bhutan	215	177	211	190	2
134	02_72M_016	NRSC	7G	NP_92	4572	GL	27°47'54.6"	87°5'33.36"	Ganga	Arun Kosi	Nepal	214	161	209	164	2
135	03_62J_026	NRSC		CH_298	5078	GL	30°15'21.6"	82°12'34.2"	Brahmaputra		China	137	103	134	121	2
136	03_82F_022	NRSC		CH_747	4200	GL	30°14'30.48"	93°38'14.28"	Brahmaputra		China	113	103	111	101	2
137	02_71L_002	NRSC		CH_157	5261	WB	28°51'29.16"	86°31'12.36"	Ganga	Arun Kosi	China	81	72	80	77	2
138	03_78E_019	NRSC		CH_611	5022	GL	27°52'40.44"	89°18'43.2"	Brahmaputra		China	61	60	55	55	2
139	02_77D_008	NRSC	266G	CH_263	5285	GL	28°1'6.24"	88°17'14.28"	Ganga	Arun Kosi	China	50	45	49	45	2
140	03_82O_047	NRSC		CH_1039	3574	WB	29°9'46.08"	95°29'27.6"	Brahmaputra	Dihang	China	46	44	45	37	2
141	01_62F_003	NRSC		CH_94	4586	WB	30°41'5.28"	81°28'12.36"	Indus	Sutlej	China	41361	40552	40466	40731	2
142	03_62K_001	NRSC		CH_305	4834	WB	29°59'8.16"	82°32'4.56"	Brahmaputra		China	401	370	392	364	2
143	03_78M_003	NRSC		CH_614	4459	WB	27°54'3.96"	91°53'48.84"	Brahmaputra	Dangme Chhu	China	215	207	210	196	2
144	03_77B_001	NRSC		CH_452	5039	WB	30°10'5.52"	88°37'10.92"	Brahmaputra		China	53	52	47	44	2
145	03_82K_007	NRSC		CH_863	4294	WB	29°57'31.68"	94°17'30.48"	Brahmaputra		China	131	130	125	126	1
146	03_82G_019	NRSC		CH_780	4460	WB	29°30'9"	93°56'12.12"	Brahmaputra		China	60	59	52	44	1

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
147	03_82O_062	NRSC		AP_55	3612	WB	29°0'18.36"	95°54'19.44"	Brahmaputra	Dibang	India	53	52	52	42	1
148	01_52N_001	NRSC		CH_3	4964	WB	34°9'32.04"	79°46'45.84"	Indus	Indus	China	12468	11564	12293	12183	1
149	01_52K_004	NRSC		JK_212	4293	WB	33°31'49.08"	78°54'37.8"	Indus	Shyok	India	5916	5741	5848	5774	1
150	01_61C_015	NRSC		CH_43	4280	WB	33°29'16.44"	80°18'58.32"	Indus	Indus	China	846	742	835	775	1
151	03_71G_001	NRSC		CH_410	5163	WB	29°53'34.08"	85°14'49.56"	Brahmaputra		China	750	720	746	735	1
152	01_62E_004	NRSC		CH_79	5161	WB	31°21'24.48"	81°8'59.28"	Indus	Indus	China	248	233	245	237	1
153	03_77L_044	NRSC		BH_19	4385	GL	28°6'20.88"	90°14'49.56"	Brahmaputra	Puna Tsang Chhu	Bhutan	135	123	133	119	1
154	03_82K_075	NRSC		CH_931	4511	WB	29°31'3.36"	94°7'14.88"	Brahmaputra		China	119	118	118	106	1
155	03_62O_030	NRSC		CH_375	5013	WB	29°43'34.68"	83°6'16.56"	Brahmaputra		China	105	97	103	101	1
156	02_72M_007	NRSC	33G	CH_253	4950	GL	27°55'35.04"	87°46'11.64"	Ganga	Arun Kosi	China	102	94	101	87	1
157	01_52H_002	NRSC/SDC	4I/Very High Risk	HP_3	4101	GL	32°31'28.92"	77°13'5.88"	Indus	Chenab	India	100	62	99	88	1
158	03_91H_010	NRSC		CH_1175	4433	WB	28°56'23.28"	97°15'41.04"	Brahmaputra	Lohit	China	99	79	98	79	1
159	03_91C_044	NRSC		AP_90	4230	WB	29°13'23.16"	96°16'41.16"	Brahmaputra	Lohit	India	67	63	67	59	1
160	01_52C_003	NRSC	7I	JK_187	4512	GL	33°9'26.28"	76°59'3.48"	Indus	Indus	India	58	45	58	56	1
161	03_82B_028	NRSC		CH_654	4998	WB	30°2'58.2"	92°26'35.52"	Brahmaputra		China	51	48	51	46	1

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
162	03_82F_004	NRSC		CH_729	4508	WB	30°37'16.32"	93°10'49.8"	Brahmaputra		China	711	692	701	661	1
163	03_82B_002	NRSC		CH_628	4906	WB	30°58'33.24"	92°56'28.68"	Brahmaputra		China	450	405	443	418	1
164	01_43N_030	NRSC		JK_157	3799	WB	34°8'21.12"	75°8'50.64"	Indus	Jhelum	India	87	86	79	82	1
165	03_82F_030	NRSC		CH_755	3485	WB	30°1'13.8"	93°58'5.16"	Brahmaputra		China	2713	2675	2684	2607	1
166	03_82F_007	NRSC		CH_732	4801	GL	30°31'13.8"	93°26'41.28"	Brahmaputra		China	117	115	116	108	1
167	03_78I_056	NRSC		BH_137	4794	WB	27°51'42.48"	90°35'27.6"	Brahmaputra	Manas Chhu & Mangde Chhu	Bhutan	77	76	76	67	1

*Note: G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability,
“-” Inventory Data not available , “#” indicates frozen/ dried lakes.*

Table 4.3: Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “No Change” in area

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i) & (ii)
1	01_61G_003	NRSC		CH_64	4864	WB	33°37'59.88"	81°23'14.64"	Indus	Indus	China	85	85	60	65	0
2	03_82N_033	NRSC		CH_100 4	4357	GL	30°13'16.68"	95°35'0.24"	Brahma putra		China	89	89	85	78	0
3	03_62J_012	NRSC		CH_284	4883	WB	30°25'53.4"	82°21'42.12"	Brahma putra		China	165	165	162	157	0
4	03_77C_006	NRSC		CH_460	4514	WB	29°35'15"	88°13'54.12"	Brahma putra		China	102	102	83	84	0
5	02_71H_001	NRSC		CH_121	4580	WB	28°53'32.28"	85°35'8.52"	Ganga	Arun Kosi	China	27140	26825	27009	25843	0
6	02_62K_010	NRSC		NP_28	2975	WB	29°31'50.16"	82°5'29.04"	Ganga	Karnali	Nepal	1056	1051	1037	943	0
7	02_62P_003	NRSC	4G	NP_36	4937	GL	28°41'31.92"	83°51'9"	Ganga	Trishuli	Nepal	341	315	340	292	0
8	01_61C_012	NRSC		CH_40	4282	WB	33°32'45.24"	80°9'2.16"	Indus	Indus	China	324	290	324	309	0
9	03_82K_017	NRSC		CH_873	4397	WB	29°55'0.48"	94°16'46.56"	Brahma putra		China	178	151	179	163	0
10	01_62E_003	NRSC		CH_78	5104	WB	31°27'30.24"	81°5'26.52"	Indus	Indus	China	153	136	154	148	0
11	03_82K_077	NRSC		CH_933	4590	WB	29°30'16.2"	94°7'58.44"	Brahma putra		China	100	100	100	91	0
12	03_78I_018	NRSC		BH_99	5083	GL	27°58'37.92"	90°13'56.28"	Brahma putra	Puna Tsang Chhu	Bhutan	69	63	69	63	0
13	03_71C_003	NRSC		CH_396	5412	GL	29°51'59.76"	84°37'26.4"	Brahma putra		China	49	47	49	48	0
14	03_82J_017	NRSC		CH_847	3829	WB	30°7'33.24"	94°5'24"	Brahma putra		China	283	282	280	269	0

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i), (ii)&(iii)
15	03_78E_002	NRSC		BH_57	5110	GL	27°58'21"	89°55'47.64"	Brahma putra	Puna Tsang Chhu	Bhutan	58	58	49	47	0
16	01_62A_003	NRSC		CH_69	5142	WB	31°34'40.08"	80°59'22.2"	Indus	Indus	China	1350	1355	1336	1284	0
17	03_77D_002	NRSC		SK_2	5156	GL	28°1'33.96"	88°42'36"	Brahma putra	Teesta	India	107	104	107	95	0
18	01_43P_002	NRSC		JK_167	669	WB	32°41'48.84"	75°8'44.16"	Indus	Ravi	India	55	52	55	55	0
19	03_77L_011	NRSC		CH_527	4533	WB	28°45'34.92"	90°50'49.2"	Brahma putra		China	1207	1209	1170	1149	0
20	03_82K_018	NRSC		CH_874	4168	WB	29°53'25.44"	94°34'12"	Brahma putra		China	164	165	161	140	0

*Note: G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability,
“-” Inventory Data not available , “#” indicates frozen/ dried lakes.*

Table 4.4: Results of Analysis of GLs & WBs with water spread greater than 50 ha showing “Decrease” in area

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
1	03_82K_045	NRSC		CH_901	4572	WB	29°49'0.12"	94°7'58.8"	Brahmaputra		China	49	49	46	40	-1
2	03_91H_067	NRSC		AP_185	3791	WB	28°5'44.52"	97°17'20.4"	Brahmaputra	Lohit	India	55	56	52	47	-1
3	03_78E_006	NRSC		CH_604	4572	WB	27°58'11.64"	89°22'41.52"	Brahmaputra		China	67	67	60	56	-1
4	02_72M_006	NRSC	349G	CH_252	5188	GL	27°57'2.16"	87°54'31.68"	Ganga	Arun Kosi	China	65	65	64	59	-1
5	03_77H_008	NRSC		CH_482	4570	WB	28°13'37.92"	89°38'17.52"	Brahmaputra		China	1254	1268	1248	1172	-1
6	03_62N_001	NRSC		CH_318	5102	WB	30°53'20.04"	83°34'48.72"	Brahmaputra		China	14742	14300	14868	14696	-1
7	03_77P_017	NRSC		CH_588	4751	WB	28°17'49.92"	91°56'44.52"	Brahmaputra	Dangme Chhu	China	2327	2345	2236	2148	-1
8	03_71G_006	NRSC		CH_415	5065	WB	29°39'11.52"	85°44'15.72"	Brahmaputra		China	970	956	977	927	-1
9	03_77L_013	NRSC		CH_529	5191	WB	28°26'56.04"	90°15'24.84"	Brahmaputra		China	350	319	353	318	-1
10	03_77P_019	NRSC		CH_590	4637	WB	28°3'31.68"	91°56'22.92"	Brahmaputra	Dangme Chhu	China	298	220	302	252	-1
11	03_62J_031	NRSC		CH_303	4897	GL	30°6'14.04"	82°16'10.56"	Brahmaputra		China	218	160	221	199	-1
12	01_52K_009	NRSC		JK_217	4921	WB	33°27'51.48"	78°36'39.24"	Indus	Shyok	India	202	204	193	188	-1
13	03_78E_009	NRSC		CH_605	4580	WB	27°57'37.08"	89°23'47.04"	Brahmaputra		China	174	175	174	162	-1
14	03_62O_038	NRSC		CH_383	4893	WB	29°36'16.92"	83°22'38.28"	Brahmaputra		China	133	124	134	133	-1

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
15	02_71L_028	NRSC	38G	CH_183	5027	GL	28°8'8.88"	86°31'45.48"	Ganga	Sun Kosi	China	101	79	102	90	-1
16	03_82A_007	NRSC		CH_626	4911	WB	31°2'10.32"	92°47'12.84"	Brahmaputra		China	93	85	94	89	-1
17	03_82J_019	NRSC		CH_849	3944	GL	30°5'49.56"	94°16'10.92"	Brahmaputra		China	81	45	82	68	-1
18	01_43N_022	NRSC		JK_149	4243	WB	34°39'59.4"	75°10'45.48"	Indus	Jhelum	India	73	73	71	70	-1
19	03_77L_041	NRSC		CH_550	5214	GL	28°7'24.6"	90°34'0.12"	Brahmaputra	Kuri Chhu	China	64	56	65	58	-1
20	01_43N_032	NRSC		JK_159	3595	WB	34°5'37.32"	75°29'52.44"	Indus	Jhelum	India	56	49	56	56	-1
21	01_62F_001	NRSC		CH_92	4571	WB	30°41'19.68"	81°13'55.2"	Indus	Sutlej	China	25204	25486	23880	24012	-1
22	03_71B_002	NRSC		CH_392	5388	WB	30°26'7.8"	84°3'33.12"	Brahmaputra		China	8070	8185	8115	7956	-1
23	03_71K_002	NRSC		CH_425	4974	WB	29°48'4.32"	86°56'44.16"	Brahmaputra		China	2309	2248	2321	2238	-1
24	03_77L_037	NRSC		BH_15	5139	GL	28°14'15.72"	90°6'15.48"	Brahmaputra		Bhutan	584	542	590	569	-1
25	03_91C_029	NRSC		CH_1078	4229	WB	29°14'15.72"	96°49'25.32"	Brahmaputra		China	214	216	217	205	-1
26	01_62E_013	NRSC		CH_88	5345	WB	31°14'29.4"	81°41'9.96"	Indus	Indus	China	164	166	159	155	-1
27	03_62J_001	NRSC		CH_273	5449	WB	30°52'49.8"	82°51'33.12"	Brahmaputra		China	146	147	141	134	-1
28	01_43N_001	NRSC		JK_128	4142	WB	34°59'28.32"	75°14'9.96"	Indus	Shingo (Indus)	India	126	127	125	124	-1
29	01_61C_023	NRSC		CH_51	4350	WB	33°5'57.48"	80°10'38.64"	Indus	Indus	China	641	623	649	601	-1
30	03_77H_011	NRSC		BH_4	4963	GL	28°13'48.72"	89°53'15"	Brahmaputra		Bhutan	151	140	153	139	-1

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
31	01_43E_023	NRSC		JK_47	4155	WB	35°51'54"	73°44'42.72"	Indus	Gilgit	India	85	86	84	83	-1
32	03_91H_017	NRSC		CH_1182	4590	WB	28°52'37.2"	97°21'19.44"	Brahmaputra	Lohit	China	45	46	38	32	-2
33	03_77P_020	NRSC		CH_591	4649	WB	28°5'16.44"	91°15'25.92"	Brahmaputra	Kuri Chhu	China	62	63	56	52	-2
34	03_82J_018	NRSC		CH_848	3913	GL	30°6'54.72"	94°11'17.16"	Brahmaputra		China	97	99	93	89	-2
35	01_43J_020	NRSC		JK_98	1584	WB	34°14'59.64"	74°40'10.2"	Indus	Jhelum	India	187	191	169	162	-2
36	01_52K_012	NRSC		JK_220	4695	WB	33°18'46.8"	78°28'41.16"	Indus	Indus	India	162	166	161	154	-2
37	03_78E_012	NRSC		CH_607	4576	WB	27°56'32.64"	89°23'16.44"	Brahmaputra		China	274	279	264	256	-2
38	01_42H_005	NRSC		JK_5	2237	WB	36°14'56.76"	73°21'41.4"	Indus	Gilgit	India	71	73	57	54	-2
39	03_82B_007	NRSC		CH_633	4964	WB	30°53'40.92"	92°57'2.52"	Brahmaputra		China	208	199	211	192	-2
40	01_43A_001	NRSC		JK_22	3641	WB	35°59'42"	72°36'45.36"	Indus	Gilgit	India	204	203	209	195	-2
41	03_82E_003	NRSC		CH_721	5027	WB	31°6'12.96"	93°8'36.6"	Brahmaputra		China	96	98	95	93	-2
42	02_71L_001	NRSC		CH_156	5106	WB	28°53'12.84"	86°30'52.2"	Ganga	Arun Kosi	China	88	83	90	81	-2
43	03_77L_042	NRSC		CH_551	5057	GL	28°5'56.4"	90°44'23.28"	Brahmaputra	Kuri Chhu	China	70	57	71	64	-2
44	03_62J_016	NRSC		CH_288	5303	GL	30°21'43.92"	82°3'17.28"	Brahmaputra		China	53	44	54	49	-2
45	03_77L_029	NRSC		CH_545	5451	GL	28°16'22.8"	90°35'24.36"	Brahmaputra	Kuri Chhu	China	46	45	47	46	-2
46	03_62O_039	NRSC		CH_384	4555	WB	29°35'21.48"	83°59'19.68"	Brahmaputra		China	287	236	294	272	-2

