सत्यमेव जयते

Monthly Monitoring Report

of

Glacial Lakes & Water Bodies in the Himalayan Region of Indian River Basins

(June, 2022)

Morphology & Climate Change Directorate

Central Water Commission

Department of Water Resources, River Development & Ganga Rejuvenation

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10.	Abstract (with Keywords): This document presents the details on monitoring of Glacial Lakes and water bodies in the Himalayan regionand Tibetan region, draining to India. The work has been carried out using remote sensing technique.The adopted methodology is indicated in the report. The change in water spread area for 902 GL&WBs has been worked out. The Glacial Lakes requiring vigorous monitoring have been identified for the month of June, 2022. Keywords: Glacial Lake, Water Bodies, Himalayas, Satellite Images, Remote Sensing				

Contents

List of Figures

List of Tables

ABBREVIATIONS	
AR	Arunachal Pradesh
GEE	Google Earth Engine
GL	Glacial Lake
GLOF	Glacial Lake Outburst Flood
FCC	False Colour Composite
ha	Hectare
HP	Himachal Pradesh
J&K	Jammu & Kashmir
LAT	Latitude
LONG	Longitude
LU/LC	Land Use /Land Cover
NDWI	Normalised Difference Water Index
NDMA	National Disaster Management Authority
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	Water Body

Executive Summary

The Himalayan Region (HR) is facing important challenges in view of 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 floods (GLOFs) 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.

Remote sensing technique being the most cost effective and reliable approach especially for remote and difficult to access terrain, has been applied for detecting water spread area of such lakes. For analysing and processing large number of remote sensed satellite imageries, Google Earth Engine (GEE), which is an open-source cloud computing platform, has been used. High resolution multi-spectral and microwave (SAR) images at 10m resolution from Sentinel satellite have been analysed. This facilitated in detecting lakes even in cloudy conditions.

The water spread areas for Glacial Lakes and Water Bodies has been calculated in an automatic manner. Manual digitisation of the lakes was carried out wherever required. The algorithm for automation has been developed in-house in GEE. The detailed methodology is included in this report.

For the month of June, 2022, a total of 902 Glacial Lakes and Water Bodies have been monitored. It includes 477 Glacial Lakes & Water Bodies, having water spread area greater than 50 ha, which are being monitored since 2011. All Glacial Lakes having size up to 10 ha as per NRSC inventory, 2009 have been monitored. Further, the critical Glacial lakes as identified by Swiss agency for Development and Cooperation (SDC) for NDMA in their report titled "*Synthesis report on GLOF hazard and risk across the Indian Himalayan Region*" has also been included in monitoring.

The monitoring was based on analysis of 12853 satellite images in the month of June, 2022. From disaster point of view, the base year, average area for last 5 and 10 years, has been considered to determine the maximum change. However, for 424 Glacial Lakes having size upto 10 ha or even samller only water spread area has been calculated as these were monitored for the first time this year. 12 Glacial Lakes have shown an increase in water spread area greater than 40% requiring vigorous monitoring. 6 lakes are in TAR, 2 in Nepal, 2 in Bhutan and 2 in India. The 2 GLs in India are in Sikkim and Himachal Pradesh.

1. Introduction

1.1 Background

Glacial retreat due to climate change occurring in most parts of the Hindu Kush Himalaya has given rise to the formation of numerous new Glacial Lakes. The water in these Glacial Lakes accumulates behind loose naturally formed 'glacial/moraine dams' made of ice, sand, pebbles and ice residue as the glaciers melt. Different types of lakes may have different levels of hazard potential depending upon many factors like the nature of the damming materials, the position of the lake, the 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 above-mentioned risk factors and triggering processes like ice avalanches, debris flows, rockfall, earthquake or landslides reaching a lake strongly affect the risk of a lake outburst. For instance, moraine-dammed lakes located at the snout of a glacier have a high probability of breaching with high hazard potential whereas there is a reduced risk of breaching in case of erosion lakes.

Glacial Lake Outburst Flood (GLOF) is created when water dammed by a glacier or a moraine is released suddenly. Some of the Glacial Lakes are unstable and particularly moraine dammed lakes are potentially susceptible to sudden discharge of large volumes of water and debris which causes floods downstream. Climate change is expected to alter and potentially increase the probability of lake outbursts in the future.

1.2 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 (SRS) technology has contributed significantly to the acquisition of Earth’s resources, thus helping in their better management. SRS plays a complementary role to other means of spatial data acquisitions i.e., through conventional procedures. Satellite remote sensing offers several unique advantages quick data collection, reliability, more accurate, repetitive collection, geometric integrity and digital storage, which makes it an ideal tool for mapping, inventorying and monitoring the natural resources.

Due to the remote location of Glaciers and Glacial Lakes their access is difficult, owing to tough and difficult terrain. Thus, preparation of inventory of Glacial Lakes using conventional methods requires extensive time and resources together with undergoing hardships in the field. Creating inventories and monitoring of the Glacial Lakes can be done quickly and correctly using satellite images and aerial photographs. Use of these

images and photographs for the evaluation of physical conditions of the area provides greater accuracy. The multi-stage approach using remotely sensed data and field investigation increases the ability and accuracy of the work. Visual and digital image analysis techniques integrated with techniques of geographic information systems (GIS) are very useful for the study of glacier and Glacial Lakes.

1.3 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 on monthly basis during June to October.
- To detect changes in water spread area of GL&WBs with respect to historical information & base year.
- To detect any sharp change in area of GL&WBs for disaster purpose
- To share the monitoring reports with concerned stakeholders including National Disaster Management Authority / State Disaster Management Authority.

2. Study Area &Satellite Data Used

2.1 Study Area

The present study area covers the GL&WBs lying in the region of Himalaya and Tibet that drains to India as shown in

Figure 2. The study area extends across different countries, namely, India, Nepal, Bhutan and China.

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

- Monitoring of 477 Glacial Lakes and Water Bodies, having water spread area greater than 50 ha which have been included from the inventory of Glacial Lakes & Water Bodies in the Indian Himalayan region using satellite data of the year 2009 prepared by NRSC (Ref: NRSC Report No. NRSC-RS&GISAA-WRG-CWC-Lakes-May2011-TR255).
- Monitoring of 385 Glacial Lakes, having spatial extent greater than 10 ha, which have been taken from the inventory of Glacial Lakes & Water Bodies in the Indian Himalayan region using satellite data of the year 2009 prepared by NRSC (Ref: NRSC Report No. NRSC-RS&GISAA-WRG-CWC-Lakes-May2011-TR255).
- Monitoring of 57 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.

A total of 902 Glacial Lakes and Water Bodies have been monitored. Of these, 544 are Glacial Lakes and 358 are Water Bodies. All Glacial Lakes upto size of 10 ha as per NRSC 2009 inventory and few more Glacial Lakes of size even smaller than 10 ha as identified by SDC have also been included for monitoring. The breakup of Glacial Lakes and Water Bodies is shown in Figure 1.

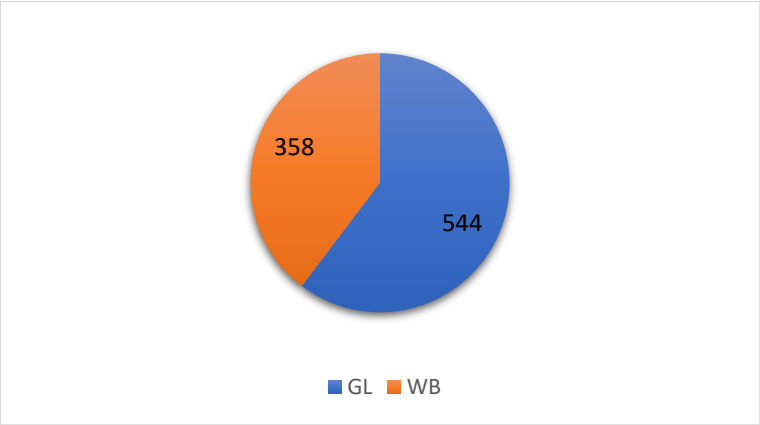

FIGURE 1: LAKE TYPE DISTRIBUTION

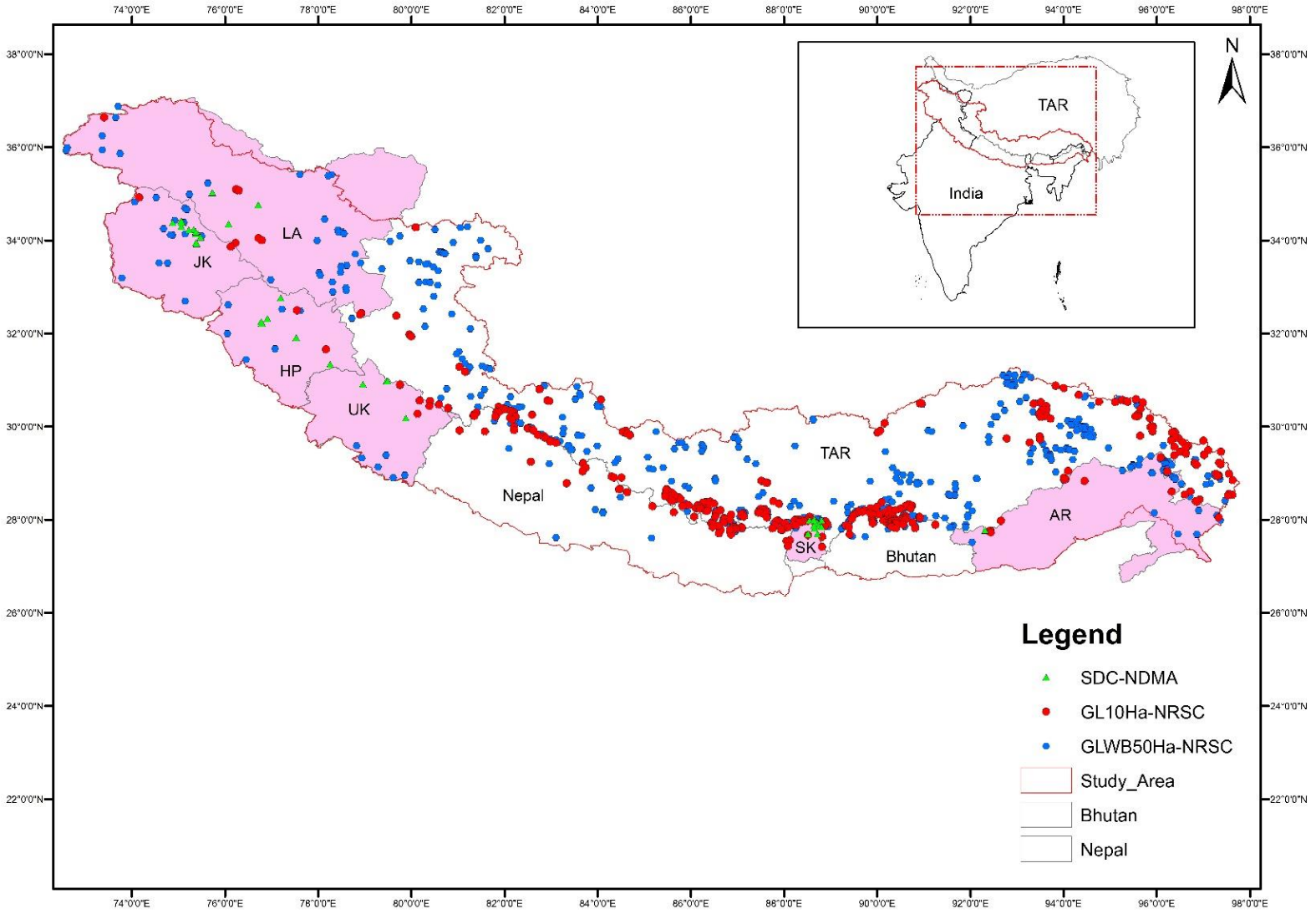

FIGURE 2: LOCATIONS OF GLACIAL LAKES & WATER BODIES IN THE STUDY AREA

2.2 Satellite Data Used

2.2.1 Sentinel-2 MSI

It is a wide-swath, high-resolution, multi-spectral imaging mission, supporting Copernicus Land Monitoring studies, including the monitoring of vegetation, soil and water cover, as well as observation of inland waterways and coastal areas. The SENTINEL-2 Multispectral Instrument (MSI) samples 13 spectral bands: four bands at 10 metres, six bands at 20 metres and three bands at 60 metres spatial resolution. The revisit frequency of each single SENTINEL-2 satellite is 10 day and the combined constellation revisit is 5 day.

2.2.2 Sentinel-1SAR (Micro)

It has C-band synthetic aperture radar (SAR) active sensor can observe the Earth's surface at any time of the day or night, regardless of weather and environmental conditions. SAR has the advantage of operating at wavelengths not impeded by cloud cover or lack of illumination.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 repeat orbit cycle of each Sentinel-1 satellite is 12-day.

The number of satellite images processed for the month of June-2022 were 12853. Out of which, 7648 are Multispectral images and 5205 were Microwave images as shown inFigure 3.

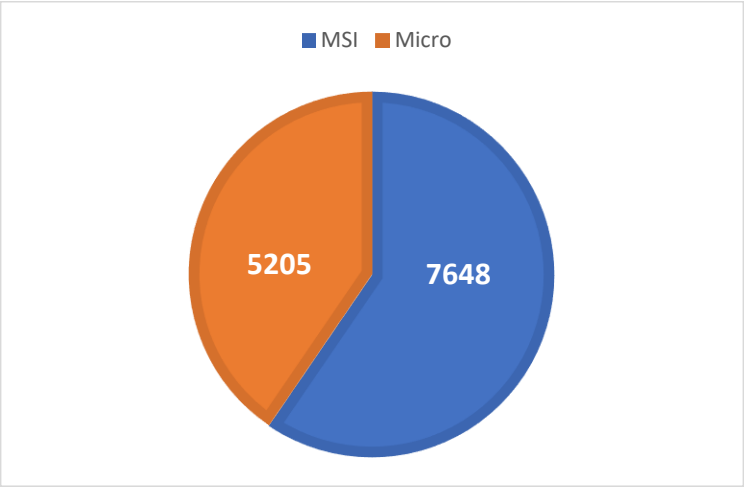

FIGURE 3: ANALYSED SATELLITE IMAGES DISTRIBUTION

3. Methodology

Google Earth Engine (GEE) being a planetary-scale platform for earth science data & analysis, has been used to process the Multispectral and Microwave Sentinel image data for the monitoring of Glacial Lakes & Water Bodies. The Microwave and Multispectral Satellite works on different principle, hence separate methodology has been applied 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. It can transmit a signal in either horizontal (H) or vertical (V) polarisation, and then receive in both H and V polarisations. The backscatter intensity of vertical transmit vertical receive (VV) 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.

It has also been observed that some lakes are required to the delineated manually based on the visual interpretation of satellite images. This is due to the fact that region being monitored has rugged terrain with steep mountains and valleys, which may lead to effects like foreshortening, layover, mountain shadows etc in the microwave/SAR data. Also, the cloud cover on many occasions hinders the performance of Multispectral satellite data. Thus, creating difficulty in interpreting the signal through automatic means.