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
47	03_91C_034	NRSC		AP_84	4288	WB	29°18'6.48"	96°4'55.92"	Brahmaputra	Dibang	India	144	134	147	119	-2
48	02_71L_032	NRSC	122G	CH_187	5250	GL	28°2'40.2"	86°30'49.32"	Ganga	Sun Kosi	China	56	58	52	49	-3
49	01_62F_004	NRSC		CH_95	5493	WB	30°25'50.88"	81°25'58.44"	Indus	Sutlej	China	190	196	183	173	-3
50	03_82B_020	NRSC		CH_646	4986	WB	30°12'59.04"	92°30'59.76"	Brahmaputra		China	47	49	48	45	-3
51	01_42H_001	NRSC		JK_1	4292	WB	36°52'50.16"	73°42'4.68"	Indus	Gilgit	India	267	276	270	273	-3
52	01_52K_011	NRSC		JK_219	5291	WB	33°25'38.64"	78°29'16.44"	Indus	Shyok	India	180	186	175	168	-3
53	01_62J_001	NRSC		CH_102	4784	WB	30°38'15.72"	82°8'6.36"	Indus	Sutlej	China	5653	5571	5827	5499	-3
54	02_71P_015	NRSC		CH_203	4153	WB	28°34'35.76"	87°32'38.76"	Ganga	Arun Kosi	China	1042	838	1079	933	-3
55	02_62K_012	NRSC		NP_30	3653	WB	29°11'47.76"	82°56'54.6"	Ganga	Bheri	Nepal	472	469	489	450	-3
56	03_71C_011	NRSC		CH_404	4684	WB	29°13'52.32"	84°22'12"	Brahmaputra		China	160	119	166	137	-3
57	03_82B_006	NRSC		CH_632	4837	WB	30°56'1.68"	92°46'27.84"	Brahmaputra		China	121	124	124	119	-3
58	03_82G_035	NRSC		CH_796	4386	WB	29°28'35.4"	93°37'53.04"	Brahmaputra		China	84	81	87	82	-3
59	01_52H_005	NRSC		HP_6	4286	WB	32°28'53.76"	77°36'52.56"	Indus	Chenab	India	44	45	45	42	-3
60	01_52L_001	NRSC		JK_225	4523	WB	32°53'48.12"	78°18'48.6"	Indus	Sutlej	India	13758	14139	14052	14082	-3
61	03_78M_016	NRSC		CH_617	4647	WB	27°50'30.84"	91°53'34.44"	Brahmaputra	Dangme Chhu	China	145	142	150	135	-3
62	03_62N_017	NRSC		CH_334	5454	WB	30°27'55.44"	83°59'4.2"	Brahmaputra		China	76	77	79	78	-3
63	03_77L_027	NRSC		CH_543	4531	WB	28°16'25.68"	90°44'12.48"	Brahmaputra	Kuri Chhu	China	175	163	181	160	-3

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
64	03_91C_078	NRSC		CH_1106	3694	WB	29°0'30.24"	96°13'4.44"	Brahmaputra	Dibang	China	46	48	43	38	-4
65	02_53O_001	NRSC		UK_4	1968	WB	29°23'9.24"	79°27'35.64"	Ganga	Ramganga	India	44	46	43	40	-4
66	01_43N_027	NRSC		JK_154	3683	WB	34°23'17.16"	75°7'6.6"	Indus	Jhelum	India	46	48	45	43	-4
67	01_52L_002	NRSC		JK_226	4986	WB	32°58'54.84"	78°35'43.44"	Indus	Indus	India	426	442	426	408	-4
68	01_52K_010	NRSC		JK_218	5313	WB	33°27'17.64"	78°29'54.24"	Indus	Shyok	India	146	152	143	133	-4
69	03_91D_107	NRSC		AP_163	3769	WB	28°12'8.64"	96°53'51.72"	Brahmaputra	Lohit	India	64	67	65	56	-4
70	03_78M_019	NRSC		BH_194	4697	WB	27°50'49.92"	91°34'59.88"	Brahmaputra	Dangme Chhu	Bhutan	53	55	54	49	-4
71	01_61F_003	NRSC		CH_60	5256	WB	34°16'30.36"	81°3'7.56"	Indus	Indus	China	546	570	555	504	-4
72	03_71O_009	NRSC		CH_445	4302	WB	29°18'31.68"	87°11'22.2"	Brahmaputra		China	2139	2123	2227	2107	-4
73	03_82B_005	NRSC		CH_631	4888	WB	30°56'4.56"	92°49'45.12"	Brahmaputra		China	213	195	221	201	-4
74	03_82J_008	NRSC		CH_838	4036	GL	30°27'0.72"	94°36'14.76"	Brahmaputra		China	205	156	215	188	-4
75	02_72I_014	NRSC	6G	NP_67	4574	GL	27°51'41.04"	86°28'35.04"	Ganga	Sun Kosi	Nepal	168	134	175	162	-4
76	02_71H_008	NRSC		CH_128	5152	GL	28°37'1.56"	85°31'35.4"	Ganga	Arun Kosi	China	104	95	108	98	-4
77	03_91H_040	NRSC		CH_1205	4324	WB	28°24'44.28"	97°27'52.56"	Brahmaputra	Lohit	China	54	51	56	50	-4
78	01_52O_005	NRSC		CH_8	4358	WB	33°23'25.08"	79°22'1.2"	Indus	Indus	China	770	780	798	770	-4
79	03_77L_067	NRSC		BH_35	5231	GL	28°2'17.88"	90°21'50.4"	Brahmaputra	Manas Chhu & Mangde Chhu	Bhutan	79	78	83	73	-4

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80	01_43E_006	NRSC		JK_30	4186	WB	35°56'43.08"	73°21'52.56"	Indus	Gilgit	India	68	71	67	64	-4
81	03_78E_010	NRSC		CH_606	4582	WB	27°57'48.96"	89°24'45.72"	Brahmaputra		China	46	49	39	40	-5
82	03_77L_068	NRSC		BH_36	4764	WB	28°0'12.6"	90°54'18.36"	Brahmaputra	Kuri Chhu	Bhutan	82	86	81	75	-5
83	02_71H_007	NRSC		CH_127	5149	GL	28°37'25.68"	85°30'33.84"	Ganga	Arun Kosi	China	119	125	118	109	-5
84	01_52J_006	NRSC		JK_202	5401	WB	34°10'23.88"	78°26'16.08"	Indus	Shyok	India	105	110	104	97	-5
85	02_71D_007	NRSC		NP_48	700	WB	28°10'31.8"	84°5'57.84"	Ganga	Trishuli	Nepal	285	300	289	270	-5
86	02_71H_028	NRSC	15G	CH_148	5174	WB	28°19'49.08"	85°52'7.32"	Ganga	Sun Kosi	China	189	200	196	182	-5
87	01_43J_017	NRSC	3I	JK_95	3580	WB	34°25'55.56"	74°55'27.12"	Indus	Jhelum	India	156	164	158	155	-5
88	03_77K_017	NRSC		CH_519	4448	WB	29°0'39.6"	90°26'50.28"	Brahmaputra		China	3670	3853	3750	3594	-5
89	03_92A_006	NRSC		AP_204	1178	WB	27°41'50.28"	96°27'7.2"	Brahmaputra	Lohit	India	79	83	76	71	-5
90	03_77L_043	NRSC		CH_552	5200	GL	28°5'21.84"	90°47'18.6"	Brahmaputra	Kuri Chhu	China	227	181	238	207	-5
91	03_62J_015	NRSC		CH_287	5207	WB	30°23'52.08"	82°11'32.28"	Brahmaputra		China	77	70	81	80	-5
92	03_82K_002	NRSC		CH_858	3998	WB	29°59'14.64"	94°26'7.44"	Brahmaputra		China	73	75	77	70	-5
93	03_77P_023	NRSC		CH_593	4235	WB	28°1'55.56"	91°0'6.12"	Brahmaputra	Kuri Chhu	China	68	45	71	58	-5
94	03_82K_068	NRSC		CH_924	4320	WB	29°32'40.92"	94°4'0.48"	Brahmaputra		China	49	52	49	47	-5
95	03_77B_002	NRSC		CH_453	5019	WB	30°8'51.72"	88°37'36.12"	Brahmaputra		China	217	227	205	184	-5

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96	03_82G_009	NRSC		CH_770	4580	WB	29°37'46.2"	93°33'41.4"	Brahmaputra		China	48	51	43	46	-6
97	03_82F_014	NRSC		CH_739	4691	GL	30°20'52.08"	93°30'24.12"	Brahmaputra		China	46	49	44	42	-6
98	03_91D_022	NRSC		AP_118	3143	WB	28°52'33.96"	96°23'38.76"	Brahmaputra	Dibang	India	41	44	42	38	-6
99	03_82D_004	NRSC		CH_710	4481	WB	28°52'54.84"	92°9'5.4"	Brahmaputra		China	366	390	376	375	-6
100	03_83A_012	NRSC		AP_77	4287	WB	27°31'6.6"	92°2'2.4"	Brahmaputra	Dangme Chhu	India	59	63	61	52	-6
101	03_62N_022	NRSC		CH_339	4599	WB	30°12'15.12"	83°14'31.92"	Brahmaputra		China	186	198	192	183	-6
102	01_62E_005	NRSC		CH_80	5174	WB	31°18'47.88"	81°31'1.56"	Indus	Indus	China	186	189	199	190	-6
103	02_78A_005	NRSC		CH_271	5376	GL	27°55'41.16"	88°0'10.08"	Ganga	Arun Kosi	China	110	89	108	117	-6
104	03_82B_004	NRSC		CH_630	4893	WB	30°56'56.04"	92°53'22.56"	Brahmaputra		China	98	93	104	95	-6
105	02_77D_006	NRSC		CH_261	4894	GL	28°3'21.6"	88°25'35.4"	Ganga	Arun Kosi	China	88	80	89	94	-6
106	03_82O_029	NRSC		CH_1032	3345	WB	29°18'17.64"	95°38'20.4"	Brahmaputra	Dihang	China	70	68	74	62	-6
107	01_61C_016	NRSC		CH_44	4289	WB	33°25'58.44"	80°27'59.76"	Indus	Indus	China	351	344	374	366	-6
108	01_62E_002	NRSC		CH_77	5139	WB	31°36'58.32"	81°1'0.48"	Indus	Indus	China	152	161	146	145	-6
109	03_82G_024	NRSC		CH_785	4647	WB	29°32'25.8"	93°20'42"	Brahmaputra		China	94	95	100	91	-6
110	03_82G_017	NRSC		CH_778	4437	WB	29°32'32.28"	93°49'49.44"	Brahmaputra		China	50	53	52	49	-6
111	03_78A_018	NRSC		CH_598	4880	WB	27°51'19.44"	88°56'41.28"	Brahmaputra	Amo Chhu	China	62	67	46	42	-7

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112	03_77D_008	NRSC		SK_8	5039	GL	28°0'26.28"	88°29'41.64"	Brahmaputra	Teesta	India	43	46	41	42	-7
113	03_82G_051	NRSC		CH_812	4735	WB	29°22'10.92"	93°41'38.04"	Brahmaputra		China	46	49	46	43	-7
114	03_77H_013	NRSC		CH_484	4950	GL	28°12'32.04"	89°44'42.72"	Brahmaputra		China	45	48	46	46	-7
115	01_61B_003	NRSC		CH_28	5074	WB	34°14'5.64"	80°30'20.88"	Indus	Indus	China	209	224	206	194	-7
116	03_78A_014	NRSC/SDC	/Very High Risk	SK_20	5234	GL	27°54'42.84"	88°11'54.96"	Brahmaputra	Teesta	India	141	123	152	130	-7
117	03_91H_005	NRSC		CH_1170	4123	WB	28°58'40.08"	97°12'50.76"	Brahmaputra	Lohit	China	65	58	68	70	-7
118	01_52J_002	NRSC		JK_198	5359	WB	34°13'59.16"	78°25'34.32"	Indus	Shyok	India	62	67	60	55	-7
119	03_77L_003	NRSC		CH_521	4434	WB	28°56'57.48"	90°31'1.2"	Brahmaputra		China	3770	4065	3961	3985	-7
120	03_71K_006	NRSC		CH_429	4847	WB	29°37'30.36"	86°14'50.28"	Brahmaputra		China	1941	2096	2078	1997	-7
121	03_82K_042	NRSC		CH_898	4364	WB	29°46'44.76"	94°36'2.88"	Brahmaputra		China	188	205	182	158	-8
122	03_82G_050	NRSC		CH_811	4734	WB	29°22'57.36"	93°38'25.08"	Brahmaputra		China	41	44	40	35	-8
123	03_82P_010	NRSC		AP_67	1676	WB	28°8'53.16"	95°56'35.88"	Brahmaputra	Dibang	India	91	99	95	86	-8
124	03_91C_025	NRSC		CH_1076	4022	GL	29°17'40.2"	96°50'3.84"	Brahmaputra		China	108	95	118	108	-8
125	01_53E_001	NRSC		HP_12	921	WB	31°40'22.8"	77°4'44.76"	Indus	Beas	India	91	72	99	94	-8

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126	03_77J_003	NRSC		CH_499	5039	WB	30°28'45.48"	90°57'58.32"	Brahmaputra		China	82	89	85	80	-8
127	01_43N_020	NRSC		JK_147	4112	WB	34°41'50.28"	75°8'12.84"	Indus	Jhelum	India	57	61	62	60	-8
128	03_82B_021	NRSC		CH_647	5041	WB	30°12'46.08"	92°34'15.96"	Brahmaputra		China	57	63	54	48	-9
129	02_71H_021	NRSC	76G	CH_141	4463	GL	28°28'6.6"	85°31'7.68"	Ganga	Trishuli	China	44	48	45	42	-9
130	03_82J_024	NRSC		CH_854	4362	WB	30°0'46.44"	94°28'17.76"	Brahmaputra		China	61	67	64	55	-9
131	03_91C_046	NRSC		AP_92	3353	WB	29°13'32.52"	96°9'36"	Brahmaputra	Dibang	India	55	61	54	51	-9
132	03_77H_012	NRSC		CH_483	4723	GL	28°14'25.44"	89°41'41.28"	Brahmaputra		China	69	76	72	73	-9
133	03_91C_038	NRSC		AP_85	4002	WB	29°16'8.4"	96°9'24.12"	Brahmaputra	Dibang	India	102	113	94	87	-10
134	02_62P_004	NRSC		NP_37	807	WB	28°13'1.2"	83°56'43.8"	Ganga	Trishuli	Nepal	365	406	389	372	-10
135	03_82J_004	NRSC		CH_834	3957	GL	30°39'37.8"	94°29'7.8"	Brahmaputra		China	495	356	552	512	-10
136	01_52I_003	NRSC		JK_195	5159	WB	35°24'37.8"	78°17'3.84"	Indus	Shyok	India	174	180	193	189	-10
137	03_78M_022	NRSC		BH_197	4549	WB	27°50'2.04"	91°33'12.96"	Brahmaputra	Dangme Chhu	Bhutan	62	67	69	59	-10
138	03_78E_023	NRSC		CH_612	5291	GL	27°51'17.64"	89°15'59.76"	Brahmaputra		China	55	38	55	61	-10
139	03_82A_003	NRSC		CH_622	4896	WB	31°6'33.12"	92°57'7.2"	Brahmaputra		China	89	99	91	88	-10
140	03_77L_032	NRSC		CH_547	4669	GL	28°14'32.64"	90°43'38.28"	Brahmaputra	Kuri Chhu	China	95	105	101	86	-10
141	02_72I_003	NRSC	319G	NP_59	4762	GL	27°57'3.6"	86°41'22.92"	Ganga	Sun Kosi	Nepal	40	45	41	38	-11
142	03_91C_045	NRSC		AP_91	3493	WB	29°13'44.4"	96°11'29.4"	Brahmaputra	Dibang	India	100	113	106	100	-11

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143	03_91D_009	NRSC		AP_108	4037	WB	28°55'40.44"	96°20'19.68"	Brahmaputra	Dibang	India	43	47	49	39	-11
144	01_52K_014	NRSC		JK_222	4535	WB	33°15'6.84"	78°2'34.44"	Indus	Indus	India	382	405	431	419	-11
145	03_77L_035	NRSC		BH_14	5486	GL	28°14'58.92"	90°11'13.56"	Brahmaputra		Bhutan	61	68	60	56	-11
146	03_77H_030	NRSC		CH_495	4802	WB	28°1'32.16"	89°25'37.56"	Brahmaputra		China	58	66	58	54	-12
147	01_62F_002	NRSC		CH_93	4592	WB	30°48'6.48"	81°33'54.72"	Indus	Sutlej	China	294	333	303	297	-12
148	03_82K_009	NRSC		CH_865	4168	WB	29°56'48.84"	94°21'28.44"	Brahmaputra		China	112	116	127	104	-12
149	03_71G_008	NRSC		CH_417	5187	WB	29°33'30.96"	85°52'50.52"	Brahmaputra		China	53	60	54	56	-12
150	01_61D_002	NRSC		CH_54	4313	WB	32°32'12.12"	80°13'42.96"	Indus	Indus	China	1344	1216	1530	1504	-12
151	03_82K_036	NRSC		CH_892	4251	WB	29°49'46.56"	94°37'55.2"	Brahmaputra		China	60	69	61	51	-13
152	03_71O_010	NRSC		CH_446	4296	WB	29°12'14.4"	87°23'29.04"	Brahmaputra		China	855	813	982	882	-13
153	03_62O_024	NRSC		CH_369	4637	WB	29°51'26.64"	83°15'5.76"	Brahmaputra		China	789	721	912	823	-13
154	03_71G_013	NRSC		CH_422	4543	WB	29°6'7.56"	85°5'49.56"	Brahmaputra		China	230	244	265	247	-13
155	03_92E_001	NRSC		AP_206	4206	WB	27°59'23.28"	97°22'8.76"	Brahmaputra	Lohit	India	50	45	58	49	-13
156	03_92A_005	NRSC		AP_203	3391	WB	27°41'23.64"	96°51'38.16"	Brahmaputra	Lohit	India	44	50	50	43	-13
157	01_43G_001	NRSC		JK_67	346	WB	33°12'47.16"	73°42'41.76"	Indus	Jhelum	India	19449	14989	20855	22406	-13
158	03_82K_040	NRSC		CH_896	4329	WB	29°48'28.44"	94°30'1.8"	Brahmaputra		China	57	66	52	48	-14

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
159	01_42H_003	NRSC		JK_3	3854	WB	36°38'47.4"	73°38'50.28"	Indus	Gilgit	India	106	124	110	102	-14
160	03_82O_044	NRSC		CH_1037	3552	WB	29°10'46.92"	95°29'6.72"	Brahmaputra	Dihang	China	79	92	89	74	-14
161	01_43A_002	NRSC		JK_23	3790	WB	35°56'42.36"	72°35'40.92"	Indus	Gilgit	India	87	91	101	96	-14
162	02_62J_003	NRSC	254G	NP_19	4854	WB	30°4'4.08"	82°7'35.04"	Ganga	Karnali	Nepal	50	49	58	53	-14
163	03_62N_004	NRSC		CH_321	5168	WB	30°40'5.16"	83°37'30.72"	Brahmaputra		China	765	878	889	891	-14
164	03_71C_005	NRSC		CH_398	5551	GL	29°50'43.8"	84°40'32.16"	Brahmaputra		China	49	57	51	52	-14
165	03_77P_021	NRSC		CH_592	4749	GL	28°2'15"	91°27'6.48"	Brahmaputra	Dangme Chhu	China	52	61	55	51	-14
166	03_82G_060	NRSC		CH_821	4577	WB	29°17'13.92"	93°44'10.68"	Brahmaputra		China	50	59	54	50	-15
167	02_71H_027	NRSC	2G	CH_147	5242	GL	28°21'40.32"	85°52'12.36"	Ganga	Sun Kosi	China	427	501	458	416	-15
168	03_91D_041	NRSC		AP_135	3526	WB	28°46'32.52"	96°31'53.4"	Brahmaputra	Dibang	India	111	115	131	115	-15
169	03_71K_003	NRSC		CH_426	4982	WB	29°45'59.04"	86°55'21.36"	Brahmaputra		China	84	72	98	80	-15
170	03_82F_016	NRSC		CH_741	4632	WB	30°19'7.68"	93°20'32.64"	Brahmaputra		China	50	49	45	59	-15
171	03_82K_049	NRSC		CH_905	4180	WB	29°46'31.8"	94°34'20.64"	Brahmaputra		China	42	50	42	36	-16
172	03_82K_006	NRSC		CH_862	4523	WB	29°56'25.8"	94°35'18.24"	Brahmaputra		China	44	52	47	44	-16
173	03_82K_039	NRSC		CH_895	4128	WB	29°48'45.72"	94°25'57"	Brahmaputra		China	188	224	203	194	-16
174	03_62J_011	NRSC		CH_283	5181	WB	30°28'6.6"	82°3'33.12"	Brahmaputra		China	335	401	382	359	-16
175	01_61C_021	NRSC		CH_49	4349	WB	33°6'16.56"	80°17'10.32"	Indus	Indus	China	1010	1155	1200	1082	-16

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
176	03_82K_074	NRSC		CH_930	4553	WB	29°31'33.96"	94°3'26.28"	Brahmaputra		China	73	88	81	75	-17
177	02_71P_035	NRSC		CH_223	5146	WB	28°9'7.2"	87°9'27"	Ganga	Arun Kosi	China	89	107	93	93	-17
178	03_71K_011	NRSC		CH_434	4761	WB	29°28'32.88"	86°13'50.88"	Brahmaputra		China	322	387	347	352	-17
179	03_78M_010	NRSC		BH_188	4496	WB	27°52'37.92"	91°38'1.68"	Brahmaputra	Dangme Chhu	Bhutan	41	50	42	36	-18
180	03_91D_080	NRSC		CH_1135	4295	WB	28°32'29.76"	96°37'3.36"	Brahmaputra	Lohit	China	37	45	41	35	-18
181	03_82D_003	NRSC		CH_709	4408	WB	28°53'37.32"	92°7'43.32"	Brahmaputra		China	41	50	43	42	-18
182	02_72I_002	NRSC	645G	NP_58	4854	GL	27°58'30.72"	86°40'52.32"	Ganga	Sun Kosi	Nepal	56	68	55	54	-18
183	03_77L_072	NRSC		BH_40	5201	GL	28°0'55.8"	90°22'26.76"	Brahmaputra	Manas Chhu & Mangde Chhu	Bhutan	78	91	95	86	-18
184	01_61F_002	NRSC		CH_59	5279	WB	34°17'55.32"	81°12'5.4"	Indus	Indus	China	48	59	55	49	-18
185	03_91C_033	NRSC		CH_1079	4278	GL	29°13'46.92"	96°48'4.68"	Brahmaputra		China	139	164	170	154	-18
186	02_71L_011	NRSC	61G	CH_166	5439	GL	28°20'7.44"	86°11'30.12"	Ganga	Sun Kosi	China	52	64	53	49	-19
187	02_71P_019	NRSC		CH_207	4199	GL	28°21'8.64"	87°52'30.36"	Ganga	Arun Kosi	China	47	48	58	55	-19
188	03_77P_013	NRSC		CH_584	5155	WB	28°31'48.36"	91°33'42.84"	Brahmaputra		China	49	60	45	47	-19
189	03_82K_103	NRSC		CH_959	3964	WB	29°17'42.36"	94°12'6.12"	Brahmaputra		China	40	50	40	35	-20

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
190	02_71L_013	NRSC	58G	CH_168	5324	GL	28°18'12.24"	86°9'27.36"	Ganga	Sun Kosi	China	51	64	58	54	-20
191	03_91H_011	NRSC		CH_1176	4494	WB	28°56'43.44"	97°5'53.16"	Brahmaputra	Lohit	China	52	50	65	50	-20
192	01_43J_021	NRSC		JK_99	1582	WB	34°7'6.24"	74°51'39.6"	Indus	Jhelum	India	987	1238	959	980	-20
193	03_78A_003	NRSC/SDC	/Very High Risk	SK_11	4977	GL	27°58'31.08"	88°36'59.04"	Brahmaputra	Teesta	India	54	58	57	68	-21
194	03_82K_060	NRSC		CH_916	4316	WB	29°32'43.44"	94°57'53.64"	Brahmaputra		China	74	93	84	76	-21
195	03_77L_007	NRSC		CH_523	4510	WB	28°49'27.12"	90°50'0.24"	Brahmaputra		China	1170	1478	1347	1342	-21
196	03_77L_008	NRSC		CH_524	4448	WB	28°49'31.8"	90°41'11.04"	Brahmaputra		China	56	71	62	71	-21
197	02_72I_007	NRSC	785G	NP_62	4540	GL	27°55'25.32"	86°47'11.76"	Ganga	Sun Kosi	Nepal	46	48	53	59	-22
198	03_82G_055	NRSC		CH_816	4619	WB	29°19'55.92"	93°43'17.04"	Brahmaputra		China	48	62	46	43	-23
199	03_77K_009	NRSC		CH_511	3937	WB	29°28'1.2"	90°10'20.28"	Brahmaputra		China	54	70	63	64	-23
200	03_91D_081	NRSC		CH_1136	3356	WB	28°30'58.32"	96°41'54.24"	Brahmaputra	Lohit	China	246	304	318	294	-23
201	03_82E_004	NRSC		CH_722	5049	WB	31°3'52.92"	93°17'32.64"	Brahmaputra		China	43	57	46	44	-24
202	03_62O_043	NRSC		CH_388	5285	WB	29°28'13.44"	83°45'49.68"	Brahmaputra		China	65	86	67	65	-24
203	03_77P_018	NRSC		CH_589	4707	WB	28°6'5.76"	91°56'34.44"	Brahmaputra	Dangme Chhu	China	116	154	116	118	-24
204	02_53K_001	NRSC		UK_1	355	WB	29°34'10.2"	78°45'46.8"	Ganga	Ram-ganga	India	4030	3880	5390	5253	-25

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
205	03_77H_004	NRSC		CH_479	4428	WB	28°19'37.56"	89°25'43.68"	Brahmaputra		China	150	201	133	140	-25
206	03_91H_029	NRSC		CH_1194	3325	WB	28°45'44.28"	97°3'24.12"	Brahmaputra	Lohit	China	37	50	48	45	-26
207	03_82G_048	NRSC		CH_809	4663	WB	29°25'15.6"	93°17'27.6"	Brahmaputra		China	40	55	45	42	-27
208	01_61D_003	NRSC		CH_55	4453	WB	32°25'23.52"	80°51'55.08"	Indus	Indus	China	50	69	51	52	-27
209	01_53A_002	NRSC		HP_10	495	WB	31°23'7.8"	76°32'6"	Indus	Sutlej	India	8571	10256	11140	11816	-27
210	03_78E_017	NRSC		CH_609	5253	GL	27°52'35.76"	89°17'45.96"	Brahmaputra		China	46	65	43	48	-29
211	02_53O_005	NRSC		UK_8	239	WB	29°8'6.72"	79°17'19.68"	Ganga	Ramganga	India	1070	1510	1028	1172	-29
212	03_71G_011	NRSC		CH_420	4619	WB	29°7'19.56"	85°23'54.6"	Brahmaputra		China	1050	951	1486	1308	-29
213	01_52L_003	NRSC		JK_227	4985	WB	32°55'14.88"	78°36'0.72"	Indus	Indus	India	463	649	532	559	-29
214	03_78E_028	NRSC		BH_72	2161	WB	27°38'21.12"	89°44'24.36"	Brahmaputra	Puna Tsang Chhu	Bhutan	33	47	43	41	-30
215	01_53A_001	NRSC		HP_9	409	WB	31°59'21.84"	76°3'1.44"	Indus	Beas	India	13070	16946	18732	18149	-30
216	03_78A_001	NRSC/SDC	/High Risk	SK_9	5371	GL	27°59'30.12"	88°48'55.8"	Brahmaputra	Teesta	India	175	156	185	254	-31
217	03_71G_014	NRSC		CH_423	4606	WB	29°5'1.68"	85°11'22.56"	Brahmaputra		China	160	60	232	191	-31
218	01_52O_003	NRSC		CH_6	4252	WB	33°33'43.56"	79°57'46.8"	Indus	Indus	China	198	290	207	188	-32
219	01_52I_004	NRSC		JK_196	5141	WB	35°23'27.96"	78°13'7.68"	Indus	Shyok	India	81	124	73	83	-34
220	01_52O_002	NRSC		CH_5	5262	WB	33°58'49.08"	79°32'35.52"	Indus	Indus	China	87	135	104	102	-36
221	03_62N_009	NRSC		CH_326	5241	WB	30°35'26.88"	83°31'7.32"	Brahmaputra		China	180	288	294	274	-39

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
222	03_62N_021	NRSC		CH_338	5432	WB	30°25'50.88"	83°59'48.84"	Brahmaputra		China	120	197	186	187	-39
223	01_52G_003	NRSC		JK_191	4533	WB	33°18'38.52"	77°59'49.2"	Indus	Indus	India	902	1473	1254	1249	-39
224	03_77L_006	NRSC		CH_522	4533	WB	28°53'40.2"	90°24'19.44"	Brahmaputra		China	26	44	29	32	-40
225	03_78E_029	NRSC		BH_73	4250	WB	27°38'37.68"	89°27'39.96"	Brahmaputra	Puna Tsang Chhu	Bhutan	27	45	40	35	-40
226	03_77P_016	NRSC		CH_587	4749	WB	28°19'48.72"	91°57'47.88"	Brahmaputra	Dangme Chhu	China	151	251	197	203	-40
227	03_71G_010	NRSC		CH_419	4491	WB	29°20'49.2"	85°4'58.8"	Brahmaputra		China	175	304	221	236	-42
228	03_77O_001	NRSC		CH_564	3879	WB	29°55'7.68"	91°5'22.2"	Brahmaputra		China	104	181	149	154	-43
229	03_77H_001	NRSC		CH_476	4275	WB	28°49'46.92"	89°51'6.48"	Brahmaputra		China	252	442	375	353	-43
230	01_62B_001	NRSC		CH_73	4526	WB	30°49'22.8"	80°44'34.8"	Indus	Sutlej	China	246	440	247	273	-44
231	03_77P_012	NRSC		CH_583	4975	WB	28°31'43.32"	91°39'54.36"	Brahmaputra		China	48	91	63	57	-47
232	03_71G_009	NRSC		CH_418	5032	WB	29°31'32.88"	85°38'37.32"	Brahmaputra		China	92	178	133	135	-48
233	03_77P_006	NRSC		CH_577	4616	WB	28°39'46.44"	91°40'46.56"	Brahmaputra		China	2229	4566	4900	4648	-55
234	02_77D_003	NRSC		CH_258	4364	WB	28°18'33.12"	88°19'31.08"	Ganga	Arun Kosi	China	61	119	75	141	-57
235	03_77L_009	NRSC		CH_525	4515	WB	28°47'21.12"	90°53'38.76"	Brahmaputra		China	234	522	549	513	-57
236	02_62B_001	NRSC		CH_106	5216	WB	30°37'4.8"	80°37'49.44"	Ganga	Karnali	China	27	67	36	39	-60

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
237	02_53P_003	NRSC		UK_11	207	WB	28°54'3.6"	79°37'22.8"	Ganga	Ramgan ga	India	428	1078	831	828	-60
238	03_71O_002	NRSC		CH_438	4909	WB	29°42'16.92"	87°1'0.84"	Brahmap utra		China	18	48	47	46	-63
239	02_77D_001	NRSC		CH_256	4423	WB	28°24'16.2"	88°13'42.96"	Ganga	Arun Kosi	China	1975	5831	3378	3211	-66
240	02_53P_001	NRSC		UK_9	210	WB	28°57'29.88"	79°50'32.64"	Ganga	Ganga	India	630	2054	1509	1547	-69
241	03_82D_010	NRSC		CH_716	5043	WB	28°11'29.4"	92°2'34.8"	Brahmap utra	Dangme Chhu	China	22	76	42	51	-71
242	02_53K_002	NRSC		UK_2	260	WB	29°19'9.84"	78°55'13.08"	Ganga	Ramgan ga	India	359	1597	947	931	-78
243	01_61C_005	NRSC	8I	JK_197	5311	GL	33°44'54.96"	80°38'29.76"	Indus	Shyok	India	99	139	449	335	-78

*Note: G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability,
“-” Inventory Data not available , “#” indicates frozen/ dried lakes.*

Table 4.5: GLs & WBs with water spread greater than 50 ha “Not Analysed”

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)&(iii)
1	03_82O_016	NRSC		CH_1023	4374	WB	29°22'19.56"	95°52'18.48"	Brahma putra	Dihang	China	#	91	87	70	#
2	01_52L_008	NRSC		CH_1	3873	WB	32°19'35.04"	78°43'25.68"	Indus	Sutlej	China	#	50	68	68	#
3	01_61D_001	NRSC		CH_53	5593	WB	32°48'5.4"	80°29'0.96"	Indus	Indus	China	#	63	55	57	#
4	01_52E_001	NRSC		JK_188	5116	GL	35°25'4.8"	77°36'16.56"	Indus	Shyok	India	#	51	6	24	#
5	03_91C_074	NRSC		CH_1102	4258	GL	29°1'48"	96°13'22.8"	Brahma putra	Dibang	China	#	47	46	38	#
6	03_91C_049	NRSC		AP_95	4261	WB	29°11'46.32"	96°12'10.08"	Brahma putra	Dibang	India	#	80	69	58	#
7	03_91C_070	NRSC		CH_1098	4252	WB	29°2'37.32"	96°11'36.6"	Brahma putra	Dibang	China	#	57	56	47	#
8	03_91C_005	NRSC		CH_1056	4926	GL	29°49'23.16"	96°21'2.52"	Brahma putra		China	#	86	99	80	#
9	03_91C_042	NRSC		AP_89	4531	WB	29°14'38.04"	96°14'39.12"	Brahma putra	Dibang	India	#	50	50	42	#
10	03_91C_059	NRSC		CH_1089	4303	WB	29°5'30.12"	96°12'39.24"	Brahma putra	Dibang	China	#	98	96	82	#
11	03_91C_040	NRSC		AP_87	4450	WB	29°15'19.08"	96°14'40.92"	Brahma putra	Lohit	India	#	94	85	70	#
12	03_91C_064	NRSC		AP_100	3972	WB	29°4'45.84"	96°8'40.92"	Brahma putra	Dibang	India	#	89	90	75	#
13	03_91C_052	NRSC		CH_1085	4591	WB	29°10'28.2"	96°19'32.16"	Brahma putra	Lohit	China	#	64	39	36	#

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i) & (iii)
14	03_91C_069	NRSC		AP_101	3245	WB	29°3'3.6"	96°8'40.2"	Brahma putra	Dibang	India	#	78	76	68	#
15	03_82G_065	NRSC		CH_826	4148	WB	29°2'16.8"	93°50'8.52"	Brahma putra		China	#	47	66	80	#
16	03_78M_020	NRSC		BH_195	4157	WB	27°50'15.72"	91°36'18.36"	Brahma putra	Dangme Chhu	Bhutan	#	65	67	60	#
17	03_82J_023	NRSC		CH_853	4315	WB	30°2'45.96"	94°9'24.84"	Brahma putra		China	#	105	107	98	#
18	02_62F_019	NRSC	144G	NP_12	5039	WB	30°7'46.56"	81°46'44.76"	Ganga	Karnali	Nepal	#	58	66	60	#
19	03_62O_002	NRSC		CH_347	4587	WB	29°57'38.52"	83°16'11.64"	Brahma putra		China	#	58	48	42	#
20	02_77D_009	NRSC	71G	CH_264	5296	GL	28°0'37.08"	88°15'29.52"	Ganga	Arun Kosi	China	#	58	60	54	#
21	03_91C_014	NRSC		CH_1065	4033	GL	29°35'56.4"	96°8'28.68"	Brahma putra		China	#	65	49	48	#
22	03_78I_048	NRSC		BH_129	4169	WB	27°52'0.84"	90°48'58.32"	Brahma putra	Manas Chhu & Mangde Chhu	Bhutan	#	52	52	45	#
23	03_62O_027	NRSC		CH_372	4575	WB	29°48'47.16"	83°39'15.48"	Brahma putra		China	#	47	39	37	#
24	01_61H_001	NRSC		CH_66	4619	WB	32°7'7.68"	81°16'9.84"	Indus	Indus	China	#	282	297	285	#
25	01_43J_004	NRSC	5I	JK_82	4078	WB	34°55'15.24"	74°31'14.88"	Indus	Jhelum	India	#	59	66	64	#
26	03_82F_020	NRSC		CH_745	4110	GL	30°16'3"	93°27'22.68"	Brahma putra		China	#	71	72	67	#