The change detection in water spread area of Lake has been calculated for following three cases.

- Difference between the current area of lake and base year
- Difference between the current area of lake and Last five years average area
- Difference between the current area of lake and Last ten years average area

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

The detailed flow-chart of methodology for automatic monitoring of Glacial Lakes and water bodies using satellite images is given below in Figure 4.

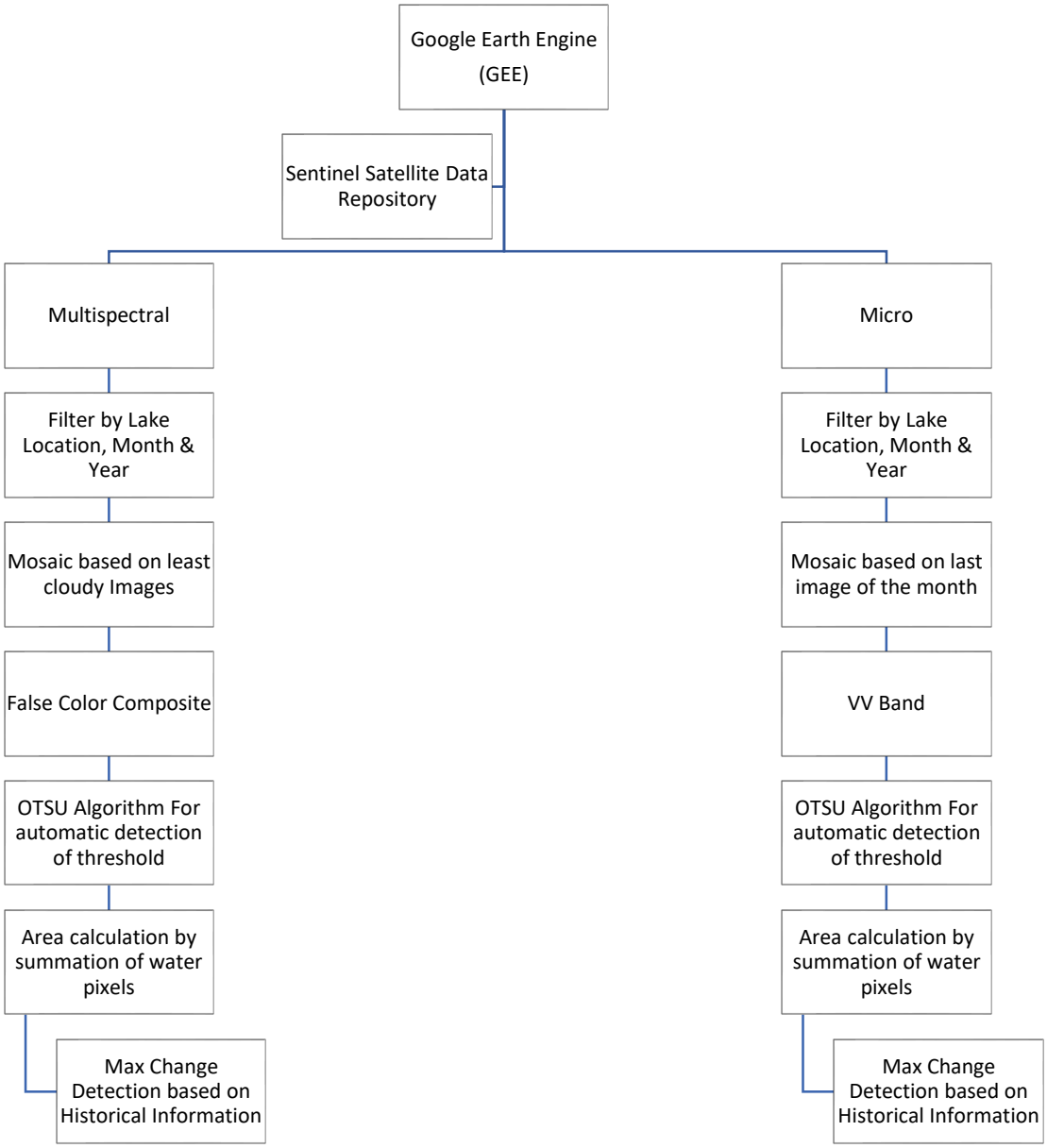

FIGURE 4: METHODOLOGY OF AUTOMATIC MONITORING OF GLACIAL LAKES & WATER BODIES USING SATELLITE IMAGES

4. Results

The water spread area of 902Glacial Lakes & Water Bodies was calculated for the month of June 2022 in anautomatic manner and manually digitised, wherever required using the methodology described above. It includes 477 GL&WBs having size greater than 50 hawhicharebeingmonitored since the year 2011.

For 477 GL&WBs, the water spread area of June, 2022 and maximum detectedchange in water spread area with respect to base year, last 5 years average area & last 10 years average area is shown inTable 1 to G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

Table 4.

The remaining 425 Glacial Lakes having size up to 10 ha or smaller were monitored for the first time and their change detection could not be performed. The water spread area for such lakes in the month of June, 2022 is shown inG stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

TABLE 5: GL&WBS HAVING WATER SPREAD GREATER THAN 50 HA WITH NO ANALYSIS OF CHANGE IN WATER SPREAD AREA

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
457	03_82F_01	NRSC	-	CH_735	5030	GL	Brahmaputr	Ø	China	17	-	-	-	

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	0						a							
458	03_77P_020	NRSC	-	CH_591	4649	WB	Brahmaputra	Kuri Chhu	China	#	58	45	50	
459	02_71P_018	NRSC	-	CH_206	4199	WB	Ganga	Arun Kosi	China	#	54	82	64	
460	02_77D_003	NRSC	-	CH_258	4364	WB	Ganga	Arun Kosi	China	#	102	82	133	
461	03_62O_028	NRSC	-	CH_373	4577	WB	Brahmaputra	Ø	China	#	902	644	635	
462	03_77L_030	NRSC	-	BH_12	5305	GL	Brahmaputra	Ø	Bhutan	#	89	73	76	
463	03_77P_005	NRSC	-	CH_576	4619	WB	Brahmaputra	Ø	China	#	110	95	97	
464	03_82J_019	NRSC	-	CH_849	3944	GL	Brahmaputra	Ø	China	#	-	64	52	

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
465	01_52E_001	NRSC	-	JK_188	5116	GL	Indus	Shyok	India	#	48	4	19	
466	01_52I_004	NRSC	-	JK_196	5141	WB	Indus	Shyok	India	#	-	63	62	
467	01_53A_002	NRSC	-	HP_10	495	WB	Indus	Sutlej	India	#	12198	11339	11603	
468	01_61C_004	NRSC	-		4495	WB	Indus	Ø		#	-	-	-	
469	01_61G_001	NRSC	-	CH_62	4973	WB	Indus	Indus	China	#	81	71	71	
470	02_63M_002	NRSC	-	NP_41	112	WB	Ganga	Rapti	Nepal	#	148	107	119	
471	02_71H_012	NRSC	-	CH_132	5379	GL	Ganga	Arun Kosi	China	#	-	129	120	
472	03_91C	NRSC	-	CH_105	4926	GL	Brahma	Ø	China	#	-	16	50	

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_005			6			putra							
473	03_91C_040	NRSC	-	AP_87	4450	WB	Brahmaputra	Lohit	India	#	-	71	60	
474	03_91C_052	NRSC	-	CH_1085	4591	WB	Brahmaputra	Lohit	China	#	-	34	38	
475	03_91C_059	NRSC	-	CH_1089	4303	WB	Brahmaputra	Dibang	China	#	-	76	72	
476	03_91C_074	NRSC	-	CH_1102	4258	GL	Brahmaputra	Dibang	China	#	-	17	21	
477	03_91D_022	NRSC	-	AP_118	3143	WB	Brahmaputra	Dibang	India	#	-	36	30	

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

#indicates frozen/ dried lakes

Table 6 to Table 7.

It was observed that 339 GL&WBs have shown increase in water spread area, 103 have shown decrease in water spread area, 15 have shown no change in water spread area and change detection for remaining Glacial Lakes could not be performed.The same is shown in Figure 5.

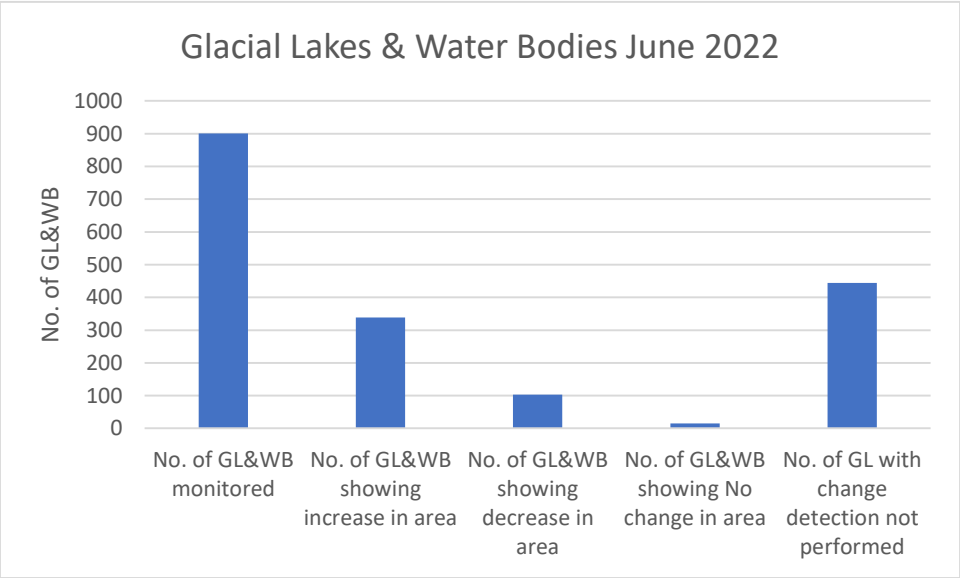

FIGURE 5: OVERALL CHANGES IN WATER SPREAD AREA OF GL&WBS FOR JUNE, 2022

5. Conclusions

- 12 Glacial Lakes of size greater than 50 ha are required **to be vigorously monitored for disaster purpose**. These lakeshaveshownincrease in water spread area greater than 40%. 6 are in TAR, 2 are in Nepal, 2 are in Bhutan and 2 are in India. The 2 GLs in India are in Sikkim and Himachal Pradesh. The details of these lakes have been highlighted inTable 1.
- 84Glacial Lakes of size greater than 50 ha have shown marginal increase in water spread area ranging from 1 to 20%, while 2 Glacial Lakes of size greater than 50 ha have shown no change and 14 Glacial Lakes of size greater than 50 ha have shown decrease in water spread area.

- Google Earth Engine (GEE) has proved to be a very useful and efficient tool in processing large information equivalent to 12853 satellite images in least possible time.
- Automatic algorithm developed in GEE has expedited the process of calculation of water spread area, which has resulted in increase of monitoring of number of lakes from 477 to 901 this year without any increase in manpower resource and financial implications.
- Use of Microwave satellite image in conjunction with multispectral satellite image (MSI) has overcome short-comings of cloud cover leading to monitoring of all 901 Lakes in all weather conditions. This has increased availability of satellite images atshorter frequency interval. This will further facilitate in reducing the monitoring interval in future.
- The use of Sentinel satellite image has increased the spatial resolution from 56mto10m leading to enhancement of monitoring accuracy. Sentinel images have also aided in improving the temporal resolution.

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*TABLE 1: LIST OF GL&WBS HAVING WATER SPREAD GREATER THAN 50 HA SHOWING MORE THAN 40% INCREASE IN AREA (**REQUIRING VIGOROUS MONITORING**)*

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
1	03_82O_062	NRSC	-	AP_55	3612	WB	Brahmaputra	Dibang	India	55	42	9	24	511
2	03_78I_085	NRSC	-	BH_166	4764	WB	Brahmaputra	Puna Tsang Chhu	Bhutan	72	-	12	31	500
3	03_82K_042	NRSC	-	CH_898	4364	WB	Brahmaputra	Ø	China	192	-	35	85	449
4	03_91C_049	NRSC	-	AP_95	4261	WB	Brahmaputra	Dibang	India	74	-	15	32	393
5	03_82O_016	NRSC	-	CH_1023	4374	WB	Brahmaputra	Dihang	China	99	94	21	41	371
6	03_82O_047	NRSC	-	CH_1039	3574	WB	Brahmaputra	Dihang	China	37	-	8	16	363
7	03_77L_077	NRSC	-	BH_45	5136	WB	Brahmaputra	Puna Tsang Chhu	Bhutan	46	55	10	29	360

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
8	03_78A_018	NRSC	-	CH_598	4880	WB	Brahmaputra	AmoChhu	China	56	53	17	30	229
9	03_91H_017	NRSC	-	CH_1182	4590	WB	Brahmaputra	Lohit	China	43	-	14	18	207
10	03_92A_005	NRSC	-	AP_203	3391	WB	Brahmaputra	Lohit	India	52	-	17	27	206
11	01_52L_008	NRSC	-	CH_1	3873	WB	Indus	Sutlej	China	98	32	101	78	206
12	03_91C_042	NRSC	-	AP_89	4531	WB	Brahmaputra	Dibang	India	54	-	19	32	184
13	03_91C_070	NRSC	-	CH_1098	4252	WB	Brahmaputra	Dibang	China	59	-	21	29	181
14	03_82K_103	NRSC	-	CH_959	3964	WB	Brahmaputra	Ø	China	41	-	15	23	173
15	03_82K_037	NRSC	-	CH_893	4147	WB	Brahmaputra	Ø	China	57	55	21	30	171
16	03_82K_018	NRSC	-	CH_874	4168	WB	Brahmaputra	Ø	China	175	175	65	92	169

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
17	03_82O_044	NRSC	-	CH_1037	3552	WB	Brahmaputra	Dihang	China	93	-	-	35	166
18	03_82K_007	NRSC	-	CH_863	4294	WB	Brahmaputra	Ø	China	130	-	49	79	165
19	03_82J_024	NRSC	-	CH_854	4362	WB	Brahmaputra	Ø	China	65	-	25	38	160
20	03_82O_054	NRSC	-	CH_1046	3311	WB	Brahmaputra	Dibang	China	49	51	19	33	158
21	03_82K_049	NRSC	-	CH_905	4180	WB	Brahmaputra	Ø	China	45	-	18	21	150
22	03_91D_080	NRSC	-	CH_1135	4295	WB	Brahmaputra	Lohit	China	49	-	25	20	145
23	03_82K_040	NRSC	-	CH_896	4329	WB	Brahmaputra	Ø	China	56	-	23	27	143
24	03_91C_034	NRSC	-	AP_84	4288	WB	Brahmaputra	Dibang	India	141	157	59	80	139
25	03_91D_107	NRSC	-	AP_163	3769	WB	Brahmaputra	Lohit	India	107	-	49	54	118

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
26	03_82K_045	NRSC	-	CH_901	4572	WB	Brahmaputra	Ø	China	49	-	28	25	96
27	01_61C_005	NRSC	-	CH_33	4495	WB	Indus	Indus	China	288	153	384	279	88
28	01_61C_005	NRSC	-	CH_33	4495	WB	Indus	Indus	China	288	153	384	279	88
29	03_91C_078	NRSC	-	CH_11106	3694	WB	Brahmaputra	Dibang	China	48	-	26	26	85
30	03_78M_016	NRSC	-	CH_617	4647	WB	Brahmaputra	DangmeChhu	China	209	151	117	128	79
31	03_91H_011	NRSC	-	CH_1176	4494	WB	Brahmaputra	Lohit	China	57	-	37	32	78
32	03_82O_061	NRSC	-	AP_54	3811	WB	Brahmaputra	Dibang	India	73	47	41	44	78
33	03_91D_009	NRSC	-	AP_108	4037	WB	Brahmaputra	Dibang	India	53	-	37	30	77
34	03_82F_016	NRSC	-	CH_741	4632	WB	Brahmaputra	Ø	China	49	-	28	31	75

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
35	03_82N_004	NRSC	-	CH_975	4290	GL	Brahmaputra	Ø	China	124	106	71	75	75
36	03_82K_036	NRSC	-	CH_892	4251	WB	Brahmaputra	Ø	China	63	64	38	36	75
37	03_78A_021	NRSC	-	SK_26	5431	GL	Brahmaputra	Teesta	India	86	56	53	50	72
38	03_82K_002	NRSC	-	CH_858	3998	WB	Brahmaputra	Ø	China	74	57	50	44	68
39	03_78I_056	NRSC	-	BH_137	4794	WB	Brahmaputra	ManasChhu&MangdeChhu	Bhutan	77	84	46	57	67
40	02_72M_016	NRSC	7G	NP_92	4572	GL	Ganga	ArunKosi	Nepal	231	139	199	163	66
41	03_77P_023	NRSC	-	CH_593	4235	WB	Brahmaputra	KuriChhu	China	71	-	50	43	65
42	03_82G_060	NRSC	-	CH_821	4577	WB	Brahmaputra	Ø	China	56	-	34	44	65
43	02_72I	NRSC	1G	NP_64	5034	GL	Ganga	Sun	Nepal	169	103	160	130	64

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_011							Kosi						
44	03_82O_029	NRSC	-	CH_1032	3345	WB	Brahmaputra	Dihang	China	72	68	44	45	64
45	03_92E_001	NRSC	-	AP_206	4206	WB	Brahmaputra	Lohit	India	49	-	43	30	63
46	01_52H_002	NRSC/SDC	4I/Very High Risk	HP_3	4101	GL	Indus	Chenab	India	99	61	97	83	62
47	03_82K_009	NRSC	-	CH_865	4168	WB	Brahmaputra	Ø	China	96	109	60	82	60
48	03_78I_048	NRSC	-	BH_129	4169	WB	Brahmaputra	ManasChhu&MangdeChhu	Bhutan	51	52	32	38	59
49	01_52H_005	NRSC	-	HP_6	4286	WB	Indus	Chenab	India	60	-	43	38	58
50	03_82G_055	NRSC	-	CH_816	4619	WB	Brahmaputra	Ø	China	49	-	31	43	58
51	03_82K	NRSC	-	CH_87	4364	WB	Brahm	Ø	China	76	85	48	54	58

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_020			6			aputra							
52	02_71L_004	NRSC	5G	CH_159	5518	GL	Ganga	ArunKosi	China	120	78	114	92	54
53	03_91D_010	NRSC	-	AP_109	3323	WB	Brahmaputra	Dibang	India	52	-	40	34	53
54	03_82O_064	NRSC	-	AP_57	3689	WB	Brahmaputra	Dihang	India	47	-	37	31	52
55	02_72I_004	NRSC	9G	CH_244	5074	GL	Ganga	Sun Kosi	China	190	125	201	174	52
56	03_82N_019	NRSC	-	CH_990	4877	WB	Brahmaputra	Ø	China	59	-	39	39	51
57	03_78E_007	NRSC	-	BH_60	5008	GL	Brahmaputra	Puna Tsang Chhu	Bhutan	70	67	47	52	49
58	03_82B_021	NRSC	-	CH_647	5041	WB	Brahmaputra	Ø	China	57	52	44	39	46
59	03_77H_023	NRSC	-	CH_492	5313	WB	Brahmaputra	Ø	China	48	-	41	33	45
60	02_78A	NRSC	194G	CH_27	5603	GL	Ganga	ArunKo	China	123	85	102	95	45

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_004			0				si						
61	03_82G_019	NRSC	-	CH_780	4460	WB	Brahmaputra	Ø	China	58	58	40	47	45
62	03_77H_003	NRSC	-	CH_478	4714	WB	Brahmaputra	Ø	China	210	231	148	145	45
63	02_77D_008	NRSC	266G	CH_263	5285	GL	Ganga	ArunKosi	China	49	-	43	34	44
64	03_71C_011	NRSC	-	CH_404	4684	WB	Brahmaputra	Ø	China	183	127	153	138	44
65	03_78I_051	NRSC	-	BH_132	5074	GL	Brahmaputra	Manas Chhu & Mangde Chhu	Bhutan	127	112	88	95	44
66	03_91H_010	NRSC	-	CH_1175	4433	WB	Brahmaputra	Lohit	China	94	-	73	66	42
67	03_77L_010	NRSC	-	CH_526	4457	WB	Brahmaputra	Ø	China	52	-	40	37	41
68	02_77D_009	NRSC	71G	CH_264	5296	GL	Ganga	ArunKosi	China	62	56	46	44	41

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
69	01_61G_003	NRSC	-	CH_64	4864	WB	Indus	Indus	China	82	80	58	64	41
70	03_83A_012	NRSC	-	AP_77	4287	WB	Brahmaputra	Dangme Chhu	India	55	60	39	46	41
71	03_91C_038	NRSC	-	AP_85	4002	WB	Brahmaputra	Dibang	India	102	-	73	85	40

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

TABLE 2: GL&WBS HAVING WATER SPREAD GREATER THAN 50 HA THAT HAVE SHOWN INCREASE IN WATER SPREAD AREA

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
72	01_52H_004	NRSC	-	HP_5	4155	GL	Indus	Chenab	India	157	-	142	114	38
73	03_82B_028	NRSC	-	CH_654	4998	WB	Brahmaputra	Ø	China	55	-	45	40	38
74	02_71P_029	NRSC	43G	CH_217	5045	GL	Ganga	ArunKosi	China	105	76	102	82	38
75	03_78E_026	NRSC	-	CH_613	5161	GL	Brahmaputra	AmoChhu	China	59	-	43	43	37
76	03_91C_046	NRSC	-	AP_92	3353	WB	Brahmaputra	Dibang	India	59	60	43	46	37
77	03_82J_025	NRSC	-	CH_855	4038	WB	Brahmaputra	Ø	China	56	59	45	41	37
78	02_62J_003	NRSC	254G	NP_19	4854	WB	Ganga	Karnal	Nepal	57	-	45	42	36
79	02_71P_054	NRSC	-	CH_242	4859		Ganga	ArunKosi	China	102	-	76	75	36
80	03_82N_030	NRSC	-	CH_10001	4462	GL	Brahmaputra	Ø	China	136	-	106	100	36

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
81	02_71L_010	NRSC	185G	CH_165	5387	GL	Ganga	Sun Kosi	China	62	-	53	46	35
82	02_71P_027	NRSC	82G	CH_215	5389	GL	Ganga	ArunKosi	China	54	-	55	40	35
83	03_91H_005	NRSC	-	CH_1170	4123	WB	Brahmaputra	Lohit	China	62	56	60	46	35
84	01_62F_010	NRSC	9I	CH_101	5250	GL	Indus	Sutlej	China	71	-	67	53	34
85	03_91H_040	NRSC	-	CH_1205	4324	WB	Brahmaputra	Lohit	China	55	-	45	41	34
86	02_71P_043	NRSC	18G	CH_231	5206	GL	Ganga	ArunKosi	China	86	66	77	64	34
87	03_78I_023	NRSC	-	BH_104	5055	GL	Brahmaputra	Manas Chhu& MangdeChhu	Bhutan	59	52	48	44	34
88	03_91D_041	NRSC	-	AP_135	3526	WB	Brahmaputra	Dibang	India	114	110	103	85	34
89	03_82K_039	NRSC	-	CH_895	4128	WB	Brahmaputra	Ø	China	176	211	131	167	34

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
90	02_71D_004	NRSC	16G	NP_45	4064	GL	Ganga	Trisuli	Nepal	100	75	98	90	33
91	02_62F_019	NRSC	144G	NP_12	5039	WB	Ganga	Karnal	Nepal	74	56	64	59	32
92	02_71P_047	NRSC	81G	CH_235	5614	GL	Ganga	ArunKosi	China	95	82	86	72	32
93	03_82B_010	NRSC	-	CH_636	4990	WB	Brahmaputra	Ø	China	54	50	47	41	32
94	03_62O_027	NRSC	-	CH_372	4575	WB	Brahmaputra	Ø	China	46	-	39	35	31
95	03_82G_051	NRSC	-	CH_812	4735	WB	Brahmaputra	Ø	China	46	-	42	35	31
96	03_82J_004	NRSC	-	CH_834	3957	GL	Brahmaputra	Ø	China	495	378	526	474	31
97	02_71P_016	NRSC	-	CH_204	4182	WB	Ganga	ArunKosi	China	163	151	139	124	31
98	03_91D_081	NRSC	-	CH_1136	3356	WB	Brahmaputra	Lohit	China	324	436	312	247	31
99	03_71K	NRSC	-	CH_42	4982	WB	Brahma	Ø	China	95	73	87	76	30

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_003			6			putra							
100	02_71P_040	NRSC	126G	CH_228	4962	WB	Ganga	ArunKosi	China	150	131	129	115	30
101	02_72I_025	NRSC	66G	NP_78	4884	GL	Ganga	Sun Kosi	Nepal	132	102	126	111	29
102	03_62J_031	NRSC	-	CH_303	4897	GL	Brahmaputra	Ø	China	224	174	218	192	29
103	03_77L_044	NRSC	-	BH_19	4385	GL	Brahmaputra	Puna Tsang Chhu	Bhutan	133	121	103	110	29
104	03_91C_044	NRSC	-	AP_90	4230	WB	Brahmaputra	Lohit	India	67	64	52	52	29
105	03_77L_043	NRSC	-	CH_552	5200	GL	Brahmaputra	KuriChhu	China	227	178	188	189	28
106	03_82J_005	NRSC	-	CH_835	4134	GL	Brahmaputra	Ø	China	74	74	58	60	28
107	03_77B_001	NRSC	-	CH_452	5039	WB	Brahmaputra	Ø	China	55	57	43	44	28
108	03_82G_024	NRSC	-	CH_785	4647	WB	Brahmaputra	Ø	China	97	108	78	76	28

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
109	02_71L_028	NRSC	38G	CH_183	5027	GL	Ganga	Sun Kosi	China	104	82	98	91	27
110	02_71P_028	NRSC	-	CH_216	4997	GL	Ganga	ArunKosi	China	56	44	58	61	27
111	02_71P_015	NRSC	-	CH_203	4153	WB	Ganga	ArunKosi	China	1211	1031	1059	950	27
112	02_71H_029	NRSC	1G	CH_149	5098	GL	Ganga	Sun Kosi	China	524	484	411	452	27
113	03_91C_045	NRSC	-	AP_91	3493	WB	Brahmaputra	Dibang	India	109	111	86	96	27
114	03_78M_022	NRSC	-	BH_197	4549	WB	Brahmaputra	DangmeChhu	Bhutan	68	-	54	56	26
115	03_82F_014	NRSC	-	CH_739	4691	GL	Brahmaputra	Ø	China	44	-	45	35	26
116	03_91C_014	NRSC	-	CH_1065	4033	GL	Brahmaputra	Ø	China	53	-	45	42	26
117	03_82J_008	NRSC	-	CH_838	4036	GL	Brahmaputra	Ø	China	208	166	167	165	26
118	02_72I	NRSC	227G	NP_76	5232	GL	Ganga	Sun	Nepal	88	82	70	72	26

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_023							Kosi						
119	03_62J_016	NRSC	-	CH_288	5303	GL	Brahmaputra	Ø	China	55	-	54	44	25
120	03_77L_033	NRSC	-	BH_13	5176	GL	Brahmaputra	Ø	Bhutan	232	186	197	185	25
121	03_82C_010	NRSC	-	CH_665	4921	WB	Brahmaputra	Ø	China	150	149	120	128	25
122	03_82K_060	NRSC	-	CH_916	4316	WB	Brahmaputra	Ø	China	85	99	71	68	25
123	01_43N_027	NRSC	-	JK_154	3683	WB	Indus	Jhelum	India	47	-	44	38	24
124	03_78E_017	NRSC	-	CH_609	5253	GL	Brahmaputra	Ø	China	47	-	38	46	24
125	03_78M_019	NRSC	-	BH_194	4697	WB	Brahmaputra	DangmeChhu	Bhutan	56	-	45	45	24
126	03_78A_001	NRSC/SDC	/High Risk	SK_9	5371	GL	Brahmaputra	Teesta	India	185	162	149	222	24
127	03_78M_020	NRSC	-	BH_195	4157	WB	Brahmaputra	DangmeChhu	Bhutan	67	59	54	56	24

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
128	03_82F_022	NRSC	-	CH_747	4200	GL	Brahmaputra	Ø	China	110	98	89	93	24
129	03_78M_003	NRSC	-	CH_614	4459	WB	Brahmaputra	DangmeChhu	China	209	215	168	186	24
130	03_82N_033	NRSC	-	CH_1004	4357	GL	Brahmaputra	Ø	China	83	86	69	67	24
131	03_77D_008	NRSC	-	SK_8	5039	GL	Brahmaputra	Teesta	India	43	-	46	35	23
132	03_77L_066	NRSC	-	BH_34	4896	GL	Brahmaputra	ManasChhu&MangdeChhu	Bhutan	162	134	132	133	23
133	03_78A_014	NRSC/SDC	/Very High Risk	SK_20	5234	GL	Brahmaputra	Teesta	India	154	132	140	125	23
134	03_91H_029	NRSC	-	CH_1194	3325	WB	Brahmaputra	Lohit	China	45	-	49	37	22
135	02_78A_005	NRSC	-	CH_271	5376	GL	Ganga	ArunKosi	China	111	91	110	116	22
136	01_52J	NRSC	-	JK_205	5576	WB	Indus	Shyok	India	62	61	56	51	22

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_009													
137	01_42H_005	NRSC	-	JK_5	2237	WB	Indus	Gilgit	India	66	72	60	54	22
138	03_77P_021	NRSC	-	CH_592	4749	GL	Brahmaputra	DangmeChhu	China	55	64	45	47	22
139	02_53O_001	NRSC	-	UK_4	1968	WB	Ganga	Ramganga	India	40	-	40	33	21
140	01_61C_002	NRSC	-	CH_30	4494	WB	Indus	Indus	China	865	717	822	779	21
141	02_71L_026	NRSC	73G	CH_181	5057	GL	Ganga	Sun Kosi	China	68	56	67	62	21
142	03_62O_040	NRSC	-	CH_385	4896	WB	Brahmaputra	Ø	China	135	112	119	113	21
143	03_62K_012	NRSC	-	CH_316	5368	GL	Brahmaputra	Ø	China	91	78	85	75	21
144	02_72I_027	NRSC	41G	NP_80	4977	GL	Ganga	Sun Kosi	Nepal	88	78	73	73	21
145	03_77D_002	NRSC	-	SK_2	5156	GL	Brahmaputra	Teesta	India	116	112	101	96	21