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Latitude(N)	Longitude(E)	Basin	River	Country	June-24 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (ii)&(iii)
27	01_43J_007	NRSC	6I	JK_85	3708	WB	34°49'45.12"	74°3'42.12"	Indus	Jhelum	India	#	95	111	95	#
28	03_77H_020	NRSC		CH_490	4473	WB	28°8'59.64"	89°20'58.92"	Brahma putra		China	#	4588	4500	4563	#
29	03_91H_025	NRSC		CH_1190	3741	WB	28°46'58.8"	97°9'6.84"	Brahma putra	Lohit	China	#	85	85	79	#
30	01_61G_001	NRSC		CH_62	4973	WB	33°49'12.72"	81°38'40.56"	Indus	Indus	China	#	85	62	66	#
31	03_82N_030	NRSC		CH_1001	4462	GL	30°15'2.88"	95°36'13.68"	Brahma putra		China	#	132	133	117	#
32	02_71P_018	NRSC		CH_206	4199	WB	28°21'27.72"	87°53'6.72"	Ganga	Arun Kosi	China	#	51	87	67	#
33	02_77D_004	NRSC		CH_259	4378	WB	28°17'38.04"	88°7'15.6"	Ganga	Arun Kosi	China	#	1875	592	648	#
34	02_63M_002	NRSC		NP_41	112	WB	27°37'15.96"	83°6'6.12"	Ganga	Rapti	Nepal	#	153	91	102	#
35	03_77H_007	NRSC		CH_481	4424	WB	28°16'25.68"	89°20'44.52"	Brahma putra		China	#	866	502	565	#
36	03_71C_010	NRSC		CH_403	4561	WB	29°18'39.6"	84°25'49.44"	Brahma putra		China	#	49	32	39	#
37	03_62O_028	NRSC		CH_373	4577	WB	29°47'40.92"	83°33'20.88"	Brahma putra		China	#	887	469	563	#
38	03_62N_003	NRSC		CH_320	5208	WB	30°42'38.16"	83°36'30.96"	Brahma putra		China	#	57	29	35	#

Note: G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability,
 “-” Inventory Data not available , “#” indicates frozen/ dried lakes.

Table 4.6: Results of analysis of GLs & WBs as per NRSC Inventory (2011) with water spread between 10ha - 50 ha

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
1	03_77H_005	NRSC		GL	5113	28°16'48"	89°59'37.68"		Brahmaputra	China	78	37	24.5	110
2	03_82O_004	NRSC		GL	4148	29°48'18.72"	95°38'33"		Brahmaputra	China	27	18	14	54
3	02_71P_017	NRSC		GL	4194	28°24'25.56"	87°45'54"	Arun Kosi	Ganga	China	64	17	42.6	50
4	03_83A_007	NRSC		GL	5028	27°43'39.36"	92°26'12.48"	Jia Brali	Brahmaputra	India	20	14	13.7	44
5	01_62F_009	NRSC	387I	GL	5712	30°23'34.8"	81°57'48.6"	Sutlej	Indus	China	28	13	19.6	43
6	02_71P_041	NRSC	768G	GL	5064	28°6'56.16"	87°35'12.84"	Arun Kosi	Ganga	China	25	17	17.9	40
7	03_62J_025	NRSC		GL	5362	30°16'55.92"	82°10'2.64"		Brahmaputra	China	27	19	19.7	37
8	01_62B_002	NRSC	381I	GL	4998	30°33'9.72"	80°24'6.48"	Sutlej	Indus	China	28	14	20.8	35
9	02_72M_004	NRSC	336G	GL	5293	27°57'46.44"	87°48'42.12"	Arun Kosi	Ganga	China	68	35	50.2	35
10	03_91C_016	NRSC		GL	4813	29°32'36.6"	96°36'57.96"		Brahmaputra	China	17	13	11.7	34
11	02_62O_004	NRSC	299G	GL	5529	29°7'1.92"	83°44'18.6"	Kali Gandak	Ganga	Nepal	23	11	17.6	31
12	03_62J_004	NRSC		GL	5556	30°48'25.56"	82°44'58.92"		Brahmaputra	China	18	14	13.4	30
13	03_91G_007	NRSC		GL	4785	29°13'47.28"	97°19'55.92"	Lohit	Brahmaputra	China	15	11	11.5	30
14	03_71P_004	NRSC		GL	5637	28°47'55.68"	87°36'12.24"		Brahmaputra	China	15	12	9.5	27

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i), & (ii)
15	03_91H_001	NRSC		GL	4429	28°59'30.84"	97°32'54.24"	Lohit	Brahmaputra	China	19	13	15.3	24
16	03_78A_035	NRSC		GL	4998	27° 57' 3.24"	88° 21' 15.48"	Teesta	Brahmaputra	India	11	#	8.9	24
17	01_52L_007	NRSC	184I	GL	5498	32°24'36.36"	78°53'56.4"	Indus	Indus	India	39	32	31.4	23
18	03_78I_037	NRSC		GL	5159	27°55'10.2"	90°24'25.92"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	17	11	13.8	23
19	03_91C_019	NRSC		GL	3858	29°27'55.08"	96°30'4.32"		Brahmaputra	China	60	17	49.2	22
20	03_91G_003	NRSC		GL	5018	29°28'1.2"	97°22'29.28"	Lohit	Brahmaputra	China	22	15	18	22
21	03_78A_006	NRSC		GL	5004	27°58'15.6"	88°25'45.84"	Teesta	Brahmaputra	India	15	11	12.3	22
22	01_52H_003	NRSC		GL	4165	32°29'54.6"	77°32'37.32"	Chenab	Indus	India	170	28	141	21
23	03_77H_021	NRSC		GL	5135	28°8'37.68"	89°50'25.8"	Puna Tsang Chhu	Brahmaputra	Bhutan	18	15	13.3	21
24	03_77L_078	NRSC		GL	5296	28°0'44.64"	90°16'46.92"	Puna Tsang Chhu	Brahmaputra	Bhutan	17	12	14.1	21
25	03_82N_008	NRSC		GL	4546	30°34'19.2"	95°15'15.48"		Brahmaputra	China	39	18	32.2	21
26	03_91G_001	NRSC		GL	5147	29°42'4.32"	97°0'2.88"		Brahmaputra	China	14	12	8.3	20

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
27	03_82L_006	NRSC		GL	4147	28°52'48.36"	94°2'22.92"		Brahmaputra	China	16	13	13.6	18
28	03_78E_016	NRSC		GL	5004	27°53'2.04"	89°21'2.52"		Brahmaputra	China	19	16	14.8	18
29	01_53I_002	NRSC/SDC	26I/Very High Risk	GL	4273	31°39'38.52"	78°10'1.92"	Sutlej	Indus	India	34	23	29.1	17
30	03_83A_003	NRSC		GL	5188	27°46'12.72"	92°25'56.64"	Dangme Chhu	Brahmaputra	India	96	24	82.4	17
31	03_77L_045	NRSC		GL	5224	28°5'7.8"	90°36'17.64"	Kuri Chhu	Brahmaputra	China	37	32	30.7	17
32	03_78A_011	NRSC		GL	5168	27°53'60"	88°55'45.84"	Amo Chhu	Brahmaputra	China	17	14	14.2	17
33	02_71L_029	NRSC	747G	GL	5237	28°6'52.2"	86°51'45.72"	Arun Kosi	Ganga	China	58	30	50	16
34	03_82N_029	NRSC		GL	4492	30°16'4.8"	95°36'21.6"		Brahmaputra	China	46	35	39.6	16
35	03_91H_034	NRSC		GL	4629	28°32'13.2"	97°37'15.6"	Lohit	Brahmaputra	China	15	13	12.9	16
36	02_71L_024	NRSC	245G	GL	5263	28°11'37.68"	86°18'51.12"	Sun Kosi	Ganga	China	28	23	24.2	16
37	02_72I_022	NRSC	287G	GL	5344	27°47'33"	86°50'21.12"	Sun Kosi	Ganga	Nepal	34	16	29.2	16
38	03_82F_023	NRSC		GL	4354	30°13'57"	93°34'35.76"		Brahmaputra	China	13	11	10.3	15
39	03_82N_011	NRSC		GL	4997	30°31'23.52"	95°42'0"		Brahmaputra	China	23	20	17.8	15
40	02_71H_011	NRSC	775G	GL	4509	28°34'9.48"	85°27'24.12"	Trishuli	Ganga	China	29	19	25.3	15

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
41	03_91H_036	NRSC		GL	4457	28°31'5.16"	97°31'35.76"	Lohit	Brahmaputra	China	23	19	20	15
42	03_78I_065	NRSC		GL	4668	27°49'18.84"	90°48'36"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	15	13	12.2	14
43	03_77D_007	NRSC/SDC	/Very High Risk	GL	5015	28°0'26.28"	88°34'18.48"	Teesta	Brahmaputra	India	27	24	23.2	14
44	03_77L_057	NRSC		GL	4897	28°3'35.28"	90°36'12.24"	Kuri Chhu	Brahmaputra		50	36	43.7	14
45	03_77J_005	NRSC		GL	5766	30°4'29.64"	90°9'24.48"		Brahmaputra	China	14	12	12.3	14
46	03_78I_067	NRSC		GL	4918	27°50'44.16"	90°18'9"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	25	20	22.2	13
47	03_62O_031	NRSC		GL	5381	29°41'40.2"	83°1'33.96"		Brahmaputra	China	34	28	30.1	13
48	03_62K_005	NRSC		GL	4999	29°58'10.2"	82°29'39.84"		Brahmaputra	China	24	21	21.3	13
49	03_82J_001	NRSC		GL	4775	30°49'51.6"	94°0'3.24"		Brahmaputra	China	35	31	28.8	13
50	02_72I_013	NRSC	694G	GL	5497	27°51'24.84"	86°56'13.56"	Sun Kosi	Ganga	Nepal	20	18	17.6	13
51	02_77D_010	NRSC	590G	GL	5127	28°0'23.76"	88°19'10.92"	Arun Kosi	Ganga	China	42	34	37.3	13
52	03_82N_018	NRSC		GL	4333	30°31'44.4"	95°6'23.4"		Brahmaputra	China	12	11	9.5	12

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Max Change in Area (%)
53	03_78E_011	NRSC		GL	4952	27°55'48.72"	89°54'2.88"	Puna Tsang Chhu	Brahmaputra	Bhutan	22	13	19.6	12
54	02_62F_013	NRSC	256G	GL	5252	30°15'56.88"	81°20'51"	Karnali	Ganga	China	49	24	43.7	12
55	03_78A_002	NRSC/SDC	/Very High Risk	GL	4952	27°58'56.28"	88°30'28.08"	Teesta	Brahmaputra	India	41	22	36.5	12
56	03_78E_027	NRSC		GL	4808	27°41'13.92"	89°24'29.88"	Puna Tsang Chhu	Brahmaputra	Bhutan	20	13	17.8	12
57	02_71H_025	NRSC	464G	GL	5303	28°24'23.4"	85°35'16.08"	Trishuli	Ganga	China	19	12	17	12
58	03_82F_009	NRSC		GL	4712	30°29'36.6"	93°21'27.72"		Brahmaputra	China	23	20	20.7	11
59	03_78I_058	NRSC		GL	5041	27°52'34.32"	90°16'50.52"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	29	16	26.1	11
60	03_91H_033	NRSC		GL	4389	28°33'21.96"	97°32'51.72"	Lohit	Brahmaputra	China	14	13	10.4	11
61	03_82O_002	NRSC		GL	4198	29°58'57.36"	95°54'12.96"		Brahmaputra	China	21	18	18.9	11
62	02_71P_042	NRSC	654G	GL	5524	28°7'46.56"	87°4'55.56"	Arun Kosi	Ganga	China	22	20	19.7	11
63	03_78A_012	NRSC		GL	5130	27°54'4.32"	88°46'54.84"	Teesta	Brahmaputra	India	29	26	26	11
64	02_71H_004	NRSC		GL	5239	28°39'46.08"	85°28'31.8"	Arun Kosi	Ganga	China	27	19	24.6	10
65	03_77J_002	NRSC		GL	5254	30°29'57.12"	90°56'52.8"		Brahmaputra	China	13	12	10.4	10

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
66	03_77J_001	NRSC		GL	5354	30°30'7.2"	90°54'46.08"		Brahmaputra	China	29	26	25.1	10
67	03_78I_054	NRSC		GL	5138	27°52'59.88"	90°17'53.16"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	17	14	15.5	10
68	03_78I_036	NRSC		GL	5028	27°55'51.96"	90°12'32.76"	Puna Tsang Chhu	Brahmaputra	Bhutan	13	11	11.8	10
69	03_82K_109	NRSC		GL	4356	29°3'7.2"	94°5'49.2"		Brahmaputra	China	24	22	21	9
70	03_71B_001	NRSC		GL	5692	30°34'48"	84°4'3.72"		Brahmaputra	China	29	26.65	26	9
71	03_82J_006	NRSC		GL	3657	30°32'8.88"	94°45'38.16"		Brahmaputra	China	60	41	55.1	9
72	03_62K_010	NRSC		GL	5181	29°47'45.96"	82°51'10.08"		Brahmaputra	China	70	41	64.4	9
73	03_77L_019	NRSC		GL	5681	28°22'45.84"	90°5'41.28"		Brahmaputra	China	15	13	13.7	9
74	02_71P_046	NRSC	317G	GL	4898	28°4'9.84"	87°8'1.32"	Arun Kosi	Ganga	China	28	25	25.8	9
75	03_71P_002	NRSC		GL	5537	28°48'13.32"	87°37'28.2"		Brahmaputra	China	17	13	15.8	8
76	02_62J_002	NRSC		GL	5021	30°8'56.04"	82°9'42.12"	Karnali	Ganga	Nepal	17	16	14.2	8
77	03_78I_026	NRSC		GL	5233	27°56'26.88"	90°23'49.2"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	18	17	16.2	8

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
78	03_62K_011	NRSC		GL	5136	29°45'46.44"	82°53'6.36"		Brahmaputra	China	48	33	44.5	8
79	02_71L_025	NRSC	154G	GL	5357	28°11'33.72"	86°21'1.8"	Sun Kosi	Ganga	China	20	16	18.6	8
80	03_78I_009	NRSC		GL	5108	27°59'6.36"	90°26'13.56"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	27	20	24.9	8
81	03_77H_027	NRSC		GL	4927	28°5'14.28"	89°28'50.16"		Brahmaputra	China	23	21	20.7	8
82	03_77H_024	NRSC		GL	4369	28°6'47.52"	89°54'33.12"	Puna Tsang Chhu	Brahmaputra	Bhutan	48	42	44.6	8
83	02_72I_008	NRSC	99G	GL	5040	27°55'44.4"	86°26'0.6"	Sun Kosi	Ganga		36	32	33.2	8
84	03_82O_001	NRSC		GL	4348	29°59'32.64"	95°51'50.4"		Brahmaputra	China	45	42	41.7	8
85	02_71H_024	NRSC	155G	GL	4890	28°25'35.76"	85°33'44.28"	Trishuli	Ganga	China	27	22	24.9	8
86	02_71L_008	NRSC	457G	GL	5577	28°22'31.08"	86°15'27"	Sun Kosi	Ganga	China	40	24	37.5	7
87	03_77L_073	NRSC		GL	5166	28°0'23.04"	90°34'21.36"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	13	12	12.2	7
88	03_82F_011	NRSC		GL	4720	30°26'26.16"	93°37'45.84"		Brahmaputra	China	13	12	9.4	7

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (& ii)
89	03_78I_064	NRSC		GL	4976	27°51'41.04"	90°17'42.36"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	21	19	19.7	7
90	02_62K_011	NRSC	612G	GL	4673	29°14'57.12"	82°33'49.68"	Bheri	Ganga	Nepal	28	26	26.2	7
91	02_72I_012	NRSC	113G	GL	4409	27°52'27.84"	86°35'10.68"	Sun Kosi	Ganga	Nepal	43	40	40.1	7
92	02_72I_021	NRSC	764G	GL	5276	27°47'38.04"	86°54'38.52"	Sun Kosi	Ganga	Nepal	20	18	18.7	7
93	03_82N_001	NRSC		GL	5055	30°35'27.96"	95°33'3.24"		Brahmaputra	China	40	38	33.4	6
94	03_78I_040	NRSC		GL	5167	27°55'13.44"	90°15'46.44"	Puna Tsang Chhu	Brahmaputra	Bhutan	23	22	21.2	6
95	02_78A_006	NRSC	676G	GL	5743	27°55'39"	88°1'11.64"	Arun Kosi	Ganga	China	18	16	17	6
96	01_42H_002	NRSC	162I	GL	2763	36°38'34.8"	73°24'26.64"	Gilgit	Indus	India	17	13	16	6
97	03_77H_029	NRSC		GL	5049	28°0'35.64"	89°53'0.96"	Puna Tsang Chhu	Brahmaputra	Bhutan	23	21	21.8	6
98	01_62F_007	NRSC		GL	5344	30°25'36.48"	81°52'13.44"	Sutlej	Indus	China	22	16	20.7	6
99	03_71D_002	NRSC		GL	5574	28°54'30.6"	84°30'25.56"		Brahmaputra	China	36	30	34.1	6
100	03_91G_009	NRSC		GL	4637	29°12'2.88"	97°22'8.4"	Lohit	Brahmaputra	China	17	16	15.1	6
101	03_82F_005	NRSC		GL	4762	30°32'6.36"	93°31'2.28"		Brahmaputra	China	43	17	40.7	6
102	01_53M_001	NRSC	33I	GL	5576	31°59'0.96"	79°57'30.96"	Indus	Indus	China	17	11	16	6