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
146	01_43K_010	NRSC	-	JK_111	3946	WB	Indus	Jhelum	India	72	65	60	60	20
147	01_61B_003	NRSC	-	CH_28	5074	WB	Indus	Indus	China	232	218	193	196	20
148	02_71P_022	NRSC	34G	CH_210	5439	GL	Ganga	ArunKosi	China	84	82	82	70	20
149	03_82K_006	NRSC	-	CH_862	4523	WB	Brahmaputra	Ø	China	48	48	40	44	20
150	03_77P_012	NRSC	-	CH_583	4975	WB	Brahmaputra	Ø	China	67	73	61	56	20
151	03_77P_006	NRSC	-	CH_577	4616	WB	Brahmaputra	Ø	China	5172	5796	5293	4301	20
152	03_77L_035	NRSC	-	BH_14	5486	GL	Brahmaputra	Ø	Bhutan	59	71	49	52	20
153	03_77L_014	NRSC	-	CH_530	5289	WB	Brahmaputra	Ø	China	43	-	37	36	19
154	03_82K_075	NRSC	-	CH_931	4511	WB	Brahmaputra	Ø	China	121	-	120	102	19
155	01_61	NRSC	-	CH_38	4495	WB	Indus	Indus	China	112	94	118	121	19

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	C_010													
156	02_71H_003	NRSC	-	CH_123	4649	WB	Ganga	ArunKosi	China	230	193	220	211	19
157	02_72M_007	NRSC	33G	CH_253	4950	GL	Ganga	ArunKosi	China	105	88	97	89	19
158	03_78E_029	NRSC	-	BH_73	4250	WB	Brahmaputra	Puna Tsang Chhu	Bhutan	33	-	33	28	18
159	03_82G_050	NRSC	-	CH_811	4734	WB	Brahmaputra	Ø	China	40	-	40	34	18
160	03_82K_017	NRSC	-	CH_873	4397	WB	Brahmaputra	Ø	China	172	-	146	155	18
161	03_62J_026	NRSC	-	CH_298	5078	GL	Brahmaputra	Ø	China	136	115	123	116	18
162	03_62K_009	NRSC	-	CH_313	5079	GL	Brahmaputra	Ø	China	314	265	312	291	18
163	03_77L_042	NRSC	-	CH_551	5057	GL	Brahmaputra	KuriChhu	China	71	62	61	60	18
164	03_77P_009	NRSC	-	CH_580	5086	WB	Brahmaputra	Ø	China	118	104	106	100	18

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
165	03_82G_023	NRSC	-	CH_784	4377	WB	Brahmaputra	Ø	China	77	76	70	65	18
166	02_72I_003	NRSC	319G	NP_59	4762	GL	Ganga	Sun Kosi	Nepal	42	-	42	36	17
167	03_78E_023	NRSC	-	CH_612	5291	GL	Brahmaputra	Ø	China	56	-	48	56	17
168	03_78E_028	NRSC	-	BH_72	2161	WB	Brahmaputra	Puna Tsang Chhu	Bhutan	41	-	44	35	17
169	03_82E_002	NRSC	-	CH_720	5008	WB	Brahmaputra	Ø	China	720	675	701	613	17
170	02_72M_005	NRSC	139G	CH_251	5141	GL	Ganga	ArunKosi	China	81	79	78	69	17
171	01_52C_003	NRSC	7I	JK_187	4512	GL	Indus	Indus	India	57	-	60	49	16
172	02_72M_009	NRSC	51G	NP_86	4932	GL	Ganga	Tamur Kosi	Nepal	65	-	64	56	16
173	03_62O_024	NRSC	-	CH_369	4637	WB	Brahmaputra	Ø	China	856	740	894	814	16

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
174	03_82G_035	NRSC	-	CH_796	4386	WB	Brahmaputra	Ø	China	86	80	88	74	16
175	01_61C_011	NRSC	-	CH_39	4494	WB	Indus	Indus	China	500	434	539	472	15
176	01_62E_004	NRSC	-	CH_79	5161	WB	Indus	Indus	China	260	227	248	238	15
177	02_78A_003	NRSC	24G	CH_269	5522	GL	Ganga	ArunKosi	China	150	131	152	137	15
178	03_82A_004	NRSC	-	CH_623	5008	WB	Brahmaputra	Ø	China	48	-	49	42	14
179	03_82K_074	NRSC	-	CH_930	4553	WB	Brahmaputra	Ø	China	73	-	68	64	14
180	03_82O_042	NRSC	-	AP_49	3093	WB	Brahmaputra	Dibang	India	41	-	43	36	14
181	01_53E_001	NRSC	-	HP_12	921	WB	Indus	Beas	India	80	70	109	95	14
182	03_82B_005	NRSC	-	CH_631	4888	WB	Brahmaputra	Ø	China	232	215	211	203	14
183	03_77L	NRSC	-	CH_53	5340	WB	Brahma	Ø	China	81	76	75	71	14

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_017			3			putra							
184	01_61C_021	NRSC	-	CH_49	4349	WB	Indus	Indus	China	1216	1147	1195	1071	14
185	03_78E_002	NRSC	-	BH_57	5110	GL	Brahmaputra	Puna Tsang Chhu	Bhutan	40	59	35	40	14
186	01_61G_002	NRSC	-	CH_63	4663	WB	Indus	Indus	China	1378	1218	1308	1264	13
187	03_82A_007	NRSC	-	CH_626	4911	WB	Brahmaputra	Ø	China	98	87	93	88	13
188	03_82G_048	NRSC	-	CH_809	4663	WB	Brahmaputra	Ø	China	43	38	46	43	13
189	03_62O_042	NRSC	-	CH_387	4964	WB	Brahmaputra	Ø	China	62	58	56	55	13
190	01_43N_022	NRSC	-	JK_149	4243	WB	Indus	Jhelum	India	77	74	72	68	13
191	02_71L_006	NRSC	3G	CH_161	5365	GL	Ganga	ArunKosi	China	387	372	380	341	13
192	03_77L_013	NRSC	-	CH_529	5191	WB	Brahmaputra	Ø	China	355	342	327	315	13

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
193	03_82B_015	NRSC	-	CH_641	5124	WB	Brahmaputra	Ø	China	86	84	78	76	13
194	01_43N_030	NRSC	-	JK_157	3799	WB	Indus	Jhelum	India	86	87	76	77	13
195	03_77D_005	NRSC/SDC	/Very High Risk	SK_5	5249	GL	Brahmaputra	Teesta	India	95	98	94	84	13
196	03_77L_032	NRSC	-	CH_547	4669	GL	Brahmaputra	Kuri	China	90	111	80	82	13
197	03_82B_020	NRSC	-	CH_646	4986	WB	Brahmaputra	Ø	China	46	-	47	41	12
198	02_72I_014	NRSC	6G	NP_67	4574	GL	Ganga	Sun Kosi	Nepal	167	149	164	163	12
199	03_62J_011	NRSC	-	CH_283	5181	WB	Brahmaputra	Ø	China	398	355	380	365	12
200	03_62O_038	NRSC	-	CH_383	4893	WB	Brahmaputra	Ø	China	143	128	136	130	12
201	03_82A_002	NRSC	-	CH_621	4905	WB	Brahmaputra	Ø	China	394	351	382	355	12

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
202	01_43N_020	NRSC	-	JK_147	4112	WB	Indus	Jhelum	India	65	65	61	58	12
203	03_78A_009	NRSC	-	SK_16	5044	GL	Brahmaputra	Teesta	India	58	61	55	52	12
204	03_77L_068	NRSC	-	BH_36	4764	WB	Brahmaputra	KuriChhu	Bhutan	77	82	69	73	12
205	01_52G_001	NRSC	-	JK_189	5008	WB	Indus	Shyok	India	42	-	44	38	11
206	01_52J_005	NRSC	-	JK_201	5430	WB	Indus	Shyok	India	41	-	44	37	11
207	02_71P_019	NRSC	-	CH_207	4199	GL	Ganga	ArunKosi	China	51	-	55	46	11
208	03_62K_002	NRSC	-	CH_306	4858	WB	Brahmaputra	Ø	China	49	-	51	44	11
209	03_62O_032	NRSC	-	CH_377	5012	WB	Brahmaputra	Ø	China	50	-	55	45	11
210	03_78E_010	NRSC	-	CH_606	4582	WB	Brahmaputra	Ø	China	41	-	43	37	11
211	03_71	NRSC	-	CH_44	4738	WB	Brahma	Ø	China	115	104	115	109	11

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	O_006			2			putra							
212	03_82L_009	NRSC	-	CH_971	3893	GL	Brahmaputra	Ø	China	60	55	60	54	11
213	01_62E_005	NRSC	-	CH_80	5174	WB	Indus	Indus	China	207	193	198	187	11
214	03_62J_032	NRSC	-	CH_304	4857	GL	Brahmaputra	Ø	China	91	89	89	82	11
215	01_43N_032	NRSC	-	JK_159	3595	WB	Indus	Jhelum	India	55	-	61	50	10
216	02_71H_021	NRSC	76G	CH_141	4463	GL	Ganga	Trisuli	China	44	-	48	40	10
217	02_71L_002	NRSC	-	CH_157	5261	WB	Ganga	ArunKosi	China	78	71	81	79	10
218	03_71G_013	NRSC	-	CH_422	4543	WB	Brahmaputra	Ø	China	250	228	277	250	10
219	01_61C_022	NRSC	-	CH_50	4339	WB	Indus	Indus	China	1610	1494	1560	1459	10
220	01_52K_010	NRSC	-	JK_218	5313	WB	Indus	Shyok	India	150	148	140	136	10

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
221	02_62P_003	NRSC	4G	NP_36	4937	GL	Ganga	Trisuli	Nepal	328	330	320	298	10
222	03_71C_003	NRSC	-	CH_396	5412	GL	Brahmaputra	Ø	China	49	-	52	45	9
223	01_61C_024	NRSC	-	CH_52	4323	WB	Indus	Indus	China	5153	4733	5107	4842	9
224	01_61C_014	NRSC	-	CH_42	4279	WB	Indus	Indus	China	326	305	311	298	9
225	02_71L_023	NRSC	39G	CH_178	5106	GL	Ganga	ArunKosi	China	132	124	128	121	9
226	03_77D_003	NRSC	-	SK_3	5098	WB	Brahmaputra	Teesta	India	99	97	93	91	9
227	03_77H_011	NRSC	-	BH_4	4963	GL	Brahmaputra	Ø	Bhutan	155	161	158	142	9
228	01_43E_023	NRSC	-	JK_47	4155	WB	Indus	Gilgit	India	87	96	83	80	9
229	03_82K_080	NRSC	-	CH_936	4530	WB	Brahmaputra	Ø	China	40	-	49	37	8
230	03_71	NRSC	-	CH_42	4619	WB	Brahma	Ø	China	1339	1236	1461	1318	8

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	G_011			0			putra							
231	03_77P_019	NRSC	-	CH_590	4637	WB	Brahmaputra	DangmeChhu	China	255	237	263	240	8
232	03_82B_009	NRSC	-	CH_635	4963	WB	Brahmaputra	Ø	China	180	176	174	166	8
233	01_43N_001	NRSC	-	JK_128	4142	WB	Indus	Shingo (Indus)	India	132	131	124	122	8
234	03_82B_002	NRSC	-	CH_628	4906	WB	Brahmaputra	Ø	China	455	449	436	422	8
235	01_52K_014	NRSC	-	JK_222	4535	WB	Indus	Indus	India	442	446	413	410	8
236	01_61C_023	NRSC	-	CH_51	4350	WB	Indus	Indus	China	648	672	622	599	8
237	03_82G_017	NRSC	-	CH_778	4437	WB	Brahmaputra	Ø	China	54	59	51	50	8
238	02_71H_035	NRSC	-	CH_155	4366	WB	Ganga	Sun Kosi	China	44	-	47	41	7
239	03_77D_004	NRSC/SDC	/Very High Risk	SK_4	5287	GL	Brahmaputra	Teesta	India	120	113	122	112	7

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
240	02_71L_013	NRSC	58G	CH_168	5324	GL	Ganga	Sun Kosi	China	60	57	59	56	7
241	03_62O_041	NRSC	-	CH_386	4963	WB	Brahmaputra	Ø	China	219	208	214	205	7
242	02_71P_025	NRSC	-	CH_213	4807	WB	Ganga	ArunKosi	China	114	110	127	107	7
243	03_82B_008	NRSC	-	CH_634	4928	WB	Brahmaputra	Ø	China	272	262	262	254	7
244	03_71G_006	NRSC	-	CH_415	5065	WB	Brahmaputra	Ø	China	998	970	955	933	7
245	02_72M_006	NRSC	349G	CH_252	5188	GL	Ganga	ArunKosi	China	65	64	66	61	7
246	03_77H_030	NRSC	-	CH_495	4802	WB	Brahmaputra	Ø	China	60	62	58	56	7
247	01_52J_001	NRSC	8I	JK_197	5311	GL	Indus	Shyok	India	98	104	96	92	7
248	03_91C_069	NRSC	-	AP_101	3245	WB	Brahmaputra	Dibang	India	48	72	46	45	7
249	03_78	NRSC	-	BH_18	4496	WB	Brahma	Dangm	Bhutan	35	-	35	33	6

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	M_010			8			putra	eChhu						
250	02_71H_028	NRSC	15G	CH_148	5174	WB	Ganga	Sun Kosi	China	205	194	194	195	6
251	03_71G_014	NRSC	-	CH_423	4606	WB	Brahmaputra	Ø	China	148	139	222	181	6
252	01_61C_015	NRSC	-	CH_43	4280	WB	Indus	Indus	China	816	777	832	770	6
253	01_62E_006	NRSC	-	CH_81	5055	WB	Indus	Indus	China	537	516	522	506	6
254	01_52K_012	NRSC	-	JK_220	4695	WB	Indus	Indus	India	165	160	159	156	6
255	03_62N_009	NRSC	-	CH_326	5241	WB	Brahmaputra	Ø	China	298	289	292	280	6
256	03_62N_022	NRSC	-	CH_339	4599	WB	Brahmaputra	Ø	China	198	193	194	187	6
257	01_42H_001	NRSC	-	JK_1	4292	WB	Indus	Gilgit	India	270	264	268	254	6
258	01_61C_016	NRSC	-	CH_44	4289	WB	Indus	Indus	China	382	377	364	360	6

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
259	01_52K_011	NRSC	-	JK_219	5291	WB	Indus	Shyok	India	180	183	175	170	6
260	03_77H_008	NRSC	-	CH_482	4570	WB	Brahmaputra	Ø	China	1205	1250	1134	1147	6
261	01_43E_006	NRSC	-	JK_30	4186	WB	Indus	Gilgit	India	70	75	66	66	6
262	01_61D_003	NRSC	-	CH_55	4453	WB	Indus	Indus	China	53	64	62	50	6
263	03_77H_013	NRSC	-	CH_484	4950	GL	Brahmaputra	Ø	China	45	-	52	43	5
264	01_62E_003	NRSC	-	CH_78	5104	WB	Indus	Indus	China	155	148	157	148	5
265	03_71O_009	NRSC	-	CH_445	4302	WB	Brahmaputra	Ø	China	2209	2111	2210	2129	5
266	03_71O_010	NRSC	-	CH_446	4296	WB	Brahmaputra	Ø	China	890	850	1017	920	5
267	01_43A_001	NRSC	-	JK_22	3641	WB	Indus	Gilgit	India	203	196	208	194	5
268	03_82J	NRSC	-	CH_85	4315	WB	Brahma	Ø	China	104	101	103	99	5

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_023			3			putra							
269	03_78E_019	NRSC	-	CH_611	5022	GL	Brahmaputra	Ø	China	61	60	62	58	5
270	03_82D_003	NRSC	-	CH_709	4408	WB	Brahmaputra	Ø	China	45	46	44	43	5
271	03_62N_021	NRSC	-	CH_338	5432	WB	Brahmaputra	Ø	China	192	200	185	183	5
272	01_52J_002	NRSC	-	JK_198	5359	WB	Indus	Shyok	India	62	67	61	59	5
273	01_61D_002	NRSC	-	CH_54	4313	WB	Indus	Indus	China	1535	1654	1562	1461	5
274	01_42H_003	NRSC	-	JK_3	3854	WB	Indus	Gilgit	India	106	119	109	101	5
275	03_82K_077	NRSC	-	CH_933	4590	WB	Brahmaputra	Ø	China	98	-	99	94	4
276	01_43J_007	NRSC	6I	JK_85	3708	WB	Indus	Jhelum	India	96	92	102	92	4
277	01_52O_001	NRSC	-	CH_4	4242	WB	Indus	Shyok	China	68957	66075	67960	66500	4

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
278	01_61C_001	NRSC	-	CH_29	4526	WB	Indus	Indus	China	11732	11304	11562	11424	4
279	01_62J_001	NRSC	-	CH_102	4784	WB	Indus	Sutlej	China	5750	5525	5774	5583	4
280	02_71H_002	NRSC	-	CH_122	4650	WB	Ganga	Arun Kosi	China	2448	2353	2466	2390	4
281	02_71H_008	NRSC	-	CH_128	5152	GL	Ganga	Arun Kosi	China	103	99	109	101	4
282	03_82B_006	NRSC	-	CH_632	4837	WB	Brahmaputra	Ø	China	125	121	125	120	4
283	02_62K_012	NRSC	-	NP_30	3653	WB	Ganga	Bheri	Nepal	492	481	494	471	4
284	02_71H_015	NRSC	-	CH_135	5367	GL	Ganga	Arun Kosi	China	545	540	537	524	4
285	03_77L_001	NRSC	-	CH_520	4443	WB	Brahmaputra	Ø	China	56718	56442	54547	54439	4
286	03_82B_007	NRSC	-	CH_633	4964	WB	Brahmaputra	Ø	China	203	206	207	196	4

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
287	01_52J_006	NRSC	-	JK_202	5401	WB	Indus	Shyok	India	104	107	104	100	4
288	03_62O_039	NRSC	-	CH_384	4555	WB	Brahmaputra	Ø	China	298	306	294	286	4
289	02_71H_027	NRSC	2G	CH_147	5242	GL	Ganga	Sun Kosi	China	454	480	441	437	4
290	03_82A_003	NRSC	-	CH_622	4896	WB	Brahmaputra	Ø	China	95	100	92	91	4
291	01_52N_001	NRSC	-	CH_3	4964	WB	Indus	Indus	China	12246	11883	12283	12099	3
292	01_61D_004	NRSC	-	CH_56	4991	WB	Indus	Indus	China	515	501	546	511	3
293	03_77K_015	NRSC	-	CH_517	4455	WB	Brahmaputra	Ø	China	109	106	108	106	3
294	03_91C_025	NRSC	-	CH_1076	4022	GL	Brahmaputra	Ø	China	110	107	113	107	3
295	01_43A_002	NRSC	-	JK_23	3790	WB	Indus	Gilgit	India	98	96	104	95	3
296	03_77L	NRSC	-	BH_15	5139	GL	Brahma	Ø	Bhutan	597	599	599	578	3

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_037						putra							
297	03_91C_024	NRSC	-	CH_1075	3977	GL	Brahmaputra	Ø	China	287	287	298	280	3
298	03_71K_002	NRSC	-	CH_425	4974	WB	Brahmaputra	Ø	China	2342	2369	2288	2280	3
299	03_82E_007	NRSC	-	CH_725	5043	WB	Brahmaputra	Ø	China	67	68	68	65	3
300	02_71D_007	NRSC	-	NP_48	700	WB	Ganga	Trisuli	Nepal	288	294	281	280	3
301	01_62A_003	NRSC	-	CH_69	5142	WB	Indus	Indus	China	1348	1385	1343	1304	3
302	02_71D_008	NRSC	-	NP_49	639	WB	Ganga	Trisuli	Nepal	101	104	102	98	3
303	03_62K_001	NRSC	-	CH_305	4834	WB	Brahmaputra	Ø	China	386	396	395	376	3
304	02_71H_017	NRSC	-	CH_137	5314	GL	Ganga	Arun Kosi	China	490	512	485	475	3
305	01_52G_003	NRSC	-	JK_191	4533	WB	Indus	Indus	India	1350	1609	1315	1335	3

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
306	03_77L_067	NRSC	-	BH_35	5231	GL	Brahmaputra	Manas Chhu& MangdeChhu	Bhutan	70	87	68	71	3
307	01_62F_003	NRSC	-	CH_94	4586	WB	Indus	Satlej	China	41749	40806	41185	41037	2
308	03_62N_004	NRSC	-	CH_321	5168	WB	Brahmaputra	Ø	China	913	899	925	900	2
309	03_77L_051	NRSC	-	BH_22	4548	GL	Brahmaputra	Puna Tsang Chhu	Bhutan	145	142	162	150	2
310	01_52K_004	NRSC	-	JK_212	4293	WB	Indus	Shyok	India	5842	5797	5817	5737	2
311	02_71H_001	NRSC	-	CH_121	4580	WB	Ganga	Arun Kosi	China	27331	26974	26951	26898	2
312	03_77L_012	NRSC	-	CH_528	5014	WB	Brahmaputra	Ø	China	29417	28995	29060	28965	2
313	02_77D_007	NRSC	244G	CH_262	5215	GL	Ganga	Arun Kosi	China	57	58	59	56	2

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
314	03_82E_004	NRSC	-	CH_722	5049	WB	Brahmaputra	Ø	China	47	48	48	46	2
315	01_43K_014	NRSC	-	JK_115	3521	WB	Indus	Jhelum	India	128	134	138	126	2
316	03_78I_018	NRSC	-	BH_99	5083	GL	Brahmaputra	Puna Tsang Chhu	Bhutan	66	69	68	65	2
317	03_77J_003	NRSC	-	CH_499	5039	WB	Brahmaputra	Ø	China	86	91	85	84	2
318	03_78E_009	NRSC	-	CH_605	4580	WB	Brahmaputra	Ø	China	168	176	168	164	2
319	01_52K_016	NRSC	-	JK_224	4675	WB	Indus	Sutlej	India	524	555	523	514	2
320	01_62E_015	NRSC	-	CH_90	5415	WB	Indus	Sutlej	China	47	50	49	46	2
321	01_61F_003	NRSC	-	CH_60	5256	WB	Indus	Indus	China	524	565	536	512	2
322	03_62N_001	NRSC	-	CH_318	5102	WB	Brahmaputra	Ø	China	14434	14352	14856	14616	1

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
323	03_78A_013	NRSC	-	SK_19	5470	GL	Brahmaputra	Teesta	India	75	74	81	77	1
324	03_82F_008	NRSC	-	CH_733	4828	WB	Brahmaputra	Ø	China	84	84	88	83	1
325	03_62N_017	NRSC	-	CH_334	5454	WB	Brahmaputra	Ø	China	78	79	80	77	1
326	01_61C_018	NRSC	-	CH_46	4291	WB	Indus	Indus	China	1916	1958	2037	1901	1
327	03_82F_004	NRSC	-	CH_729	4508	WB	Brahmaputra	Ø	China	700	713	701	690	1
328	01_43J_017	NRSC	3I	JK_95	3580	WB	Indus	Jhelum	India	155	160	159	153	1
329	02_71H_007	NRSC	-	CH_127	5149	GL	Ganga	Arun Kosi	China	118	122	120	117	1
330	03_82E_003	NRSC	-	CH_721	5027	WB	Brahmaputra	Ø	China	95	98	95	94	1
331	01_62F_002	NRSC	-	CH_93	4592	WB	Indus	Sutlej	China	320	334	320	316	1
332	03_82	NRSC	-	CH_80	4523	WB	Brahma	Ø	China	70	73	74	69	1

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	G_045			6			putra							
333	03_91C_029	NRSC	-	CH_1078	4229	WB	Brahmaputra	Ø	China	213	221	218	211	1
334	01_52K_009	NRSC	-	JK_217	4921	WB	Indus	Shyok	India	193	205	196	191	1
335	01_43J_020	NRSC	-	JK_98	1584	WB	Indus	Jhelum	India	166	185	168	164	1
336	01_62E_010	NRSC	-	CH_85	5233	WB	Indus	Indus	China	148	164	155	146	1
337	03_77L_027	NRSC	-	CH_543	4531	WB	Brahmaputra	Kuri Chhu	China	170	188	173	168	1
338	01_52O_003	NRSC	-	CH_6	4252	WB	Indus	Indus	China	183	220	196	181	1
339	01_43J_021	NRSC	-	JK_99	1582	WB	Indus	Jhelum	India	999	1305	992	1028	1

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

TABLE 3: GL&WBS HAVING WATER SPREAD GREATER THAN 50 HA THAT HAVE SHOWN NO CHANGE IN WATER SPREAD AREA

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
340	03_78A_003	NRSC/SDC	/Very High Risk	SK_11	4977	GL	Brahmaputra	Teesta	India	57	-	74	57	0
341	03_91H_067	NRSC	-	AP_185	3791	WB	Brahmaputra	Lohit	India	44	-	44	47	0
342	03_62J_015	NRSC	-	CH_287	5207	WB	Brahmaputra	Ø	China	80	80	85	82	0
343	03_71G_007	NRSC	-	CH_416	5153	WB	Brahmaputra	Ø	China	187	188	189	187	0
344	03_82D_004	NRSC	-	CH_710	4481	WB	Brahmaputra	Ø	China	372	375	382	372	0
345	03_78E_012	NRSC	-	CH_607	4576	WB	Brahmaputra	Ø	China	268	274	280	267	0
346	02_71L_003	NRSC	-	CH_158	5324	WB	Ganga	Arun Kosi	China	268	276	273	267	0
347	03_62J	NRSC	-	CH_28	4934	WB	Brahm	Ø	China	910	935	933	911	0

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_013			5			aputra							
348	03_82F_030	NRSC	-	CH_755	3485	WB	Brahmaputra	Ø	China	2662	2735	2694	2665	0
349	03_77H_012	NRSC	-	CH_483	4723	GL	Brahmaputra	Ø	China	76	81	80	76	0
350	01_52O_005	NRSC	-	CH_8	4358	WB	Indus	Indus	China	760	829	792	757	0
351	03_82K_068	NRSC	-	CH_924	4320	WB	Brahmaputra	Ø	China	50	55	54	50	0
352	03_77P_017	NRSC	-	CH_588	4751	WB	Brahmaputra	DangmeChhu	China	2100	2357	2097	2184	0
353	03_82B_014	NRSC	-	CH_640	4825	WB	Brahmaputra	Ø	China	127	155	152	127	0
354	03_77P_013	NRSC	-	CH_584	5155	WB	Brahmaputra	Ø	China	48	64	52	48	0

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

TABLE 4: GL&WBS HAVING WATER SPREAD GREATER THAN 50 HA THAT HAVE SHOWN DECREASE IN WATER SPREAD AREA

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
355	01_52L_002	NRSC	-	JK_226	4986	WB	Indus	Indus	India	400	406	423	408	-1
356	02_71L_001	NRSC	-	CH_156	5106	WB	Ganga	Arun Kosi	China	80	81	85	82	-1
357	02_77D_006	NRSC	-	CH_261	4894	GL	Ganga	Arun Kosi	China	88	89	92	97	-1
358	03_82B_004	NRSC	-	CH_630	4893	WB	Brahmaputra	Ø	China	97	98	103	98	-1
359	03_71P_001	NRSC	-	CH_448	5302	WB	Brahmaputra	Ø	China	126	130	130	127	-1
360	01_61C_012	NRSC	-	CH_40	4282	WB	Indus	Indus	China	304	317	330	308	-1
361	01_52I_003	NRSC	-	JK_195	5159	WB	Indus	Shyok	India	167	186	211	169	-1
362	03_77H_020	NRSC	-	CH_490	4473	WB	Brahmaputra	Ø	China	4499	4976	4525	4594	-1

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
363	03_91C_064	NRSC	-	AP_100	3972	WB	Brahmaputra	Dibang	India	64	-	72	65	-2
364	02_71L_032	NRSC	122G	CH_187	5250	GL	Ganga	Sun Kosi	China	50	51	51	51	-2
365	01_52L_001	NRSC	-	JK_225	4523	WB	Indus	Sutlej	India	13824	14351	14180	14105	-2
366	01_62F_001	NRSC	-	CH_92	4571	WB	Indus	Sutlej	China	24655	25680	25164	25241	-2
367	03_77K_017	NRSC	-	CH_519	4448	WB	Brahmaputra	Ø	China	3652	3807	3760	3734	-2
368	03_77L_003	NRSC	-	CH_521	4434	WB	Brahmaputra	Ø	China	3947	4113	4016	4022	-2
369	03_77N_004	NRSC	-	CH_563	3890	WB	Brahmaputra	Ø	China	1201	1257	1238	1231	-2
370	02_71L_011	NRSC	61G	CH_166	5439	GL	Ganga	Sun Kosi	China	52	55	54	53	-2
371	01_43P_002	NRSC	-	JK_167	669	WB	Indus	Ravi	India	54	58	59	55	-2