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
103	02_72I_018	NRSC	776G	GL	5370	27°49'57.72"	86°55'1.92"	Sun Kosi	Ganga	Nepal	33	31	30.7	6
104	03_78A_005	NRSC		GL	5201	27°58'31.44"	88°25'20.64"	Teesta	Brahmaputra	India	12	11	8.9	6
105	01_53M_003	NRSC	110I	GL	5511	31°56'16.08"	79°59'39.84"	Indus	Indus	China	13	12	8.8	5
106	03_82F_025	NRSC		GL	4253	30°12'29.52"	93°30'44.28"		Brahmaputra	China	12	11	10	5
107	03_62J_010	NRSC		GL	5571	30°33'3.96"	82°57'27"		Brahmaputra	China	28	27	22.7	5
108	03_78A_007	NRSC/SDC	/Very High Risk	GL	4977	27°57'38.88"	88°38'57.48"	Teesta	Brahmaputra	India	18	17	16.8	5
109	02_71H_020	NRSC		GL	5354	28°29'11.76"	85°44'8.88"	Arun Kosi	Ganga	China	74	29	70.4	5
110	03_78I_019	NRSC		GL	5224	27°58'7.68"	90°24'42.48"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	24	18	22.9	5
111	03_77L_039	NRSC		GL	5457	28°12'19.44"	90°23'7.08"	Kuri Chhu	Brahmaputra	China	43	38	41.1	5
112	02_71L_022	NRSC	715G	GL	5554	28°12'26.28"	86°37'45.84"	Arun Kosi	Ganga	China	27	24	25.7	5
113	03_77H_010	NRSC		GL	5518	28°14'22.92"	89°57'46.08"		Brahmaputra	China	14	13	13.3	5
114	02_71P_038	NRSC	586G	GL	5483	28°8'33.36"	87°6'42.12"	Arun Kosi	Ganga	China	28	23	26.7	5
115	02_72I_009	NRSC		GL	5292	27°55'2.64"	86°27'59.04"	Sun Kosi	Ganga	Nepal	18	11	17.3	4
116	03_77L_028	NRSC		GL	4632	28°16'15.24"	90°43'19.2"	Kuri Chhu	Brahmaputra	China	13	12	12.5	4
117	02_71P_048	NRSC	283G	GL	5094	28°3'6.84"	87°37'36.48"	Arun Kosi	Ganga	China	19	17	18.3	4

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
118	03_77L_075	NRSC		GL	4718	28°0'11.16"	90°32'25.8"	Manas Chhu &MangdeChhu	Brahmaputra	Bhutan	24	23	20.2	4
119	03_77K_003	NRSC		GL	5303	29°52'22.08"	90°0'28.08"		Brahmaputra	China	15	14	12.5	4
120	01_61B_002	NRSC	345I	GL	5722	34°16'54.48"	80°5'21.84"	Indus	Indus	China	27	26	23.8	4
121	01_62B_003	NRSC	86I	GL	5288	30°28'36.48"	80°35'35.16"	Sutlej	Indus	India	13	12	12	4
122	01_52C_001	NRSC	11I	GL	4394	33°56'44.52"	76°13'53.76"	Shingo (Indus)	Indus	India	54	36	52.1	4
123	03_62K_006	NRSC		GL	5101	29°57'47.52"	82°30'27"		Brahmaputra	China	25	21	24.4	3
124	02_72M_014	NRSC	47G	GL	5217	27°47'44.16"	87°58'27.48"	Tamor Kosi	Ganga	Nepal	23	21	22.3	3
125	03_83A_004	NRSC		GL	5109	27°45'47.16"	92°25'29.64"	Dangme Chhu	Brahmaputra	India	18	17	17.4	3
126	03_78A_010	NRSC		GL	5078	27°57'0.72"	88°18'16.92"	Teesta	Brahmaputra	India	37	36	32.7	3
127	03_78E_025	NRSC		GL	4341	27°50'20.4"	89°23'16.8"	Puna Tsang Chhu	Brahmaputra	Bhutan	17	17	15.5	3
128	03_78I_008	NRSC		GL	5252	27°59'17.88"	90°22'48.36"	Manas Chhu &MangdeChhu	Brahmaputra	Bhutan	14	14	12.1	3
129	03_83A_005	NRSC		GL	4994	27°45'20.52"	92°24'2.52"	Dangme Chhu	Brahmaputra	India	13	13	11.9	3

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
130	03_77H_015	NRSC		GL	4801	28°12'10.44"	89°42'46.8"		Brahmaputra	China	14	12	13.6	3
131	03_78I_011	NRSC		GL	5239	27°58'54.48"	90°22'52.32"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	21	19	20.4	3
132	03_62J_027	NRSC		GL	4781	30°15'23.76"	82°35'21.12"		Brahmaputra	China	23	19	22.4	3
133	03_91H_003	NRSC		GL	4439	28°59'22.56"	97°16'4.08"	Lohit	Brahmaputra	China	12	10	11.7	3
134	02_72I_028	NRSC	146G	GL	4408	27°44'33.36"	86°50'39.48"	Sun Kosi	Ganga	Nepal	25	21	24.4	2
135	03_77L_071	NRSC		GL	5228	28°1'41.52"	90°16'13.44"	Puna Tsang Chhu	Brahmaputra	Bhutan	22	21	21.6	2
136	03_91D_099	NRSC		GL	4406	28°23'31.2"	96°51'28.44"	Lohit	Brahmaputra	China	31	30	27.8	2
137	02_72I_030	NRSC	480G	GL	4624	27°42'41.04"	86°35'56.76"	Sun Kosi	Ganga	Nepal	11	11	6.5	2
138	03_71D_001	NRSC		GL	5454	28°55'44.76"	84°18'2.52"		Brahmaputra	China	21	21	18	2
139	03_77L_034	NRSC		GL	5500	28°14'31.2"	90°30'23.76"	Kuri Chhu	Brahmaputra	China	21	21	20	2
140	01_52C_002	NRSC	46I	GL	4092	33°52'10.2"	76°7'9.48"	Chenab	Indus	India	43	26	42.3	2
141	03_62K_007	NRSC		GL	4911	29°56'22.56"	82°36'7.56"		Brahmaputra	China	29	25	28.5	2

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
142	03_77L_062	NRSC		GL	5295	28°2'50.64"	90°21'16.92"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	47	42	46.2	2
143	03_62K_008	NRSC		GL	4968	29°55'26.76"	82°37'4.44"		Brahmaputra	China	42	36	41.2	2
144	03_91H_007	NRSC		GL	4635	28°56'52.08"	97°19'11.64"	Lohit	Brahmaputra	China	28	27	27.5	2
145	03_78I_025	NRSC		GL	5194	27°57'7.92"	90°15'18.72"	Puna Tsang Chhu	Brahmaputra	Bhutan	14	12	13.9	1
146	03_78E_003	NRSC		GL	5152	27°58'26.4"	89°53'44.88"	Puna Tsang Chhu	Brahmaputra	Bhutan	23	21	22.7	1
147	02_62G_002	NRSC	599G	GL	4822	29°55'17.76"	81°1'50.52"	Karnali	Ganga	Nepal	17	16	16.9	1
148	03_91C_012	NRSC		GL	4663	29°35'18.6"	96°40'18.84"		Brahmaputra	China	21	21	17.8	1
149	03_78I_022	NRSC		GL	5048	27°56'32.64"	90°45'22.32"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	16	16	14.2	1
150	03_78A_030	NRSC		GL	4447	27°25'12.36"	88°48'45"	Amo Chhu	Brahmaputra		17	17	14.2	1
151	03_83A_001	NRSC		GL	5018	27°58'51.6"	92°39'3.96"		Brahmaputra	China	52	52	46	1
152	02_62F_010	NRSC		GL	5502	30°18'25.56"	81°51'55.44"	Karnali	Ganga	Nepal	11	11	9.4	1
153	02_72I_031	NRSC	14G	GL	4777	27°41'15"	86°51'29.52"	Sun Kosi	Ganga	Nepal	32	32	29.7	1

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
154	02_62K_001	NRSC	329G	GL	4404	29°59'35.88"	82°11'49.2"	Karnali	Ganga	Nepal	26	26	24.2	1
155	02_72I_019	NRSC	757G	GL	5510	27°48'20.16"	86°58'24.96"	Sun Kosi	Ganga	Nepal	17	17	16	1
156	03_78I_005	NRSC		GL	5338	27°59'47.04"	90°17'17.16"	Puna Tsang Chhu	Brahmaputra	Bhutan	44	40	43.5	1
157	02_72M_015	NRSC	115G	GL	4969	27°47'34.08"	87°56'1.32"	Tamor Kosi	Ganga	Nepal	13	13	12.2	1
158	03_78I_072	NRSC		GL	4788	27°49'7.32"	90°23'39.12"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	12	11	11.9	1
159	02_78A_001	NRSC	498G	GL	5201	27°59'46.68"	88°24'7.2"	Arun Kosi	Ganga	China	20	16	19.9	1
160	03_78E_001	NRSC		GL	5157	27°58'54.12"	89°53'47.4"	Puna Tsang Chhu	Brahmaputra	Bhutan	33	26	33	0
161	03_62J_028	NRSC		GL	5603	30°13'18.48"	82°13'58.44"		Brahmaputra	China	43	37	43	0
162	03_77K_002	NRSC		GL	5154	29°54'43.92"	90°3'46.8"		Brahmaputra	China	38	38	37.9	0
163	03_91C_007	NRSC		GL	4817	29°45'42.48"	96°22'26.76"		Brahmaputra	China	11	11	8.5	0
164	03_78A_023	NRSC		GL	4547	27°40'17.04"	88°30'46.44"	Teesta	Brahmaputra	India	33	33	26.7	0
165	03_78I_038	NRSC		GL	5143	27°55'28.56"	90°15'30.6"	Puna Tsang Chhu	Brahmaputra	Bhutan	11	11	9.7	0

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (& ii)
166	03_91C_004	NRSC		GL	4137	29°52'26.76"	96°19'29.28"		Brahmaputra	China	21	21	17.7	0
167	02_62K_003	NRSC	546G	GL	4571	29°55'50.16"	82°12'22.68"	Karnali	Ganga	Nepal	43	43	41.8	0
168	02_71L_027	NRSC	433G	GL	5234	28°9'2.88"	86°32'7.08"	Sun Kosi	Ganga	China	18	18	18	0
169	02_71H_018	NRSC	123G	GL	4787	28°30'31.68"	85°29'36.6"	Trishuli	Ganga	China	31	20	31	0
170	02_71L_005	NRSC	282G	GL	5524	28°23'33.72"	86°24'52.56"	Arun Kosi	Ganga	China	18	18	18	0
171	02_71H_023	NRSC		GL	5595	28°26'42.36"	85°46'46.92"	Arun Kosi	Ganga	China	57	41	56.9	0
172	02_71H_005	NRSC		GL	5010	28°38'47.4"	85°29'37.68"	Arun Kosi	Ganga	China	72	27	72.3	0
173	01_62E_007	NRSC	437I	GL	5641	31°17'6.36"	81°1'53.04"	Sutlej	Indus	China	14	11	14.1	-1
174	03_78I_020	NRSC		GL	5331	27°58'13.8"	90°19'49.8"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	21	18	21.2	-1
175	02_71D_001	NRSC		GL	4111	28°39'46.44"	84°28'17.76"	Trishuli	Ganga	Nepal	23	20	23.2	-1
176	02_72I_015	NRSC	814G	GL	5416	27°51'0"	86°55'42.96"	Sun Kosi	Ganga	Nepal	44	36	44.5	-1
177	03_77L_063	NRSC		GL	5183	28°2'6.36"	90°37'29.28"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	30	30	24.1	-1
178	02_62F_009	NRSC	536G	GL	5586	30°18'7.2"	81°23'57.12"	Karnali	Ganga	China	11	11	9.6	-1
179	03_78E_008	NRSC		GL	5045	27°56'27.6"	89°54'20.88"	Puna Tsang Chhu	Brahmaputra	Bhutan	12	12	11.8	-1
180	03_82L_007	NRSC		GL	4163	28°50'15"	94°27'5.04"	Ding	Brahmaputra	India	16	16	14.8	-1

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
181	03_82F_018	NRSC		GL	4554	30°17'15.72"	93°28'45.12"		Brahmaputra	China	17	17	15.5	-1
182	02_72I_010	NRSC	263G	GL	5125	27°54'57.96"	86°28'39"	Sun Kosi	Ganga	Nepal	14	14	14.2	-1
183	03_91C_003	NRSC		GL	4703	29°52'59.88"	96°23'21.12"		Brahmaputra	China	28	24	28.4	-1
184	02_71P_039	NRSC	396G	GL	5489	28°8'32.64"	87°6'19.08"	Arun Kosi	Ganga	China	18	15	18.1	-1
185	03_78I_046	NRSC		GL	5168	27°54'21.96"	90°16'32.16"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	21	20	21.3	-1
186	02_71H_032	NRSC		GL	5116	28°17'55.32"	85°49'8.4"	Sun Kosi	Ganga	China	25	22	25.5	-2
187	02_62F_015	NRSC	59G	GL	5359	30°13'58.8"	81°20'57.48"	Karnali	Ganga	China	36	37	28.2	-2
188	03_82F_021	NRSC		GL	4487	30°14'58.56"	93°36'49.32"		Brahmaputra	China	11	11	10.3	-2
189	03_77L_049	NRSC		GL	4716	28°6'44.28"	90°1'35.04"	Puna Tsang Chhu	Brahmaputra	Bhutan	38	39	31.4	-2
190	02_72M_013	NRSC	518G	GL	5233	27°49'44.76"	87°5'41.64"	Arun Kosi	Ganga	Nepal	12	12	10.6	-2
191	03_78I_015	NRSC		GL	5116	27°58'55.2"	90°14'38.76"	Puna Tsang Chhu	Brahmaputra	Bhutan	16	16	15.2	-2
192	02_71L_020	NRSC	156G	GL	5348	28°14'23.28"	86°21'55.44"	Sun Kosi	Ganga	China	29	30	26.9	-2
193	03_77L_058	NRSC		GL	5016	28°2'53.88"	90°35'49.2"	Kuri Chhu	Brahmaputra		32	28	32.8	-2

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
194	03_77L_079	NRSC		GL	5386	28°0'21.24"	90°19'40.08"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	33	30	33.7	-2
195	03_77L_048	NRSC		GL	4792	28°3'48.24"	90°54'10.08"	Kuri Chhu	Brahmaputra	China	26	21	26.4	-2
196	02_71P_036	NRSC	54G	GL	5121	28°8'51.36"	87°28'6.96"	Arun Kosi	Ganga	China	37	32	38.1	-3
197	02_62G_003	NRSC	589G	GL	3603	29°53'50.64"	81°34'43.68"	Karnali	Ganga	Nepal	32	17	33.1	-3
198	03_78I_028	NRSC		GL	4792	27°55'32.88"	90°33'17.64"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	24	24	24.7	-3
199	03_82G_003	NRSC		GL	4936	29°47'24.36"	93°29'17.88"		Brahmaputra	China	17	13	17.5	-3
200	03_62J_003	NRSC		GL	5553	30°48'40.32"	82°45'14.04"		Brahmaputra	China	11	11	9	-3
201	03_77H_019	NRSC		GL	4804	28°10'21.36"	89°41'3.48"	Puna Tsang Chhu	Brahmaputra	Bhutan	10	10	8	-3
202	03_82F_026	NRSC		GL	4607	30°10'21"	93°43'5.52"		Brahmaputra	China	13	13	10.8	-3
203	02_71P_031	NRSC	141G	GL	5395	28°10'3.36"	87°37'23.16"	Arun Kosi	Ganga	China	21	22	18.9	-3
204	03_77L_023	NRSC		GL	5489	28°18'3.6"	90°38'48.84"	Kuri Chhu	Brahmaputra	China	32	33	28.4	-3
205	03_82N_025	NRSC		GL	4764	30°22'51.24"	95°39'12.96"		Brahmaputra	China	26	27	22.9	-3

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
206	03_78I_006	NRSC		GL	5158	27°59'43.08"	90°15'38.16"	Puna Tsang Chhu	Brahmaputra	Bhutan	18	16	18.6	-3
207	02_71H_022	NRSC		GL	5735	28°27'41.76"	85°40'55.92"	Arun Kosi	Ganga	China	18	17	18.8	-4
208	03_91H_015	NRSC		GL	4553	28°51'10.08"	97°37'50.88"	Lohit	Brahmaputra	China	13	14	10.5	-4
209	03_77L_022	NRSC		GL	4810	28°18'14.76"	90°44'27.6"	Kuri Chhu	Brahmaputra	China	12	12	10.5	-4
210	03_71C_006	NRSC		GL	5482	29°49'4.8"	84°41'27.96"		Brahmaputra	China	21	22	17.7	-4
211	03_78A_025	NRSC		GL	4888	27°38'10.32"	88°48'57.96"	Amo Chhu	Brahmaputra		10	10	9.8	-4
212	02_62B_004	NRSC	232G	GL	4918	30°33'52.2"	80°10'41.16"	Sarda	Ganga	India	18	19	18.7	-4
213	03_82C_011	NRSC		GL	5242	29°45'0.72"	92°46'40.8"		Brahmaputra	China	14	12	14.6	-4
214	02_71L_019	NRSC	323G	GL	5378	28°14'56.04"	86°9'2.16"	Sun Kosi	Ganga	China	13	14	12.5	-5
215	01_52A_002	NRSC		GL	4537	35°5'48.12"	76°14'0.6"	Shyok	Indus	India	22	23	19.3	-5
216	02_62F_011	NRSC	362G	GL	5524	30°17'49.2"	81°23'16.8"	Karnali	Ganga	China	26	27	25.5	-5
217	01_52A_004	NRSC/SDC	/Very High Risk	GL	4619	35°4'28.2"	76°17'33.72"	Shyok	Indus	India	10	11	9.9	-5
218	02_78A_007	NRSC	429G	GL	5618	27°50'11.4"	88°4'39.36"	Tamor Kosi	Ganga	Nepal	15	16	15.1	-5
219	03_77L_047	NRSC		GL	4364	28°6'1.44"	90°13'49.08"	Puna Tsang Chhu	Brahmaputra	Bhutan	40	23	42.3	-5