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
372	03_71K_006	NRSC	-	CH_429	4847	WB	Brahmaputra	Ø	China	1991	2173	2088	2036	-2
373	02_62P_004	NRSC	-	NP_37	807	WB	Ganga	Trisuli	Nepal	375	385	394	389	-3
374	03_62O_030	NRSC	-	CH_375	5013	WB	Brahmaputra	Ø	China	96	99	111	101	-3
375	03_82J_017	NRSC	-	CH_847	3829	WB	Brahmaputra	Ø	China	272	287	284	279	-3
376	03_62J_012	NRSC	-	CH_284	4883	WB	Brahmaputra	Ø	China	154	164	168	159	-3
377	03_92A_006	NRSC	-	AP_204	1178	WB	Brahmaputra	Lohit	India	76	82	80	78	-3
378	03_82F_007	NRSC	-	CH_732	4801	GL	Brahmaputra	Ø	China	110	120	119	113	-3
379	03_62J_001	NRSC	-	CH_273	5449	WB	Brahmaputra	Ø	China	136	151	143	140	-3
380	03_77L_072	NRSC	-	BH_40	5201	GL	Brahmaputra	Manas Chhu&	Bhutan	77	88	79	82	-3

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
								MangdeChhu						
381	03_77H_018	NRSC	-	CH_488	4699	WB	Brahmaputra	Ø	China	72	75	83	77	-4
382	03_77L_011	NRSC	-	CH_527	4533	WB	Brahmaputra	Ø	China	1105	1282	1200	1150	-4
383	03_71O_002	NRSC	-	CH_438	4909	WB	Brahmaputra	Ø	China	42	-	49	44	-5
384	01_61F_004	NRSC	-	CH_61	4814	WB	Indus	Indus	China	35372	37181	39073	38352	-5
385	03_71B_002	NRSC	-	CH_392	5388	WB	Brahmaputra	Ø	China	7764	8251	8211	8132	-5
386	03_77L_007	NRSC	-	CH_523	4510	WB	Brahmaputra	Ø	China	1316	1582	1380	1402	-5
387	03_82G_062	NRSC	-	CH_823	4925	WB	Brahmaputra	Ø	China	51	-	58	54	-6
388	01_52L_003	NRSC	-	JK_227	4985	WB	Indus	Indus	India	536	680	573	594	-6

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
389	03_77L_041	NRSC	-	CH_550	5214	GL	Brahmaputra	Kuri Chhu	China	53	-	61	57	-7
390	03_71G_001	NRSC	-	CH_410	5163	WB	Brahmaputra	Ø	China	684	741	753	732	-7
391	03_77H_004	NRSC	-	CH_479	4428	WB	Brahmaputra	Ø	China	139	205	149	150	-7
392	03_77P_004	NRSC	-	CH_575	4452	WB	Brahmaputra	Ø	China	188	205	216	205	-8
393	02_62B_001	NRSC	-	CH_106	5216	WB	Ganga	Karnal	China	37	42	45	40	-8
394	01_43J_022	NRSC	-	JK_100	1583	WB	Indus	Jhelum	India	54	62	64	59	-8
395	02_71P_035	NRSC	-	CH_223	5146	WB	Ganga	Arun Kosi	China	90	108	98	98	-8
396	02_53P_003	NRSC	-	UK_11	207	WB	Ganga	Ramganga	India	778	1138	842	844	-8
397	03_82	NRSC	-	CH_77	4580	WB	Brahm	Ø	China	42	-	46	46	-9

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	G_009			0			aputra							
398	03_77K_009	NRSC	-	CH_511	3937	WB	Brahmaputra	Ø	China	61	67	69	67	-9
399	03_71C_005	NRSC	-	CH_398	5551	GL	Brahmaputra	Ø	China	49	58	56	54	-9
400	03_82J_018	NRSC	-	CH_848	3913	GL	Brahmaputra	Ø	China	83	94	97	92	-10
401	03_71G_008	NRSC	-	CH_417	5187	WB	Brahmaputra	Ø	China	53	62	60	59	-10
402	03_62O_002	NRSC	-	CH_347	4587	WB	Brahmaputra	Ø	China	38	47	49	42	-10
403	03_91H_025	NRSC	-	CH_1190	3741	WB	Brahmaputra	Lohit	China	55	85	91	61	-10
404	01_62E_013	NRSC	-	CH_88	5345	WB	Indus	Indus	China	142	169	167	159	-11
405	01_62E_002	NRSC	-	CH_77	5139	WB	Indus	Indus	China	132	173	157	149	-11
406	01_62F	NRSC	-	CH_95	5493	WB	Indus	Sutlej	China	157	186	191	181	-13

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	_004													
407	03_77P_018	NRSC	-	CH_589	4707	WB	Brahmaputra	DangmeChhu	China	112	153	129	131	-13
408	02_77D_001	NRSC	-	CH_256	4423	WB	Ganga	Arun Kosi	China	3118	4849	3677	3583	-13
409	03_78E_006	NRSC	-	CH_604	4572	WB	Brahmaputra	Ø	China	48	65	59	56	-14
410	03_91C_033	NRSC	-	CH_1079	4278	GL	Brahmaputra	Ø	China	138	190	177	161	-14
411	03_82J_020	NRSC	-	CH_850	3852	WB	Brahmaputra	Ø	China	300	439	348	383	-14
412	03_82P_010	NRSC	-	AP_67	1676	WB	Brahmaputra	Dibang	India	57	-	81	68	-16
413	01_43M_003	NRSC	-	JK_120	2663	WB	Indus	Shigar (Indus)	India	166	198	224	220	-16
414	03_82C_016	NRSC	-	CH_671	4679	WB	Brahmaputra	Ø	China	42	54	50	52	-16

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
415	03_77C_006	NRSC	-	CH_460	4514	WB	Brahmaputra	Ø	China	76	101	93	91	-16
416	03_77B_002	NRSC	-	CH_453	5019	WB	Brahmaputra	Ø	China	172	248	210	206	-17
417	03_71K_009	NRSC	-	CH_432	4750	WB	Brahmaputra	Ø	China	160	258	218	193	-17
418	02_62K_010	NRSC	-	NP_28	2975	WB	Ganga	Karnal	Nepal	843	1054	1048	1026	-18
419	01_52D_001	NRSC	-	HP_1	780	WB	Indus	Ravi	India	626	819	838	768	-18
420	03_62O_043	NRSC	-	CH_388	5285	WB	Brahmaputra	Ø	China	60	83	80	73	-18
421	03_82D_010	NRSC	-	CH_716	5043	WB	Brahmaputra	DangmeChhu	China	40	70	49	57	-18
422	01_52O_002	NRSC	-	CH_5	5262	WB	Indus	Indus	China	82	115	112	102	-20
423	03_82J_014	NRSC	-	CH_844	3703	WB	Brahmaputra	Ø	China	117	183	158	147	-20

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
424	01_62B_001	NRSC	-	CH_73	4526	WB	Indus	Sutlej	China	242	472	301	316	-20
425	03_71C_010	NRSC	-	CH_403	4561	WB	Brahmaputra	Ø	China	33	-	54	42	-21
426	01_43J_004	NRSC	5I	JK_82	4078	WB	Indus	Jhelum	India	50	70	68	63	-21
427	02_53K_001	NRSC	-	UK_1	355	WB	Ganga	Ramganga	India	4145	5557	5371	5332	-22
428	03_77L_029	NRSC	-	CH_545	5451	GL	Brahmaputra	KuriChhu	China	33	-	54	43	-23
429	03_82G_065	NRSC	-	CH_826	4148	WB	Brahmaputra	Ø	China	42	-	55	59	-24
430	01_61H_001	NRSC	-	CH_66	4619	WB	Indus	Indus	China	219	317	315	287	-24
431	02_72I_002	NRSC	645G	NP_58	4854	GL	Ganga	Sun Kosi	Nepal	45	65	60	59	-24
432	03_77P_016	NRSC	-	CH_587	4749	WB	Brahmaputra	DangmeChhu	China	168	262	224	227	-25

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
433	02_71L_034	NRSC	89G	CH_188	5095	GL	Ganga	Sun Kosi	China	40	-	69	55	-27
434	03_82F_020	NRSC	-	CH_745	4110	GL	Brahmaputra	Ø	China	49	71	74	68	-28
435	03_77L_006	NRSC	-	CH_522	4533	WB	Brahmaputra	Ø	China	21	-	30	30	-30
436	03_77O_001	NRSC	-	CH_564	3879	WB	Brahmaputra	Ø	China	106	153	160	159	-31
437	03_71G_009	NRSC	-	CH_418	5032	WB	Brahmaputra	Ø	China	100	155	156	148	-32
438	03_71K_007	NRSC	-	CH_430	4752	WB	Brahmaputra	Ø	China	54	96	82	80	-33
439	01_53A_001	NRSC	-	HP_9	409	WB	Indus	Beas	India	11901	22072	18290	17771	-33
440	01_61D_001	NRSC	-	CH_53	5593	WB	Indus	Indus	China	42	81	76	66	-36
441	01_61F_002	NRSC	-	CH_59	5279	WB	Indus	Indus	China	32	63	54	50	-36

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
442	02_53O_005	NRSC	-	UK_8	239	WB	Ganga	Ramganga	India	730	1284	1263	1160	-37
443	03_77H_001	NRSC	-	CH_476	4275	WB	Brahmaputra	Ø	China	222	521	353	361	-37
444	03_77O_002	NRSC	-	CH_565	3806	WB	Brahmaputra	Ø	China	46	82	80	79	-42
445	02_72E_001	NRSC	-	NP_57	1554	WB	Ganga	Bagmati	Nepal	89	165	168	153	-42
446	03_71G_010	NRSC	-	CH_419	4491	WB	Brahmaputra	Ø	China	136	310	262	259	-47
447	02_53P_001	NRSC	-	UK_9	210	WB	Ganga	Ganga	India	558	1855	1621	1567	-64
448	03_77L_008	NRSC	-	CH_524	4448	WB	Brahmaputra	Ø	China	26	76	80	79	-66
449	02_53K_002	NRSC	-	UK_2	260	WB	Ganga	Ramganga	India	315	1481	1000	918	-66
450	03_62N_003	NRSC	-	CH_320	5208	WB	Brahmaputra	Ø	China	14	-	46	44	-68

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
451	03_71K_011	NRSC	-	CH_434	4761	WB	Brahmaputra	Ø	China	111	409	399	371	-70
452	02_77D_004	NRSC	-	CH_259	4378	WB	Ganga	Arun Kosi	China	215	1013	802	740	-71
453	02_72I_007	NRSC	785G	NP_62	4540	GL	Ganga	Sun Kosi	Nepal	18	-	70	67	-73
454	03_77L_009	NRSC	-	CH_525	4515	WB	Brahmaputra	Ø	China	123	569	584	542	-77
455	01_43G_001	NRSC	-	JK_67	346	WB	Indus	Jhelum	India	3887	22572	22977	22344	-83
456	03_77H_007	NRSC	-	CH_481	4424	WB	Brahmaputra	Ø	China	71	823	737	670	-89

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

TABLE 5: GL&WBS HAVING WATER SPREAD GREATER THAN 50 HA WITH NO ANALYSIS OF CHANGE IN WATER SPREAD AREA

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
457	03_82F_010	NRSC	-	CH_735	5030	GL	Brahmaputra	Ø	China	17	-	-	-	
458	03_77P_020	NRSC	-	CH_591	4649	WB	Brahmaputra	KuriChhu	China	#	58	45	50	
459	02_71P_018	NRSC	-	CH_206	4199	WB	Ganga	Arun Kosi	China	#	54	82	64	
460	02_77D_003	NRSC	-	CH_258	4364	WB	Ganga	Arun Kosi	China	#	102	82	133	
461	03_62O_028	NRSC	-	CH_373	4577	WB	Brahmaputra	Ø	China	#	902	644	635	
462	03_77L_030	NRSC	-	BH_12	5305	GL	Brahmaputra	Ø	Bhutan	#	89	73	76	
463	03_77P_005	NRSC	-	CH_576	4619	WB	Brahmaputra	Ø	China	#	110	95	97	
464	03_82J_019	NRSC	-	CH_849	3944	GL	Brahmaputra	Ø	China	#	-	64	52	

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
465	01_52E_001	NRSC	-	JK_188	5116	GL	Indus	Shyok	India	#	48	4	19	
466	01_52I_004	NRSC	-	JK_196	5141	WB	Indus	Shyok	India	#	-	63	62	
467	01_53A_002	NRSC	-	HP_10	495	WB	Indus	Sutlej	India	#	12198	11339	11603	
468	01_61C_004	NRSC	-		4495	WB	Indus	Ø		#	-	-	-	
469	01_61G_001	NRSC	-	CH_62	4973	WB	Indus	Indus	China	#	81	71	71	
470	02_63M_002	NRSC	-	NP_41	112	WB	Ganga	Rapti	Nepal	#	148	107	119	
471	02_71H_012	NRSC	-	CH_132	5379	GL	Ganga	Arun Kosi	China	#	-	129	120	
472	03_91C_005	NRSC	-	CH_1056	4926	GL	Brahmaputra	Ø	China	#	-	16	50	
473	03_91	NRSC	-	AP_87	4450	WB	Brahm	Lohit	India	#	-	71	60	

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	UID	Elevation (m)	Lake Type	Basin	River	Country	Area of June-2022 (ha)	Area of Base Year of 2011 (ha)	Area of Last 5 Years (ha)	Area of Last 10 years (ha)	Max Change in Area (%)
	C_040						aputra							
474	03_91C_052	NRSC	-	CH_1085	4591	WB	Brahmaputra	Lohit	China	#	-	34	38	
475	03_91C_059	NRSC	-	CH_1089	4303	WB	Brahmaputra	Dibang	China	#	-	76	72	
476	03_91C_074	NRSC	-	CH_1102	4258	GL	Brahmaputra	Dibang	China	#	-	17	21	
477	03_91D_022	NRSC	-	AP_118	3143	WB	Brahmaputra	Dibang	India	#	-	36	30	

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream

#indicates frozen/ dried lakes

TABLE 6: GLS INVENTORY PREPARED BY NDMA THROUGH SWISS DEVELOPMENT AGENCY (SDC) FOR INDIAN HIMALAYAN REGION

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Latitude	Longitude	Lake Type	Elevation (m)	State/UT	Country	Area of June-2022 (ha)
478	98	SDC	High Risk	34.392	75.085	GL	4103	JK	India	#
479	976	SDC	High Risk/15I	34.185	75.372	GL	4314	JK	India	#
480	173	SDC	Medium Risk	34.765	76.71	GL	5150	JK	India	#
481	963	SDC	Medium Risk	34.139	75.376	GL	3725	JK	India	26
482	1037	SDC	Medium Risk/27I	34.422	75.058	GL	3603	JK	India	40
483	2147	SDC	Medium Risk	30.98	79.487	GL	5688	UK	India	#
484	260	SDC	Medium Risk	27.894	88.761	GL	5253	SK	India	39
485	292	SDC	Medium Risk	28.006	88.655	GL	5577	SK	India	4
486	312	SDC	Medium Risk	27.701	88.514	GL	5137	SK	India	8
487	345	SDC	Medium Risk	27.864	88.747	GL	5108	SK	India	18
488	515	SDC	Medium Risk	27.854	88.806	GL	5063	SK	India	8
489	569	SDC	Medium Risk	28.002	88.64	GL	5450	SK	India	30
490	256	SDC	High risk	27.816	88.657	GL	4615	SK	India	17
491	27	SDC	Very High Risk	34.381	74.876	GL	3775	JK	India	14
492	180	SDC	Very High	34.353	76.077	GL	4442	JK	India	11