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (& ii)
220	03_91D_070	NRSC		GL	4126	28°36'36.36"	96°43'19.56"	Lohit	Brahmaputra	China	13	12	13.9	-6
221	02_53N_001	NRSC	250G	GL	4688	30°54'7.92"	79°45'12.6"	Ganga	Ganga	India	21	21	22.4	-6
222	02_72I_006	NRSC		GL	4741	27°56'32.28"	86°41'55.32"	Sun Kosi	Ganga	Nepal	17	16	18	-6
223	03_91G_004	NRSC		GL	5262	29°29'48.48"	97°6'10.8"	Lohit	Brahmaputra	China	26	21	27.7	-6
224	03_77H_032	NRSC		GL	5056	28°1'3.36"	89°26'59.64"		Brahmaputra	China	10	11	6.7	-6
225	03_91G_005	NRSC		GL	5170	29°24'7.56"	97°0'32.4"	Lohit	Brahmaputra	China	13	14	9.7	-6
226	02_71P_044	NRSC	557G	GL	5555	28°6'0"	87°4'34.68"	Arun Kosi	Ganga	China	11	12	8.2	-6
227	01_62E_016	NRSC	270I	GL	5528	31°10'42.6"	81°9'6.84"	Sutlej	Indus	China	20	21	19.3	-6
228	02_72I_016	NRSC	739G	GL	5231	27°50'18.6"	86°56'7.8"	Sun Kosi	Ganga	Nepal	28	30	27.1	-6
229	03_82N_034	NRSC		GL	4181	30°13'23.52"	95°32'32.64"		Brahmaputra	China	13	13	13.9	-6
230	03_78I_057	NRSC		GL	5060	27°52'24.24"	90°18'11.88"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	42	33	44.9	-6
231	03_77H_022	NRSC		GL	4936	28°8'58.2"	89°33'52.56"		Brahmaputra	China	19	19	20.2	-6
232	03_62O_035	NRSC		GL	5256	29°39'19.44"	83°6'21.24"		Brahmaputra	China	30	29	32.3	-7
233	02_78A_002	NRSC	668G	GL	5397	27°59'21.48"	88°13'15.96"	Arun Kosi	Ganga	China	16	17	12.4	-7
234	02_71P_024	NRSC	576G	GL	5273	28°13'41.52"	87°34'39.36"	Arun Kosi	Ganga	China	24	26	21.8	-7

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
235	03_77H_025	NRSC		GL	4312	28°6'19.44"	89°53'53.16"	Puna Tsang Chhu	Brahmaputra	Bhutan	24	26	23.1	-7
236	02_71H_031	NRSC	78G	GL	5268	28°18'54"	85°56'50.28"	Sun Kosi	Ganga	China	25	20	26.8	-7
237	03_78A_020	NRSC		GL	5219	27°52'49.44"	88°15'4.68"	Teesta	Brahmaputra	India	13	14	13.8	-7
238	03_78A_015	NRSC/SDC	/Medium Risk	GL	4970	27°52'23.88"	88°47'22.2"	Teesta	Brahmaputra	India	11	12	8.4	-8
239	01_52B_010	NRSC/SDC	75I/Medium Risk	GL	5122	34°3'6.48"	76°43'5.16"	Indus	Indus	India	17	18	15.1	-8
240	03_82N_035	NRSC		GL	4479	30°10'50.16"	95°51'20.88"		Brahmaputra	China	21	23	16.5	-8
241	02_71P_026	NRSC	322G	GL	5340	28°12'23.04"	87°33'37.8"	Arun Kosi	Ganga	China	15	16	14.1	-8
242	02_78A_008	NRSC	199G	GL	5032	27°32'44.88"	88°2'57.84"	Tamor Kosi	Ganga	Nepal	26	28	24.2	-8
243	01_62J_004	NRSC	446I	GL	5504	30°22'33.96"	82°1'6.24"	Sutlej	Indus	China	11	12	10	-8
244	03_82N_031	NRSC		GL	4409	30°14'17.88"	95°36'8.28"		Brahmaputra	China	16	17	15	-8
245	03_91H_006	NRSC		GL	4620	28°57'28.8"	97°20'3.84"	Lohit	Brahmaputra	China	16	17	16.3	-8
246	03_77H_017	NRSC		GL	4537	28°10'19.2"	89°50'54.24"	Puna Tsang Chhu	Brahmaputra	Bhutan	23	25	23.9	-8
247	03_91H_008	NRSC		GL	4755	28°56'41.28"	97°18'12.6"	Lohit	Brahmaputra	China	42	40	45.8	-8

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
248	03_82L_004	NRSC		GL	4441	28°54'20.16"	94°0'14.04"		Brahmaputra	China	12	13	13	-8
249	03_71C_004	NRSC		GL	5575	29°51'22.68"	84°37'56.28"		Brahmaputra	China	14	15	13.1	-9
250	03_71D_003	NRSC		GL	5362	28°54'33.84"	84°20'51.72"		Brahmaputra	China	10	11	9.6	-9
251	03_91C_021	NRSC		GL	4093	29°25'15.96"	96°37'30.72"		Brahmaputra	China	32	35	29.7	-9
252	02_71H_030	NRSC	598G	GL	5411	28°19'28.56"	85°54'24.84"	Sun Kosi	Ganga	China	14	15	13.1	-9
253	02_71H_010	NRSC		GL	5481	28°34'32.16"	85°34'59.52"	Arun Kosi	Ganga	China	25	27	23.8	-9
254	03_78A_026	NRSC		GL	4736	27°33'44.28"	88°7'24.96"	Teesta	Brahmaputra	India	10	11	11.1	-10
255	03_71C_002	NRSC		GL	5663	29°53'15"	84°32'13.2"		Brahmaputra	China	11	12	7.7	-10
256	02_62O_002	NRSC	410G	GL	5495	29°12'3.24"	83°41'2.76"	Kali Gandak	Ganga	Nepal	22	25	21	-10
257	02_62B_005	NRSC	580G	GL	4314	30°26'44.52"	80°23'16.08"	Sarda	Ganga	India	11	12	9	-11
258	03_78I_014	NRSC		GL	5087	27°59'13.2"	90°7'48.72"	Puna Tsang Chhu	Brahmaputra	Bhutan	19	21	17.6	-11
259	02_62F_006	NRSC		GL	5444	30°20'46.68"	81°51'38.88"	Karnali	Ganga	Nepal	15	17	14.6	-11
260	02_71H_006	NRSC		GL	5167	28°38'33.72"	85°28'22.8"	Arun Kosi	Ganga	China	34	38	33.5	-11
261	02_71L_017	NRSC	179G	GL	5211	28°15'11.16"	86°6'10.44"	Sun Kosi	Ganga	China	13	15	13.4	-11
262	03_77L_056	NRSC		GL	4963	28°2'46.32"	90°55'6.96"	Kuri Chhu	Brahmaputra	China	14	16	14.4	-11

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
263	03_78A_017	NRSC		GL	5545	27°53'34.8"	88°11'31.92"	Teesta	Brahmaputra	India	23	19	25.8	-11
264	02_72I_001	NRSC	198G	GL	5333	27°59'55.32"	86°50'8.16"	Sun Kosi	Ganga	Nepal	11	12	12.5	-12
265	01_53M_002	NRSC	142I	GL	5468	31°56'57.12"	79°59'6.72"	Indus	Indus	China	10	11	8.6	-12
266	03_78A_004	NRSC		GL	5456	27°57'55.44"	88°53'37.68"		Brahmaputra	China	23	26	18.8	-12
267	02_72M_012	NRSC	69G	GL	4932	27°48'57.6"	87°44'56.04"	Tamor Kosi	Ganga	Nepal	16	18	15.3	-12
268	02_72I_024	NRSC	358G	GL	5165	27°47'23.28"	86°37'11.64"	Sun Kosi	Ganga	Nepal	31	35	31.4	-12
269	02_71L_021	NRSC	438G	GL	5373	28°14'33.36"	86°11'45.6"	Sun Kosi	Ganga	China	17	19	15.8	-12
270	02_62B_006	NRSC	495G	GL	5106	30°24'8.28"	80°47'4.92"	Karnali	Ganga	China	37	42	40.4	-12
271	02_71P_034	NRSC	726G	GL	5259	28°9'18"	87°36'46.44"	Arun Kosi	Ganga	China	20	23	21.4	-12
272	02_71L_009	NRSC	520G	GL	5546	28°20'53.16"	86°29'35.16"	Arun Kosi	Ganga	China	33	38	32.5	-13
273	03_78A_031	NRSC		GL	4305	27°26'15"	88°5'0.96"	Teesta	Brahmaputra	India	12	14	11.9	-13
274	03_77L_082	NRSC		GL	5019	28°0'11.52"	90°8'59.64"	Puna Tsang Chhu	Brahmaputra	Bhutan	12	14	12.9	-13
275	02_71L_030	NRSC	242G	GL	5242	28°4'22.8"	86°31'12.72"	Sun Kosi	Ganga	China	19	19	21.9	-13
276	03_77H_016	NRSC		GL	4929	28°11'10.32"	89°35'51"		Brahmaputra	China	33	38	35.3	-13
277	02_62K_006	NRSC	70G	GL	5053	29°49'18.48"	82°42'41.4"	Karnali	Ganga	Nepal	20	18	22.9	-13
278	02_71P_030	NRSC	166G	GL	5329	28°10'21.36"	87°28'44.76"	Arun Kosi	Ganga	China	19	18	22.1	-14

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
279	03_82G_007	NRSC		GL	4994	29°39'28.08"	93°16'30"		Brahmaputra	China	14	16	12.1	-14
280	03_78I_043	NRSC		GL	5000	27°53'44.88"	90°33'7.2"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	24	28	20.9	-14
281	02_71P_023	NRSC	124G	GL	5235	28°14'8.52"	87°30'1.8"	Arun Kosi	Ganga	China	22	26	20.3	-14
282	02_62P_001	NRSC	258G	GL	4472	28°47'17.52"	83°19'51.24"	Bheri	Ganga	Nepal	45	52	42.6	-14
283	02_72M_008	NRSC	376G	GL	4722	27°52'48.72"	87°48'17.28"	Tamor Kosi	Ganga	Nepal	37	43	35.2	-14
284	03_91C_002	NRSC		GL	4691	29°53'36.96"	96°22'40.44"		Brahmaputra	China	27	23	31.5	-14
285	02_71L_007	NRSC	572G	GL	5576	28°22'54.84"	86°23'3.84"	Arun Kosi	Ganga	China	13	15	12.6	-15
286	02_71L_012	NRSC	96G	GL	5570	28°19'15.24"	86°9'30.96"	Sun Kosi	Ganga	China	21	25	19.9	-15
287	02_71L_031	NRSC	52G	GL	4682	28°4'4.8"	86°3'56.16"	Sun Kosi	Ganga	China	28	33	30.1	-15
288	02_71D_003	NRSC	67G	GL	3668	28°35'46.68"	84°37'39.72"	Trishuli	Ganga	Nepal	27	32	24.5	-16
289	02_71H_014	NRSC		GL	4458	28°33'50.4"	85°28'3.36"	Trishuli	Ganga	China	10	12	9.1	-16
290	02_71H_036	NRSC	195G	GL	5024	28°9'50.76"	85°37'49.08"	Trishuli	Ganga	Nepal	13	15	12.5	-16
291	03_77D_006	NRSC/SDC	/Very High Risk	GL	5084	28°0'51.84"	88°33'41.76"	Teesta	Brahmaputra	India	19	22	22.8	-17
292	02_71P_033	NRSC		GL	4888	28°9'36.72"	87°26'36.6"	Arun Kosi	Ganga	China	26	31	19.5	-17
293	02_72M_003	NRSC	823G	GL	5608	27°58'5.88"	87°53'3.84"	Arun Kosi	Ganga	China	17	20	17.6	-17
294	02_71L_033	NRSC	408G	GL	5369	28°2'18.96"	86°42'34.56"	Sun Kosi	Ganga	Nepal	14	17	14.6	-17

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
295	03_82L_008	NRSC		GL	4342	28°52'12.36"	94°1'5.88"		Brahmaputra	China	10	12	10.6	-17
296	03_91C_010	NRSC		GL	4712	29°39'49.32"	96°33'8.64"		Brahmaputra	China	19	23	21.3	-17
297	03_78E_018	NRSC		GL	5164	27°52'45.12"	89°19'28.2"		Brahmaputra	China	20	24	16.1	-18
298	03_62J_020	NRSC		GL	5603	30°20'25.8"	82°8'26.16"		Brahmaputra	China	15	18	12.7	-18
299	03_82G_004	NRSC		GL	4498	29°43'54.12"	93°29'52.44"		Brahmaputra	China	31	38	30.2	-18
300	03_77H_026	NRSC		GL	5233	28°7'24.6"	89°30'47.52"		Brahmaputra	China	10	12	9.7	-18
301	03_82F_001	NRSC		GL	4822	30°52'59.16"	93°49'51.24"		Brahmaputra	China	14	17	14.4	-18
302	03_77L_025	NRSC		GL	5370	28°18'0.72"	90°36'29.52"	Kuri Chhu	Brahmaputra	China	12	15	14.3	-18
303	03_91C_015	NRSC		GL	4421	29°34'14.88"	96°22'26.04"		Brahmaputra	China	21	26	19	-19
304	02_71H_009	NRSC		GL	5448	28°34'50.16"	85°35'41.28"	Arun Kosi	Ganga	China	25	31	24	-19
305	02_71H_013	NRSC	172G	GL	4446	28°34'0.12"	85°27'50.04"	Trishuli	Ganga	China	17	21	16.4	-19
306	02_71L_015	NRSC	284G	GL	5261	28°17'38.76"	86°7'52.32"	Sun Kosi	Ganga	China	22	27	21.8	-19
307	02_62F_007	NRSC		GL	5179	30°20'18.96"	81°54'39.96"	Karnali	Ganga	Nepal	20	25	19.8	-20
308	02_71L_014	NRSC	240G	GL	5364	28°17'43.08"	86°9'2.88"	Sun Kosi	Ganga	China	14	18	15.6	-20
309	02_71H_034	NRSC	320G	GL	4745	28°17'32.28"	85°10'12.72"	Trishuli	Ganga	Nepal	17	21	16.6	-21
310	02_71L_035	NRSC	657G	GL	5091	28°1'2.28"	86°43'14.16"	Sun Kosi	Ganga	Nepal	15	19	15.4	-21

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i), (& (ii)
311	03_62O_045	NRSC		GL	5566	29°13'17.4"	83°41'9.6"		Brahmaputra	China	9	11	9.4	-21
312	03_71P_003	NRSC		GL	5360	28°47'47.76"	87°38'26.52"		Brahmaputra	China	21	23	26.6	-21
313	03_71C_001	NRSC		GL	5543	29°54'51.84"	84°36'2.88"		Brahmaputra	China	9	11	7.2	-22
314	02_71P_001	NRSC		GL	5498	28°50'26.88"	87°30'28.08"	Arun Kosi	Ganga	China	19	24	17.7	-22
315	02_71H_016	NRSC		GL	5305	28°31'40.8"	85°38'14.64"	Arun Kosi	Ganga	China	26	33	26.7	-22
316	03_91D_082	NRSC		GL	4550	28°32'28.68"	96°36'5.04"	Lohit	Brahmaputra	China	24	31	29.6	-22
317	03_91G_006	NRSC		GL	5028	29°23'30.48"	97°1'8.76"	Lohit	Brahmaputra	China	21	27	18.4	-23
318	01_52B_012	NRSC	129I	GL	5137	34°0'19.8"	76°47'12.84"	Indus	Indus	India	13	17	13.4	-23
319	02_62F_008	NRSC		GL	5620	30°19'24.24"	81°49'56.28"	Karnali	Ganga	Nepal	11	15	8.7	-24
320	03_77L_020	NRSC		GL	4682	28°20'3.48"	90°40'26.4"	Kuri Chhu	Brahmaputra	China	11	14	9.9	-24
321	02_71P_032	NRSC	564G	GL	5190	28°9'49.32"	87°34'40.8"	Arun Kosi	Ganga	China	17	22	17.7	-24
322	03_62J_009	NRSC		GL	5624	30°33'45.72"	82°55'14.16"		Brahmaputra	China	21	28	22.3	-24
323	03_78A_019	NRSC/SDC	/Very High Risk	GL	4809	27°51'52.2"	88°51'46.44"	Teesta	Brahmaputra	India	11	15	11.5	-25
324	02_71H_019	NRSC	92G	GL	4674	28°30'36.36"	85°26'44.52"	Trishuli	Ganga	China	12	16	12.6	-25
325	03_77L_065	NRSC		GL	5025	28°2'18.24"	90°32'47.76"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	13	17	16.3	-25