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Latitude	Longitude	Lake Type	Elevation (m)	State/UT	Country	Area of June-2022 (ha)
			Risk							
493	182	SDC	Very High Risk	34.234	75.325	GL	4304	JK	India	#
494	931	SDC	Very High Risk	33.929	75.389	GL	4082	JK	India	20
495	938	SDC	Very High Risk	33.953	75.378	GL	3683	JK	India	23
496	951	SDC	Very High Risk	34.067	75.475	GL	3762	JK	India	1
497	958	SDC	Very High Risk	34.138	75.416	GL	4103	JK	India	7
498	993	SDC	Very High Risk	34.227	75.222	GL	4148	JK	India	11
499	1014	SDC	Very High Risk	34.299	75.06	GL	3989	JK	India	5
500	1032	SDC	Very High Risk	34.386	75.064	GL	4007	JK	India	1
501	1360	SDC	Very High Risk	35.027	75.725	GL	4667	JK	India	9
502	1774	SDC	Very High	32.221	76.788	GL	4593	HP	India	7

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Latitude	Longitude	Lake Type	Elevation (m)	State/UT	Country	Area of June-2022 (ha)
			Risk							
503	1805	SDC	Very High Risk/81I	32.762	77.195	GL	4775	HP	India	1
504	1847	SDC	Very High Risk	31.915	77.527	GL	4570	HP	India	11
505	1936	SDC	Very High Risk/321I	32.256	76.777	GL	4606	HP	India	#
506	1998	SDC	Very High Risk	32.32	76.908	GL	3857	HP	India	#
507	2031	SDC	Very High Risk	31.339	78.253	GL	4702	HP	India	19
508	2108	SDC	Very High Risk/347G	30.976	79.459	GL	5587	UK	India	17
509	2207	SDC	Very High Risk	30.912	78.958	GL	4707	UK	India	10
510	2299	SDC	Very High Risk	30.184	79.88	GL	4490	UK	India	#
511	227	SDC	Very High Risk	27.993	88.547	GL	5176	SK	India	56
512	293	SDC	Very High	27.951	88.705	GL	5048	SK	India	2

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Latitude	Longitude	Lake Type	Elevation (m)	State/UT	Country	Area of June-2022 (ha)
			Risk							
513	295	SDC	Very High Risk	27.92	88.672	GL	4850	SK	India	6
514	298	SDC	Very High Risk	27.873	88.638	GL	4508	SK	India	4
515	599	SDC	Very High Risk	27.695	88.716	GL	4251	SK	India	#
516	129	SDC	Very High Risk	27.775	92.314	GL	4895	AP	India	9
517	237	SDC	Very Low Risk	27.993	88.801	GL	5322	SK	India	7

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

#indicates frozen/ dried lakes

TABLE 7: GLS INVENTORY UPTO 10 HA BUT SMALLER THAN 50 HA PREPARED BY NRSC IN 2009

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
518	02_53N_001	NRSC	250G	GL	4688	Ganga	Ganga	India	21
519	02_62B_004	NRSC	232G	GL	4918	Sarda	Ganga	India	21
520	02_62B_005	NRSC	580G	GL	4314	Sarda	Ganga	India	8
521	02_62B_006	NRSC	495G	GL	5106	Karnal	Ganga	China	#
522	02_62B_007	NRSC	-	GL	4839	Sarda	Ganga	India	#
523	02_62F_006	NRSC	-	GL	5444	Karnal	Ganga	Nepal	15
524	02_62F_007	NRSC	-	GL	5179	Karnal	Ganga	Nepal	12
525	02_62F_008	NRSC	-	GL	5620	Karnal	Ganga	Nepal	7
526	02_62F_009	NRSC	536G	GL	5586	Karnal	Ganga	China	10
527	02_62F_010	NRSC	-	GL	5502	Karnal	Ganga	Nepal	11
528	02_62F_011	NRSC	362G	GL	5524	Karnal	Ganga	China	26
529	02_62F_013	NRSC	256G	GL	5252	Karnal	Ganga	China	45
530	02_62F_014	NRSC	236G	GL	5481	Karnal	Ganga	China	5
531	02_62F_015	NRSC	59G	GL	5359	Karnal	Ganga	China	27
532	02_62F_016	NRSC	591G	GL	5359	Karnal	Ganga	Nepal	14

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
533	01_42H_002	NRSC	162I	GL	2763	Gilgit	Indus	India	#
534	01_43J_003	NRSC	-	GL	3954	Jhelum	Indus	India	12
535	01_52A_002	NRSC	-	GL	4537	Shyok	Indus	India	19
536	01_52A_003	NRSC	-	GL	4586	Shyok	Indus	India	1
537	01_52B_012	NRSC	129I	GL	5137	Indus	Indus	India	#
538	01_52C_001	NRSC	11I	GL	4394	Shingo (Indus)	Indus	India	55
539	01_52C_002	NRSC	46I	GL	4092	Chenab	Indus	India	43
540	01_52H_003	NRSC	-	GL	4165	Chenab	Indus	India	147
541	01_52L_006	NRSC	306I	GL	5727	Indus	Indus	India	10
542	01_52L_007	NRSC	184I	GL	5498	Indus	Indus	India	#
543	01_52P_004	NRSC	-	GL	5470	Indus	Indus	China	0
544	01_53M_001	NRSC	33I	GL	5576	Indus	Indus	China	#
545	01_53M_002	NRSC	142I	GL	5468	Indus	Indus	China	10
546	01_53M_003	NRSC	110I	GL	5511	Indus	Indus	China	9

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
547	01_61B_002	NRSC	345I	GL	5722	Indus	Indus	China	#
548	01_62B_002	NRSC	381I	GL	4998	Sutlej	Indus	China	20
549	01_62B_003	NRSC	86I	GL	5288	Sutlej	Indus	India	#
550	01_62E_007	NRSC	437I	GL	5641	Sutlej	Indus	China	#
551	01_62E_016	NRSC	270I	GL	5528	Sutlej	Indus	China	#
552	01_62F_007	NRSC	-	GL	5344	Sutlej	Indus	China	21
553	01_62F_009	NRSC	387I	GL	5712	Sutlej	Indus	China	10
554	01_62J_004	NRSC	446I	GL	5504	Sutlej	Indus	China	10
555	03_62J_003	NRSC	-	GL	5553	Ø	Brahmaputra	China	11
556	03_62J_004	NRSC	-	GL	5556	Ø	Brahmaputra	China	15
557	03_62J_009	NRSC	-	GL	5624	Ø	Brahmaputra	China	24
558	03_62J_010	NRSC	-	GL	5571	Ø	Brahmaputra	China	25
559	03_62J_020	NRSC	-	GL	5603	Ø	Brahmaputra	China	15

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
560	03_62J_024	NRSC	-	GL	5548	Ø	Brahmaputra	China	20
561	03_62J_025	NRSC	-	GL	5362	Ø	Brahmaputra	China	20
562	03_62J_027	NRSC	-	GL	4781	Ø	Brahmaputra	China	22
563	03_62J_028	NRSC	-	GL	5603	Ø	Brahmaputra	China	40
564	03_71B_001	NRSC	-	GL	5692	Ø	Brahmaputra	China	29
565	03_77J_001	NRSC	-	GL	5354	Ø	Brahmaputra	China	27
566	03_77J_002	NRSC	-	GL	5254	Ø	Brahmaputra	China	13
567	03_77J_005	NRSC	-	GL	5766	Ø	Brahmaputra	China	14
568	03_78A_008	NRSC	-	GL	4998	Teesta	Brahmaputra	India	19
569	03_82F_001	NRSC	-	GL	4822	Ø	Brahmaputra	China	14

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
570	03_82F_005	NRSC	-	GL	4762	Ø	Brahmaputra	China	47
571	03_82F_009	NRSC	-	GL	4712	Ø	Brahmaputra	China	0
572	03_82F_011	NRSC	-	GL	4720	Ø	Brahmaputra	China	3
573	03_82F_012	NRSC	-	GL	4454	Ø	Brahmaputra	China	1
574	03_82F_013	NRSC	-	GL	4761	Ø	Brahmaputra	China	0
575	03_82F_018	NRSC	-	GL	4554	Ø	Brahmaputra	China	#
576	03_82F_021	NRSC	-	GL	4487	Ø	Brahmaputra	China	0
577	03_82F_023	NRSC	-	GL	4354	Ø	Brahmaputra	China	8
578	03_82F_024	NRSC	-	GL	4197	Ø	Brahmaputra	China	117
579	03_82F_025	NRSC	-	GL	4253	Ø	Brahmaputra	China	0

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
580	03_82F_026	NRSC	-	GL	4607	Ø	Brahmaputra	China	10
581	03_82J_001	NRSC	-	GL	4775	Ø	Brahmaputra	China	27
582	03_82J_003	NRSC	-	GL	4161	Ø	Brahmaputra	China	9
583	03_82J_006	NRSC	-	GL	3657	Ø	Brahmaputra	China	51
584	03_82N_001	NRSC	-	GL	5055	Ø	Brahmaputra	China	36
585	03_82N_008	NRSC	-	GL	4546	Ø	Brahmaputra	China	32
586	03_82N_011	NRSC	-	GL	4997	Ø	Brahmaputra	China	27
587	03_82N_015	NRSC	-	GL	5090	Ø	Brahmaputra	China	5
588	03_82N_016	NRSC	-	GL	5017	Ø	Brahmaputra	China	4
589	03_82N_018	NRSC	-	GL	4333	Ø	Brahmaputra	China	#

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
590	03_82N_025	NRSC	-	GL	4764	Ø	Brahmaputra	China	24
591	03_82N_029	NRSC	-	GL	4492	Ø	Brahmaputra	China	#
592	03_82N_031	NRSC	-	GL	4409	Ø	Brahmaputra	China	#
593	03_82N_032	NRSC	-	GL	4384	Ø	Brahmaputra	China	#
594	03_82N_034	NRSC	-	GL	4181	Ø	Brahmaputra	China	#
595	03_82N_035	NRSC	-	GL	4479	Ø	Brahmaputra	China	#
596	03_82N_037	NRSC	-	GL	4691	Ø	Brahmaputra	China	#
597	03_82O_001	NRSC	-	GL	4348	Ø	Brahmaputra	China	42
598	03_82O_002	NRSC	-	GL	4198	Ø	Brahmaputra	China	19
599	03_82O_003	NRSC	-	GL	4180	Ø	Brahmaputra	China	#

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
600	03_82O_004	NRSC	-	GL	4148	Ø	Brahmaputra	China	10
601	03_91C_002	NRSC	-	GL	4691	Ø	Brahmaputra	China	#
602	03_91C_003	NRSC	-	GL	4703	Ø	Brahmaputra	China	#
603	03_91C_004	NRSC	-	GL	4137	Ø	Brahmaputra	China	18
604	03_91C_006	NRSC	-	GL	5057	Ø	Brahmaputra	China	4
605	03_91C_007	NRSC	-	GL	4817	Ø	Brahmaputra	China	#
606	03_91C_008	NRSC	-	GL	4899	Ø	Brahmaputra	China	#
607	03_91C_010	NRSC	-	GL	4712	Ø	Brahmaputra	China	#
608	03_91C_012	NRSC	-	GL	4663	Ø	Brahmaputra	China	17
609	03_91C_013	NRSC	-	GL	4925	Ø	Brahmaputra	China	#

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
610	03_91G_001	NRSC	-	GL	5147	Ø	Brahmaputra	China	9
611	01_52A_004	NRSC/SDC	/Very High Risk	GL	4619	Shyok	Indus	India	#
612	01_52B_010	NRSC/SDC	75I/Medium Risk	GL	5122	Indus	Indus	India	#
613	01_53I_002	NRSC/SDC	26I/Very High Risk	GL	4273	Sutlej	Indus	India	#
614	02_62G_002	NRSC	599G	GL	4822	Karnal	Ganga	Nepal	19
615	02_62G_003	NRSC	589G	GL	3603	Karnal	Ganga	Nepal	33
616	02_62J_001	NRSC	-	GL	5182	Karnal	Ganga	Nepal	5
617	02_62J_002	NRSC	-	GL	5021	Karnal	Ganga	Nepal	9
618	02_62K_001	NRSC	329G	GL	4404	Karnal	Ganga	Nepal	24
619	02_62K_003	NRSC	546G	GL	4571	Karnal	Ganga	Nepal	43
620	02_62K_006	NRSC	70G	GL	5053	Karnal	Ganga	Nepal	50
621	02_62K_011	NRSC	612G	GL	4673	Bheri	Ganga	Nepal	28

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
622	02_62O_002	NRSC	410G	GL	5495	Kali Gandak	Ganga	Nepal	23
623	02_62O_004	NRSC	299G	GL	5529	Kali Gandak	Ganga	Nepal	19
624	02_62O_005	NRSC	609G	GL	5450	Kali Gandak	Ganga	Nepal	14
625	02_62P_001	NRSC	258G	GL	4472	Bheri	Ganga	Nepal	45
626	02_71D_001	NRSC	-	GL	4111	Trisuli	Ganga	Nepal	25
627	02_71D_002	NRSC	-	GL	4063	Trisuli	Ganga	Nepal	6
628	02_71D_003	NRSC	67G	GL	3668	Trisuli	Ganga	Nepal	26
629	02_71H_004	NRSC	-	GL	5239	ArunKosi	Ganga	China	26
630	02_71H_005	NRSC	-	GL	5010	ArunKosi	Ganga	China	69
631	02_71H_006	NRSC	-	GL	5167	ArunKosi	Ganga	China	34
632	02_71H_009	NRSC	-	GL	5448	ArunKosi	Ganga	China	23
633	02_71H_010	NRSC	-	GL	5481	ArunKosi	Ganga	China	25
634	02_71H_011	NRSC	775G	GL	4509	Trisuli	Ganga	China	#
635	02_71H_013	NRSC	172G	GL	4446	Trisuli	Ganga	China	#

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
636	02_71H_014	NRSC	-	GL	4458	Trisuli	Ganga	China	9
637	02_71H_016	NRSC	-	GL	5305	ArunKosi	Ganga	China	26
638	02_71H_018	NRSC	123G	GL	4787	Trisuli	Ganga	China	31
639	02_71H_019	NRSC	92G	GL	4674	Trisuli	Ganga	China	#
640	02_71H_020	NRSC	-	GL	5354	ArunKosi	Ganga	China	69
641	02_71P_001	NRSC	-	GL	5498	ArunKosi	Ganga	China	15
642	03_62K_005	NRSC	-	GL	4999	Ø	Brahmaputra	China	22
643	03_62K_006	NRSC	-	GL	5101	Ø	Brahmaputra	China	#
644	03_62K_007	NRSC	-	GL	4911	Ø	Brahmaputra	China	29
645	03_62K_008	NRSC	-	GL	4968	Ø	Brahmaputra	China	42
646	03_62K_010	NRSC	-	GL	5181	Ø	Brahmaputra	China	70
647	03_62K_011	NRSC	-	GL	5136	Ø	Brahmaputra	China	45