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326	03_78I_004	NRSC		GL	5194	27°59'28.32"	90°25'6.24"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	27	36	31.5	-26
327	03_77L_036	NRSC		GL	5810	28°14'17.52"	90°29'45.96"	Kuri Chhu	Brahmaputra	China	23	31	25	-26
328	03_82F_024	NRSC		GL	4197	30°13'39.36"	93°38'11.04"		Brahmaputra	China	22	17	29.8	-26
329	03_77L_074	NRSC		GL	5324	28°0'55.44"	90°21'9.36"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	13	18	16.1	-27
330	01_52L_006	NRSC	306I	GL	5727	32°26'27.24"	78°55'29.28"	Indus	Indus	India	9	12	10.2	-28
331	02_62O_005	NRSC	609G	GL	5450	29°2'46.32"	83°40'27.48"	Kali Gandak	Ganga	Nepal	11	15	12	-28
332	03_77L_031	NRSC		GL	4698	28°14'52.08"	90°42'43.2"	Kuri Chhu	Brahmaputra	China	15	21	16.1	-28
333	03_77H_009	NRSC		GL	5150	28°14'54.24"	89°51'5.76"		Brahmaputra	China	11	15	15	-28
334	03_82N_016	NRSC		GL	5017	30°32'24.36"	95°22'30.36"		Brahmaputra	China	8	11	4.3	-29
335	01_52A_003	NRSC		GL	4586	35°5'33.36"	76°15'7.2"	Shyok	Indus	India	17	24	16.6	-29
336	02_71L_018	NRSC	651G	GL	5377	28°14'44.88"	86°19'17.4"	Sun Kosi	Ganga	China	15	21	14.9	-30
337	02_72I_020	NRSC	763G	GL	5436	27°47'56.04"	86°57'56.52"	Sun Kosi	Ganga	Nepal	20	29	19.3	-31
338	02_72M_001	NRSC	737G	GL	5675	27°59'21.48"	87°52'5.16"	Arun Kosi	Ganga	China	7	10	6.3	-32
339	02_71L_016	NRSC	570G	GL	5345	28°16'12.36"	86°11'12.12"	Sun Kosi	Ganga	China	9	13	11.2	-32

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
340	03_91C_013	NRSC		GL	4925	29°33'38.16"	96°37'40.44"		Brahmaputra	China	9	12	13.5	-33
341	03_82N_015	NRSC		GL	5090	30°32'44.88"	95°20'35.52"		Brahmaputra	China	7	10	5.4	-33
342	02_77D_005	NRSC	499G	GL	5738	28°3'52.92"	88°32'38.04"	Arun Kosi	Ganga	China	7	11	6.6	-34
343	02_72I_026	NRSC	112G	GL	5188	27°46'39.72"	86°38'31.92"	Sun Kosi	Ganga	Nepal	20	30	26.9	-34
344	02_77D_011	NRSC	393G	GL	5305	28°0'19.08"	88°14'26.88"	Arun Kosi	Ganga	China	30	39	45.4	-34
345	02_62J_001	NRSC		GL	5182	30°11'46.68"	82°7'5.52"	Karnali	Ganga	Nepal	7	11	6.2	-36
346	03_62J_024	NRSC		GL	5548	30°18'35.64"	82°11'58.92"		Brahmaputra	China	20	31	19.2	-36
347	02_71P_020	NRSC		GL	4200	28°20'48.84"	87°53'6.72"	Arun Kosi	Ganga	China	76	26	121.9	-38
348	03_91C_035	NRSC		GL	4283	29°13'20.64"	96°48'34.2"		Brahmaputra	China	33	24	53.2	-38
349	03_82F_012	NRSC		GL	4454	30°21'27.36"	93°37'52.68"		Brahmaputra	China	24	39	17.3	-39
350	03_78I_001	NRSC		GL	5129	27°59'52.44"	90°35'33"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	8	15	9.8	-47
351	03_62K_013	NRSC		GL	5101	29°41'17.88"	82°59'2.4"		Brahmaputra	China	45	37	86.4	-48
352	03_82N_032	NRSC		GL	4384	30°13'44.4"	95°35'30.84"		Brahmaputra	China	17	28	33.4	-49
353	02_72I_017	NRSC	49G	GL	5018	27°50'45.96"	86°27'49.32"	Sun Kosi	Ganga	Nepal	7	14	10.5	-51
354	03_91C_043	NRSC		GL	4429	29°10'44.04"	96°51'12.96"		Brahmaputra	China	12	26	10.6	-53

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i) (&ii)
355	03_91C_006	NRSC		GL	5057	29°45'11.16"	96°27'48.96"		Brahmaputra	China	6	14	3.9	-57
356	03_78A_008	NRSC		GL	4998	27°57'3.24"	88°21'15.48"	Teesta	Brahmaputra	India	19	44	16.2	-57
357	03_77L_038	NRSC		GL	5521	28°13'29.64"	90°15'26.64"		Brahmaputra	China	13	30	13.4	-57
358	02_71D_002	NRSC		GL	4063	28°39'24.48"	84°27'28.8"	Trishuli	Ganga	Nepal	4	10	5.8	-61
359	02_62F_016	NRSC	591G	GL	5359	30°13'0.48"	81°48'5.04"	Karnali	Ganga	Nepal	11	29	14.4	-62
360	03_77L_061	NRSC		GL	5038	28°2'29.4"	90°32'15.72"	Manas Chhu & Mangde Chhu	Brahmaputra	Bhutan	17	15	76	-78
361	03_77L_040	NRSC		GL	4515	28°9'14.76"	90°8'54.6"	Puna Tsang Chhu	Brahmaputra	Bhutan	#	12	#	#
362	03_77L_054	NRSC		GL	4717	28°5'15"	90°19'33.24"	Puna Tsang Chhu	Brahmaputra	Bhutan	#	17	3.9	#
363	03_78M_013	NRSC		GL	4232	27°53'43.08"	91°14'54.96"	Kuri Chhu	Brahmaputra	Bhutan	#	11	7.1	#
364	03_91C_036	NRSC		GL	4298	29°13'6.96"	96°48'52.2"		Brahmaputra	China	#	16	54.3	#
365	01_52P_004	NRSC		GL	5470	32°23'7.08"	79°40'43.68"	Indus	Indus	China	#	14	0.1	#
366	03_91D_096	NRSC		GL	3794	28°25'56.64"	96°55'32.52"	Lohit	Brahmaputra	China	#	38	39.5	#
367	03_91C_023	NRSC		GL	4811	29°23'8.88"	96°22'22.08"	Lohit	Brahmaputra	China	#	30	25	#

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
368	03_82O_003	NRSC		GL	4180	29°54'16.92"	95°54'31.32"		Brahmaputra	China	#	15	13.8	#
369	03_77L_053	NRSC		GL	4793	28°3'12.96"	90°54'8.28"	Kuri Chhu	Brahmaputra	China	#	25	38.1	#
370	03_82F_013	NRSC		GL	4761	30°21'16.92"	93°31'40.08"		Brahmaputra	China	#	10	9	#
371	03_82J_003	NRSC		GL	4161	30°41'4.2"	94°19'25.32"		Brahmaputra	China	#	22	27.3	#
372	03_91D_098	NRSC		GL	4197	28°24'10.44"	96°50'11.76"	Lohit	Brahmaputra	China	#	13	12.6	#
373	03_91C_008	NRSC		GL	4899	29°42'21.6"	96°18'24.84"		Brahmaputra	China	#	23	22.1	#
374	03_91C_071	NRSC		GL	4339	29°2'31.2"	96°13'12"	Dibang	Brahmaputra	China	#	35	35.3	#
375	03_82N_037	NRSC		GL	4691	30°0'30.96"	95°54'54.36"		Brahmaputra	China	#	13	11.1	#
376	02_62F_014	NRSC	236G	GL	5481	30°14'26.88"	81°19'53.4"	Karnali	Ganga	China	#	12	5.5	#
377	03_91H_073	NRSC		GL	4481	28°3'15.48"	97°19'47.64"	Lohit	Brahmaputra	India	#	25	25	#
378	02_62B_007	NRSC		GL	4839	30°16'42.96"	80°7'49.8"	Sarda	Ganga	India	#	19	#	#
379	03_91D_075	NRSC		GL	4274	28°36'28.8"	96°19'14.16"	Dibang	Brahmaputra	India	#	23	25.1	#
380	01_43J_003	NRSC		GL	3954	34°55'36.12"	74°9'19.44"	Jhelum	Indus	India	#	20	14.9	#
381	03_78A_027	NRSC/SDC	/Very High Risk	GL	4888	27°32'0.6"	88°5'8.52"	Teesta	Brahmaputra	India	#	33	33.7	#

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	Latitude(E)	Longitude(N)	River	Basin	Country	June-24 (ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
382	03_91C_026	NRSC		GL	4305	29°20'18.24"	96°4'57.72"	Dibang	Brahmaputra	India	#	28	25.3	#
383	03_78A_016	NRSC		GL	5451	27°53'33.72"	88°12'47.16"	Teesta	Brahmaputra	India	#	14	10.5	#
384	02_72I_005	NRSC	483G	GL	4715	27°56'35.88"	86°42'40.68"	Sun Kosi	Ganga	Nepal	#	19	22.4	#
385	02_72M_011	NRSC	86G	GL	4865	27°50'39.48"	87°4'50.88"	Arun Kosi	Ganga	Nepal	#	38	42.6	#

Note: G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability, “-” Inventory Data not available, “#” indicates frozen/ dried lakes.

-  - GLs/WBs with change in Area > 40%
-  - GLs/WBs with change in Area – 0% to 40%
-  - GLs/WBs with no change in Area
-  - GLs/WBs with decrease in Area
-  - GLs/WBs not analysed

Table 4.7: Results of analysis of GLs & WBs identified by SDC with water spread between 10ha - 50 ha

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	State	Country	Area of June 2024 (Ha)	Base Area (Average area of last 2 years (ha))	Change in Area (%) w.r.t Base Area
1	293	SDC	Very High Risk	GL	5048	SK	India	3	2.0	52
2	1360	SDC	Very High Risk	GL	4667	JK	India	14	9.5	47
3	292	SDC	Medium Risk	GL	5577	SK	India	5	3.5	42
4	237	SDC	Very Low Risk	GL	5322	SK	India	10	7.1	40
5	958	SDC	Very High Risk	GL	4103	JK	India	8	5.8	38
6	599	SDC	Very High Risk	GL	4251	SK	India	10	7.4	35
7	295	SDC	Very High Risk	GL	4850	SK	India	9	6.8	32
8	2207	SDC	Very High Risk	GL	4707	UK	India	13	10.1	29
9	2108	SDC	Very High Risk/347G	GL	5587	UK	India	22	17.2	28
10	1805	SDC	Very High Risk/81I	GL	4775	HP	India	5	4.0	27
11	515	SDC	Medium Risk	GL	5063	SK	India	10	7.9	27
12	345	SDC	Medium Risk	GL	5108	SK	India	20	17.2	16
13	260	SDC	Medium Risk	GL	5253	SK	India	45	39.6	14

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	State	Country	Area of June 2024 (Ha)	Base Area (Average area of last 2 years (ha))	Change in Area (%) w.r.t Base Area
14	227	SDC	Very High Risk	GL	5176	SK	India	66	58.7	12
15	129	SDC	Very High Risk	GL	4895	AP	India	10	9.3	8
16	569	SDC	Medium Risk	GL	5450	SK	India	30	28.5	5
17	963	SDC	Medium Risk	GL	3725	JK	India	31	30.0	4
18	298	SDC	Very High Risk	GL	4508	SK	India	6	5.9	1
19	312	SDC	Medium Risk	GL	5137	SK	India	7	6.9	1
20	256	SDC	High risk	GL	4615	SK	India	13	13.5	-3
21	938	SDC	Very High Risk	GL	3683	JK	India	19	19.8	-4
22	1847	SDC	Very High Risk	GL	4570	HP	India	13	13.8	-6
23	98	SDC	High Risk	GL	4103	JK	India	#	4.0	#
24	976	SDC	High Risk/15I	GL	4314	JK	India	#	16.2	#
25	2147	SDC	Medium Risk	GL	5688	UK	India	#	0.3	#
26	2299	SDC	Very High Risk	GL	4490	UK	India	#	#	#
27	27	SDC	Very High Risk	GL	3775	JK	India	#	13.7	#

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	State	Country	Area of June 2024 (Ha)	Base Area (Average area of last 2 years (ha))	Change in Area (%) w.r.t Base Area
28	180	SDC	Very High Risk	GL	4442	JK	India	#	8.2	#
29	173	SDC	Medium Risk	GL	5150	JK	India	#	7.7	#
30	931	SDC	Very High Risk	GL	4082	JK	India	#	18.2	#
31	1037	SDC	Medium Risk/271	GL	3603	JK	India	#	38.0	#
32	1998	SDC	Very High Risk	GL	3857	HP	India	#	0.9	#
33	1032	SDC	Very High Risk	GL	4007	JK	India	#	1.0	#
34	1774	SDC	Very High Risk	GL	4593	HP	India	#	6.8	#
35	182	SDC	Very High Risk	GL	4304	JK	India	#	7.6	#
36	951	SDC	Very High Risk	GL	3762	JK	India	#	16.2	#
37	2031	SDC	Very High Risk	GL	4702	HP	India	#	10.9	#
38	1014	SDC	Very High Risk	GL	3989	JK	India	#	3.6	#
39	1936	SDC	Very High Risk/321I	GL	4606	HP	India	#	2.9	#

Sl. No.	Lake ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation	State	Country	Area of June 2024 (Ha)	Base Area (Average area of last 2 years (ha)	Change in Area (%) w.r.t Base Area
40	993	SDC	Very High Risk	GL	4148	JK	India	#	6.3	#

*Note: G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability,
“-” Inventory Data not available , “#” indicates frozen/ dried lakes.*

-  - GLs/WBs with change in Area > 40%
-  - GLs/WBs with change in Area – 0% to 40%
-  - GLs/WBs with decrease in Area

Table 4.8: Results of analysis of 15 GLs of size greater than 50 Ha located in India

Sl. No.	Lake ID	Agency	Rank of Vulnerability	UID	Elevation (m)	Latitude (N)	Longitude (E)	Basin	River	Country	State/UT	Lake Area 2009 (Ha)	Lake Area June 2024 (Ha)	Area of Base Year of 2011 (ha) (i)	Average Area of Last 5 Years (ha) (ii)	Average Area of Last 10 years (ha) (ii)	Change in Area (%) w.r.t maximum of (i), (ii)&(iii)
1	01_52C_003	NRSC	7I	JK_187	4512	33° 9' 26.28"	76° 59' 3.48"	Indus	Indus	India	Ladakh	45	58	45	58	56	1
2	01_52E_001	NRSC		JK_188	5116	35° 25' 4.8"	77° 36' 16.56"	Indus	Shyok	India	Ladakh	51	#	51	6	24	#
3	01_52J_001	NRSC	8I	JK_197	5311	34° 27' 27.72"	78° 8' 6.36"	Indus	Shyok	India	Ladakh	97	99	65	98	90	14
4	01_52H_004	NRSC		HP_5	4155	32° 29' 47.04"	77° 33' 5.76"	Indus	Chenab	India	Himachal Pradesh	46	154	46	146	132	5
5	01_52H_002	NRSC/ SDC	4I/Very High Risk	HP_3	4101	32° 31' 28.92"	77° 13' 5.88"	Indus	Chenab	India	Himachal Pradesh	62	100	62	99	88	1
6	03_77D_002	NRSC		SK_2	5156	28° 1' 33.96"	88° 42' 36"	Brahma-putra	Teesta	India	Sikkim	105	107	104	107	95	0
7	03_77D_004	NRSC/ SDC	/Very High Risk	SK_4	5287	28° 0' 25.56"	88° 42' 46.08"	Brahma-putra	Teesta	India	Sikkim	106	130	106	120	111	8
8	03_77D_005	NRSC/ SDC	/Very High Risk	SK_5	5249	28° 0' 32.76"	88° 41' 52.44"	Brahma-putra	Teesta	India	Sikkim	79	114	88	101	86	13
9	03_77D_008	NRSC		SK_8	5039	28° 0' 26.28"	88° 29' 41.64"	Brahma-putra	Teesta	India	Sikkim	46	43	46	41	42	-7
10	03_78A_001	NRSC/ SDC	/High Risk	SK_9	5371	27° 59' 30.12"	88° 48' 55.8"	Brahma-putra	Teesta	India	Sikkim	156	175	156	185	254	-31
11	03_78A_003	NRSC/ SDC	/Very High Risk	SK_11	4977	27° 58' 31.08"	88° 36' 59.04"	Brahma-putra	Teesta	India	Sikkim	58	54	58	57	68	-21
12	03_78A_009	NRSC		SK_16	5044	27° 56' 51.72"	88° 19' 52.68"	Brahma-putra	Teesta	India	Sikkim	54	64	55	62	58	4
13	03_78A_013	NRSC		SK_19	5470	27° 55' 7.68"	88° 9' 39.6"	Brahma-putra	Teesta	India	Sikkim	63	88	67	80	79	9
14	03_78A_014	NRSC/ SDC	/Very High Risk	SK_20	5234	27° 54' 42.84"	88° 11' 54.96"	Brahma-putra	Teesta	India	Sikkim	94	141	123	152	130	-7
15	03_78A_021	NRSC		SK_26	5431	27° 49' 28.2"	88° 14' 57.12"	Brahma-putra	Teesta	India	Sikkim	56	87	56	78	56	11

Table 4.9: Results of analysis of 85 GLs with size between 10ha to 50ha located in India

Sl. No.	Lake ID	Agency	Rank of Vulnerability	Elevation (m)	Latitude (N)	Longitude (E)	Basin	River	Country	State/UT	Lake Area June 2024 (Ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
1	01_42H_002	NRSC	162I	2763	36° 38' 34.8"	73° 24' 26.64"	Indus	Gilgit	India	Ladakh	17	13	16	6
2	01_52A_002	NRSC		4537	35° 5' 48.12"	76° 14' 0.6"	Indus	Shyok	India	Ladakh	22	23	19	-5
3	01_52A_003	NRSC		4586	35° 5' 33.36"	76° 15' 7.2"	Indus	Shyok	India	Ladakh	17	24	17	-29
4	01_52A_004	NRSC/SDC	/Very High Risk	4619	35° 4' 28.2"	76° 17' 33.72"	Indus	Shyok	India	Ladakh	10	11	10	-5
5	01_52B_010	NRSC/SDC	75I/Medium Risk	5122	34° 3' 6.48"	76° 43' 5.16"	Indus	Indus	India	Ladakh	17	18	15	-8
6	01_52B_012	NRSC	129I	5137	34° 0' 19.8"	76° 47' 12.84"	Indus	Indus	India	Ladakh	13	17	13	-23
7	01_52C_001	NRSC	11I	4394	33° 56' 44.52"	76° 13' 53.76"	Indus	Shingo (Indus)	India	Ladakh	54	36	52	4
8	01_52L_006	NRSC	306I	5727	32° 26' 27.24"	78° 55' 29.28"	Indus	Indus	India	Ladakh	9	12	10	-28
9	01_52L_007	NRSC	184I	5498	32° 24' 36.36"	78° 53' 56.4"	Indus	Indus	India	Ladakh	39	32	31	23
10	173	SDC	Medium Risk	5150	34° 45' 54"	76° 42' 36"	Indus		India	Ladakh	#		8	#
11	180	SDC	Very High Risk	4442	34° 21' 10.8"	76° 4' 37.2"	Indus		India	Ladakh	#	-	8	#
12	1360	SDC	Very High Risk	4667	35° 1' 37.2"	75° 43' 30"	Indus		India	Ladakh	14		10	47
13	01_43J_003	NRSC		3954	34° 55' 36.12"	74° 9' 19.44"	Indus	Jhelum	India	Jammu & Kashmir	#	20	15	#
14	01_52C_002	NRSC	46I	4092	33° 52' 10.2"	76° 7' 9.48"	Indus	Chenab	India	Jammu & Kashmir	43	26	42	2
15	27	SDC	Very High Risk	3775	34° 22' 51.6"	74° 52' 33.6"	Indus		India	Jammu & Kashmir	#	-	14	#
16	98	SDC	High Risk	4103	34° 23' 31.2"	75° 5' 6"	Indus		India	Jammu & Kashmir	#		4	#
17	182	SDC	Very High Risk	4304	34° 14' 2.4"	75° 19' 30"	Indus		India	Jammu & Kashmir	#	-	8	#

Sl. No.	Lake ID	Agency	Rank of Vulnerability	Elevation (m)	Latitude (N)	Longitude (E)	Basin	River	Country	State/UT	Lake Area June 2024 (Ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(&(ii)
18	931	SDC	Very High Risk	4082	33° 55' 44.4"	75° 23' 20.4"	Indus		India	Jammu & Kashmir	#	-	18	#
19	938	SDC	Very High Risk	3683	33° 57' 10.8"	75° 22' 40.8"	Indus		India	Jammu & Kashmir	19	-	20	-4
20	951	SDC	Very High Risk	3762	34° 4' 1.2"	75° 28' 30"	Indus		India	Jammu & Kashmir	#	-	16	#
21	958	SDC	Very High Risk	4103	34° 8' 16.8"	75° 24' 57.6"	Indus		India	Jammu & Kashmir	8	-	6	38
22	963	SDC	Medium Risk	3725	34° 8' 20.4"	75° 22' 33.6"	Indus		India	Jammu & Kashmir	31	-	30	4
23	976	SDC	High Risk/15I	4314	34° 11' 6"	75° 22' 19.2"	Indus		India	Jammu & Kashmir	#	-	16	#
24	993	SDC	Very High Risk	4148	34° 13' 37.2"	75° 13' 19.2"	Indus		India	Jammu & Kashmir	#	-	6	#
25	1014	SDC	Very High Risk	3989	34° 17' 56.4"	75° 3' 36"	Indus		India	Jammu & Kashmir	#	-	4	#
26	1032	SDC	Very High Risk	4007	34° 23' 9.6"	75° 3' 50.4"	Indus		India	Jammu & Kashmir	#	-	1	#
27	1037	SDC	Medium Risk/27I	3603	34° 25' 19.2"	75° 3' 28.8"	Indus		India	Jammu & Kashmir	#	-	38	#
28	01_52H_003	NRSC		4165	32° 29' 54.6"	77° 32' 37.32"	Indus	Chenab	India	Himachal Pradesh	170	28	141	21
29	01_53I_002	NRSC/SDC	26I/Very High Risk	4273	31° 39' 38.52"	78° 10' 1.92"	Indus	Sutlej	India	Himachal Pradesh	34	23	29	17
30	1774	SDC	Very High Risk	4593	32° 13' 15.6"	76° 47' 16.8"	Indus		India	Himachal Pradesh	#	-	7	#
31	1805	SDC	Very High Risk/81I	4775	32° 45' 43.2"	77° 11' 42"	Indus		India	Himachal Pradesh	5	-	4	27
32	1847	SDC	Very High Risk	4570	31° 54' 54"	77° 31' 37.2"	Indus		India	Himachal Pradesh	13	-	14	-6
33	1936	SDC	Very High Risk/321I	4606	32° 15' 21.6"	76° 46' 37.2"	Indus		India	Himachal Pradesh	#	-	3	#

Sl. No.	Lake ID	Agency	Rank of Vulnerability	Elevation (m)	Latitude (N)	Longitude (E)	Basin	River	Country	State/UT	Lake Area June 2024 (Ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
34	1998	SDC	Very High Risk	3857	32° 19' 12"	76° 54' 28.8"	Indus		India	Himachal Pradesh	#	-	1	#
35	2031	SDC	Very High Risk	4702	31° 20' 20.4"	78° 15' 10.8"	Indus		India	Himachal Pradesh	#	-	11	#
36	01_62B_003	NRSC	86I	5288	30° 28' 36.48"	80° 35' 35.16"	Indus	Sutlej	India	Uttarakhand	13	12	12	4
37	02_53N_001	NRSC	250G	4688	30° 54' 7.92"	79° 45' 12.6"	Ganga	Ganga	India	Uttarakhand	21	21	22	-6
38	02_62B_004	NRSC	232G	4918	30° 33' 52.2"	80° 10' 41.16"	Ganga	Sarda	India	Uttarakhand	18	19	19	-4
39	02_62B_005	NRSC	580G	4314	30° 26' 44.52"	80° 23' 16.08"	Ganga	Sarda	India	Uttarakhand	11	12	9	-11
40	02_62B_007	NRSC		4839	30° 16' 42.96"	80° 7' 49.8"	Ganga	Sarda	India	Uttarakhand	#	19	#	#
41	2108	SDC	Very High Risk/347G	5587	30° 58' 33.6"	79° 27' 32.4"	Ganga		India	Uttarakhand	22	-	17	28
42	2147	SDC	Medium Risk	5688	30° 58' 48"	79° 29' 13.2"	Ganga		India	Uttarakhand	#	-	0	#
43	2207	SDC	Very High Risk	4707	30° 54' 43.2"	78° 57' 28.8"	Ganga		India	Uttarakhand	13	-	10	29
44	2299	SDC	Very High Risk	4490	30° 11' 2.4"	79° 52' 48"	Ganga		India	Uttarakhand	#	-	#	#
45	03_77D_006	NRSC/SDC	/Very High Risk	5084	28° 0' 51.84"	88° 33' 41.76"	Brahma-putra	Teesta	India	Sikkim	19	22	23	-17
46	03_77D_007	NRSC/SDC	/Very High Risk	5015	28° 0' 26.28"	88° 34' 18.48"	Brahma-putra	Teesta	India	Sikkim	27	24	23	14
47	03_78A_002	NRSC/SDC	/Very High Risk	4952	27° 58' 56.28"	88° 30' 28.08"	Brahma-putra	Teesta	India	Sikkim	41	22	36	12
48	03_78A_005	NRSC		5201	27° 58' 31.44"	88° 25' 20.64"	Brahma-putra	Teesta	India	Sikkim	12	11	9	6
49	03_78A_006	NRSC		5004	27° 58' 15.6"	88° 25' 45.84"	Brahma-putra	Teesta	India	Sikkim	15	11	12	22
50	03_78A_007	NRSC/SDC	/Very High Risk	4977	27° 57' 38.88"	88° 38' 57.48"	Brahma-putra	Teesta	India	Sikkim	18	17	17	5
51	03_78A_008	NRSC		4998	27° 57' 3.24"	88° 21' 15.48"	Brahma-putra	Teesta	India	Sikkim	19	44	16	-57

Sl. No.	Lake ID	Agency	Rank of Vulnerability	Elevation (m)	Latitude (N)	Longitude (E)	Basin	River	Country	State/UT	Lake Area June 2024 (Ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
52	03_78A_010	NRSC		5078	27° 57' 0.72"	88° 18' 16.92"	Brahma-putra	Teesta	India	Sikkim	37	36	33	3
53	03_78A_012	NRSC		5130	27° 54' 4.32"	88° 46' 54.84"	Brahma-putra	Teesta	India	Sikkim	29	26	26	11
54	03_78A_015	NRSC/SDC	/Medium Risk	4970	27° 52' 23.88"	88° 47' 22.2"	Brahma-putra	Teesta	India	Sikkim	11	12	8	-8
55	03_78A_016	NRSC		5451	27° 53' 33.72"	88° 12' 47.16"	Brahma-putra	Teesta	India	Sikkim	#	14	11	#
56	03_78A_017	NRSC		5545	27° 53' 34.8"	88° 11' 31.92"	Brahma-putra	Teesta	India	Sikkim	23	19	26	-11
57	03_78A_019	NRSC/SDC	/Very High Risk	4809	27° 51' 52.2"	88° 51' 46.44"	Brahma-putra	Teesta	India	Sikkim	11	15	12	-25
58	03_78A_020	NRSC		5219	27° 52' 49.44"	88° 15' 4.68"	Brahma-putra	Teesta	India	Sikkim	13	14	14	-7
59	03_78A_023	NRSC		4547	27° 40' 17.04"	88° 30' 46.44"	Brahma-putra	Teesta	India	Sikkim	33	33	27	0
60	03_78A_026	NRSC		4736	27° 33' 44.28"	88° 7' 24.96"	Brahma-putra	Teesta	India	Sikkim	10	11	11	-10
61	03_78A_027	NRSC/SDC	/Very High Risk	4888	27° 32' 0.6"	88° 5' 8.52"	Brahma-putra	Teesta	India	Sikkim	#	33	34	#
62	03_78A_031	NRSC		4305	27° 26' 15"	88° 5' 9.6"	Brahma-putra	Teesta	India	Sikkim	12	14	12	-13
63	03_78A_035	NRSC		4998	27° 57' 3.24"	88° 21' 15.48"	Brahma-putra	Teesta	India	Sikkim	11	-	9	24
64	227	SDC	Very High Risk	5176	27° 59' 34.8"	88° 32' 49.2"	Brahma-putra		India	Sikkim	66	-	59	12
65	237	SDC	Very Low Risk	5322	27° 59' 34.8"	88° 48' 3.6"	Brahma-putra		India	Sikkim	10	-	7	40
66	256	SDC	High risk	4615	27° 48' 57.6"	88° 39' 25.2"	Brahma-putra		India	Sikkim	13	-	13	-3
67	260	SDC	Medium Risk	5253	27° 53' 38.4"	88° 45' 39.6"	Brahma-putra		India	Sikkim	45	-	40	14

Sl. No.	Lake ID	Agency	Rank of Vulnerability	Elevation (m)	Latitude (N)	Longitude (E)	Basin	River	Country	State/UT	Lake Area June 2024 (Ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
68	292	SDC	Medium Risk	5577	28° 0' 21.6"	88° 39' 18"	Brahma-putra		India	Sikkim	5	-	4	42
69	293	SDC	Very High Risk	5048	27° 57' 3.6"	88° 42' 18"	Brahma-putra		India	Sikkim	3	-	2	52
70	295	SDC	Very High Risk	4850	27° 55' 12"	88° 40' 19.2"	Brahma-putra		India	Sikkim	9	-	7	32
71	298	SDC	Very High Risk	4508	27° 52' 22.8"	88° 38' 16.8"	Brahma-putra		India	Sikkim	6	-	6	1
72	312	SDC	Medium Risk	5137	27° 42' 3.6"	88° 30' 50.4"	Brahma-putra		India	Sikkim	7	-	7	1
73	345	SDC	Medium Risk	5108	27° 51' 50.4"	88° 44' 49.2"	Brahma-putra		India	Sikkim	20	-	17	16
74	515	SDC	Medium Risk	5063	27° 51' 14.4"	88° 48' 21.6"	Brahma-putra		India	Sikkim	10	-	8	27
75	569	SDC	Medium Risk	5450	28° 0' 7.2"	88° 38' 24"	Brahma-putra		India	Sikkim	30	-	28	5
76	599	SDC	Very High Risk	4251	27° 41' 42"	88° 42' 57.6"	Brahma-putra		India	Sikkim	10	-	7	35
77	03_82L_007	NRSC		4163	28° 50' 15"	94° 27' 5.04"	Brahma-putra	Ding	India	Arunachal Pradesh	16	16	15	-1
78	03_83A_003	NRSC		5188	27° 46' 12.72"	92° 25' 56.64"	Brahma-putra	Dangme Chhu	India	Arunachal Pradesh	96	24	82	17
79	03_83A_004	NRSC		5109	27° 45' 47.16"	92° 25' 29.64"	Brahma-putra	Dangme Chhu	India	Arunachal Pradesh	18	17	17	3
80	03_83A_005	NRSC		4994	27° 45' 20.52"	92° 24' 2.52"	Brahma-putra	Dangme Chhu	India	Arunachal Pradesh	13	13	12	3
81	03_83A_007	NRSC		5028	27° 43' 39.36"	92° 26' 12.48"	Brahma-putra	Jia Brali	India	Arunachal Pradesh	20	14	14	44
82	03_91C_026	NRSC		4305	29° 20' 18.24"	96° 4' 57.72"	Brahma-putra	Dibang	India	Arunachal Pradesh	#	28	25	#

Sl. No.	Lake ID	Agency	Rank of Vulnerability	Elevation (m)	Latitude (N)	Longitude (E)	Basin	River	Country	State/UT	Lake Area June 2024 (Ha)	Inventory Area 2011 (ha) (i)	Base Area Average (area of last 2 years) (ha) (ii)	Change in Area (%) w.r.t maximum of (i),(ii)
83	03_91D_075	NRSC		4274	28° 36' 28.8"	96° 19' 14.16"	Brahma-putra	Dibang	India	Arunachal Pradesh	#	23	25	#
84	03_91H_073	NRSC		4481	28° 3' 15.48"	97° 19' 47.64"	Brahma-putra	Lohit	India	Arunachal Pradesh	#	25	25	#
85	129	SDC	Very High Risk	4895			Brahma-putra		India	Arunachal Pradesh	10		9	8

Note: “-” Inventory Data not available , “#” indicates frozen/ dried lakes.

 - GLs displaying increase in area

6. References

1. NRSC, June 2011. *Final Report of "Inventory and Monitoring of Glacial Lakes / Water Bodies in the Himalayan Region of Indian River Basins"*, Technical Report Published by National Remote Sensing Centre, Hyderabad.
2. NRSC, April 2012. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins during 2011"*, Technical Report Published by National Remote Sensing Centre, Hyderabad.
3. NRSC, March 2013. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins during 2012"*, Technical Report Published by National Remote Sensing Centre, Hyderabad.
4. NRSC, December 2013. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins during 2013"*, Technical Report Published by National Remote Sensing Centre, Hyderabad.
5. NRSC, December 2014. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins during 2014"*, Technical Report Published by National Remote Sensing Centre, Hyderabad.
6. NRSC, December 2015. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins during 2015"*, Technical Report Published by National Remote Sensing Centre, Hyderabad.
7. CWC, February 2017. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins for 2016"*, Technical Report Published by Climate Change & IAD Directorate, CWC, New Delhi.

8. CWC, March 2018. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins for 2017"*, Technical Report Published by Morphology & Climate Change Directorate, CWC, New Delhi.
9. CWC, January 2019. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins for 2018"*, Technical Report Published by Morphology & Climate Change Directorate, CWC, New Delhi.
10. CWC, February 2020. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins for 2019"*, Technical Report Published by Morphology & Climate Change Directorate, CWC, New Delhi.
11. CWC, December 2020. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins for 2020"*, Technical Report Published by Morphology & Climate Change Directorate, CWC, New Delhi.
12. CWC, December 2021. *Report on "Monitoring of Glacial Lakes/Water Bodies in the Himalayan Region of Indian River Basins for 2021"*, Technical Report Published by Morphology & Climate Change Directorate, CWC, New Delhi.
13. Gorelick, N. a. (2017). Google Earth Engine: Planetary-scale geospatial analysis foreveryone. Remote Sensing of Environment. doi: 10.1016/j.rse.2017.06.031
14. NRSC, March 2022. *Final Report of "Glacial Lake Atlas of Indian Himalayan River Basins"*, Technical Report Published by National Remote Sensing Centre, Hyderabad.