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
648	03_62K_013	NRSC	-	GL	5101	Ø	Brahmaputra	China	46
649	03_62O_031	NRSC	-	GL	5381	Ø	Brahmaputra	China	34
650	03_62O_035	NRSC	-	GL	5256	Ø	Brahmaputra	China	33
651	03_62O_045	NRSC	-	GL	5566	Ø	Brahmaputra	China	#
652	03_71C_001	NRSC	-	GL	5543	Ø	Brahmaputra	China	9
653	03_71C_002	NRSC	-	GL	5663	Ø	Brahmaputra	China	10
654	03_71C_004	NRSC	-	GL	5575	Ø	Brahmaputra	China	14
655	03_71C_006	NRSC	-	GL	5482	Ø	Brahmaputra	China	21
656	03_71D_001	NRSC	-	GL	5454	Ø	Brahmaputra	China	20
657	03_71D_002	NRSC	-	GL	5574	Ø	Brahmaputra	China	35

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
658	03_71D_003	NRSC	-	GL	5362	Ø	Brahmaputra	China	11
659	03_71P_002	NRSC	-	GL	5537	Ø	Brahmaputra	China	13
660	03_71P_003	NRSC	-	GL	5360	Ø	Brahmaputra	China	34
661	03_71P_004	NRSC	-	GL	5637	Ø	Brahmaputra	China	10
662	03_77K_002	NRSC	-	GL	5154	Ø	Brahmaputra	China	37
663	03_77K_003	NRSC	-	GL	5303	Ø	Brahmaputra	China	10
664	03_77L_019	NRSC	-	GL	5681	Ø	Brahmaputra	China	15
665	03_77L_020	NRSC	-	GL	4682	KuriChhu	Brahmaputra	China	9
666	03_77L_022	NRSC	-	GL	4810	KuriChhu	Brahmaputra	China	10
667	03_77L_023	NRSC	-	GL	5489	KuriChhu	Brahmaputra	China	29

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
668	03_82C_011	NRSC	-	GL	5242	Ø	Brahmaputra	China	14
669	03_82G_003	NRSC	-	GL	4936	Ø	Brahmaputra	China	15
670	03_82G_004	NRSC	-	GL	4498	Ø	Brahmaputra	China	31
671	03_82G_007	NRSC	-	GL	4994	Ø	Brahmaputra	China	#
672	03_82K_109	NRSC	-	GL	4356	Ø	Brahmaputra	China	22
673	03_82L_004	NRSC	-	GL	4441	Ø	Brahmaputra	China	12
674	03_82L_006	NRSC	-	GL	4147	Ø	Brahmaputra	China	13
675	03_82L_007	NRSC	-	GL	4163	Ding	Brahmaputra	India	16
676	03_82L_008	NRSC	-	GL	4342	Ø	Brahmaputra	China	11
677	03_91C_015	NRSC	-	GL	4421	Ø	Brahmaputra	China	21

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
678	03_91C_016	NRSC	-	GL	4813	Ø	Brahmaputra	China	13
679	03_91C_019	NRSC	-	GL	3858	Ø	Brahmaputra	China	49
680	03_91C_021	NRSC	-	GL	4093	Ø	Brahmaputra	China	31
681	03_91C_023	NRSC	-	GL	4811	Lohit	Brahmaputra	China	19
682	03_91C_026	NRSC	-	GL	4305	Dibang	Brahmaputra	India	#
683	03_91C_035	NRSC	-	GL	4283	Ø	Brahmaputra	China	54
684	03_91C_036	NRSC	-	GL	4298	Ø	Brahmaputra	China	#
685	03_91C_043	NRSC	-	GL	4429	Ø	Brahmaputra	China	11
686	03_91C_071	NRSC	-	GL	4339	Dibang	Brahmaputra	China	35
687	03_91D_070	NRSC	-	GL	4126	Lohit	Brahmaputra	China	18

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
688	03_91D_075	NRSC	-	GL	4274	Dibang	Brahmaputra	India	#
689	03_91D_082	NRSC	-	GL	4550	Lohit	Brahmaputra	China	55
690	03_91D_096	NRSC	-	GL	3794	Lohit	Brahmaputra	China	#
691	03_91D_098	NRSC	-	GL	4197	Lohit	Brahmaputra	China	#
692	03_91D_099	NRSC	-	GL	4406	Lohit	Brahmaputra	China	0
693	03_91G_003	NRSC	-	GL	5018	Lohit	Brahmaputra	China	21
694	03_91G_004	NRSC	-	GL	5262	Lohit	Brahmaputra	China	32
695	03_91G_005	NRSC	-	GL	5170	Lohit	Brahmaputra	China	#
696	03_91G_006	NRSC	-	GL	5028	Lohit	Brahmaputra	China	24
697	03_91G_007	NRSC	-	GL	4785	Lohit	Brahmaputra	China	12

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
698	03_91G_009	NRSC	-	GL	4637	Lohit	Brahmaputra	China	19
699	03_91H_001	NRSC	-	GL	4429	Lohit	Brahmaputra	China	19
700	03_91H_003	NRSC	-	GL	4439	Lohit	Brahmaputra	China	15
701	03_91H_006	NRSC	-	GL	4620	Lohit	Brahmaputra	China	17
702	03_91H_007	NRSC	-	GL	4635	Lohit	Brahmaputra	China	#
703	03_91H_008	NRSC	-	GL	4755	Lohit	Brahmaputra	China	#
704	03_91H_015	NRSC	-	GL	4553	Lohit	Brahmaputra	China	#
705	03_91H_033	NRSC	-	GL	4389	Lohit	Brahmaputra	China	12
706	03_91H_034	NRSC	-	GL	4629	Lohit	Brahmaputra	China	14
707	03_91H_036	NRSC	-	GL	4457	Lohit	Brahmaputra	China	23

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
708	03_91H_073	NRSC	-	GL	4481	Lohit	Brahmaputra	India	#
709	02_71H_024	NRSC	155G	GL	4890	Trisuli	Ganga	China	27
710	02_71H_025	NRSC	464G	GL	5303	Trisuli	Ganga	China	19
711	02_71H_034	NRSC	320G	GL	4745	Trisuli	Ganga	Nepal	22
712	02_71H_036	NRSC	195G	GL	5024	Trisuli	Ganga	Nepal	14
713	02_71H_030	NRSC	598G	GL	5411	Sun Kosi	Ganga	China	14
714	02_71H_031	NRSC	78G	GL	5268	Sun Kosi	Ganga	China	30
715	02_71H_032	NRSC	-	GL	5116	Sun Kosi	Ganga	China	25
716	02_71H_022	NRSC	-	GL	5735	ArunKosi	Ganga	China	20
717	02_71H_023	NRSC	-	GL	5595	ArunKosi	Ganga	China	61
718	02_71L_008	NRSC	457G	GL	5577	Sun Kosi	Ganga	China	36
719	02_71L_012	NRSC	96G	GL	5570	Sun Kosi	Ganga	China	21
720	02_71L_014	NRSC	240G	GL	5364	Sun Kosi	Ganga	China	16
721	02_71L_015	NRSC	284G	GL	5261	Sun Kosi	Ganga	China	22
722	02_71L_016	NRSC	570G	GL	5345	Sun Kosi	Ganga	China	#
723	02_71L_017	NRSC	179G	GL	5211	Sun Kosi	Ganga	China	13

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
724	02_71L_018	NRSC	651G	GL	5377	Sun Kosi	Ganga	China	15
725	02_71L_019	NRSC	323G	GL	5378	Sun Kosi	Ganga	China	12
726	02_71L_020	NRSC	156G	GL	5348	Sun Kosi	Ganga	China	30
727	02_71L_021	NRSC	438G	GL	5373	Sun Kosi	Ganga	China	17
728	02_71L_024	NRSC	245G	GL	5263	Sun Kosi	Ganga	China	27
729	02_71L_025	NRSC	154G	GL	5357	Sun Kosi	Ganga	China	19
730	02_71L_027	NRSC	433G	GL	5234	Sun Kosi	Ganga	China	18
731	02_71L_005	NRSC	282G	GL	5524	ArunKosi	Ganga	China	19
732	02_71L_007	NRSC	572G	GL	5576	ArunKosi	Ganga	China	13
733	02_71L_009	NRSC	520G	GL	5546	ArunKosi	Ganga	China	33
734	02_71L_022	NRSC	715G	GL	5554	ArunKosi	Ganga	China	27
735	02_71P_017	NRSC	-	GL	4194	ArunKosi	Ganga	China	78
736	02_71P_020	NRSC	-	GL	4200	ArunKosi	Ganga	China	#
737	02_71P_023	NRSC	124G	GL	5235	ArunKosi	Ganga	China	17
738	02_71P_024	NRSC	576G	GL	5273	ArunKosi	Ganga	China	22
739	02_71P_026	NRSC	322G	GL	5340	ArunKosi	Ganga	China	13
740	02_71P_030	NRSC	166G	GL	5329	ArunKosi	Ganga	China	20

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
741	02_71P_031	NRSC	141G	GL	5395	ArunKosi	Ganga	China	21
742	02_71P_032	NRSC	564G	GL	5190	ArunKosi	Ganga	China	18
743	02_71P_033	NRSC	-	GL	4888	ArunKosi	Ganga	China	21
744	02_71P_034	NRSC	726G	GL	5259	ArunKosi	Ganga	China	20
745	02_71P_036	NRSC	54G	GL	5121	ArunKosi	Ganga	China	38
746	02_71P_038	NRSC	586G	GL	5483	ArunKosi	Ganga	China	27
747	02_71P_039	NRSC	396G	GL	5489	ArunKosi	Ganga	China	19
748	02_71P_041	NRSC	768G	GL	5064	ArunKosi	Ganga	China	18
749	02_71P_042	NRSC	654G	GL	5524	ArunKosi	Ganga	China	20
750	02_77D_005	NRSC	499G	GL	5738	ArunKosi	Ganga	China	7
751	03_77H_005	NRSC	-	GL	5113	Ø	Brahmaputra	China	20
752	03_77H_009	NRSC	-	GL	5150	Ø	Brahmaputra	China	15
753	03_77H_010	NRSC	-	GL	5518	Ø	Brahmaputra	China	15
754	03_77H_015	NRSC	-	GL	4801	Ø	Brahmaputra	China	14

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
755	03_77H_016	NRSC	-	GL	4929	Ø	Brahmaputra	China	44
756	03_77H_022	NRSC	-	GL	4936	Ø	Brahmaputra	China	20
757	03_77H_026	NRSC	-	GL	5233	Ø	Brahmaputra	China	10
758	03_77H_027	NRSC	-	GL	4927	Ø	Brahmaputra	China	22
759	03_77H_017	NRSC	-	GL	4537	Puna Tsang Chhu	Brahmaputra	Bhutan	26
760	03_77H_019	NRSC	-	GL	4804	Puna Tsang Chhu	Brahmaputra	Bhutan	10
761	03_77H_021	NRSC	-	GL	5135	Puna Tsang Chhu	Brahmaputra	Bhutan	13
762	03_77H_024	NRSC	-	GL	4369	Puna Tsang Chhu	Brahmaputra	Bhutan	46
763	03_77H_025	NRSC	-	GL	4312	Puna Tsang Chhu	Brahmaputra	Bhutan	25
764	03_77H_029	NRSC	-	GL	5049	Puna Tsang Chhu	Brahmaputra	Bhutan	23

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
765	03_77L_038	NRSC	-	GL	5521	Ø	Brahmaputra	China	13
766	03_77L_025	NRSC	-	GL	5370	KuriChhu	Brahmaputra	China	17
767	03_77L_028	NRSC	-	GL	4632	KuriChhu	Brahmaputra	China	12
768	03_77L_031	NRSC	-	GL	4698	KuriChhu	Brahmaputra	China	18
769	03_77L_034	NRSC	-	GL	5500	KuriChhu	Brahmaputra	China	22
770	03_77L_036	NRSC	-	GL	5810	KuriChhu	Brahmaputra	China	23
771	03_77L_039	NRSC	-	GL	5457	KuriChhu	Brahmaputra	China	42
772	03_77L_045	NRSC	-	GL	5224	KuriChhu	Brahmaputra	China	33
773	03_77L_048	NRSC	-	GL	4792	KuriChhu	Brahmaputra	China	27
774	03_77L_053	NRSC	-	GL	4793	KuriChhu	Brahmaputra	China	#

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
775	03_77L_056	NRSC	-	GL	4963	KuriChhu	Brahmaputra	China	14
776	03_77L_057	NRSC	-	GL	4897	KuriChhu	Brahmaputra		44
777	03_77L_058	NRSC	-	GL	5016	KuriChhu	Brahmaputra		32
778	03_77L_040	NRSC	-	GL	4515	Puna Tsang Chhu	Brahmaputra	Bhutan	#
779	03_77L_047	NRSC	-	GL	4364	Puna Tsang Chhu	Brahmaputra	Bhutan	48
780	03_77L_049	NRSC	-	GL	4716	Puna Tsang Chhu	Brahmaputra	Bhutan	38
781	03_77L_054	NRSC	-	GL	4717	Puna Tsang Chhu	Brahmaputra	Bhutan	#
782	03_77L_071	NRSC	-	GL	5228	Puna Tsang Chhu	Brahmaputra	Bhutan	20
783	03_77L_078	NRSC	-	GL	5296	Puna Tsang Chhu	Brahmaputra	Bhutan	15
784	03_77L_082	NRSC	-	GL	5019	Puna Tsang Chhu	Brahmaputra	Bhutan	14

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
785	03_77L_061	NRSC	-	GL	5038	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	616
786	03_77L_062	NRSC	-	GL	5295	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	47
787	03_77L_063	NRSC	-	GL	5183	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	#
788	03_77L_065	NRSC	-	GL	5025	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	14
789	03_77L_073	NRSC	-	GL	5166	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	13
790	03_77L_074	NRSC	-	GL	5324	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	17
791	03_77L_075	NRSC	-	GL	4718	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	19

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
792	03_77L_079	NRSC	-	GL	5386	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	35
793	03_78I_005	NRSC	-	GL	5338	Puna Tsang Chhu	Brahmaputra	Bhutan	45
794	03_78I_006	NRSC	-	GL	5158	Puna Tsang Chhu	Brahmaputra	Bhutan	21
795	03_78I_001	NRSC	-	GL	5129	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	6
796	03_78I_004	NRSC	-	GL	5194	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	23
797	03_78I_008	NRSC	-	GL	5252	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	13
798	03_78I_009	NRSC	-	GL	5108	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	26
799	03_78I_011	NRSC	-	GL	5239	Manas Chhu&Mang	Brahmaputra	Bhutan	23

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
						deChhu			
800	03_83A_001	NRSC	-	GL	5018	Ø	Brahmaputra	China	48
801	02_71L_030	NRSC	242G	GL	5242	Sun Kosi	Ganga	China	21
802	02_71L_031	NRSC	52G	GL	4682	Sun Kosi	Ganga	China	29
803	02_71L_033	NRSC	408G	GL	5369	Sun Kosi	Ganga	Nepal	14
804	02_71L_035	NRSC	657G	GL	5091	Sun Kosi	Ganga	Nepal	11
805	02_72I_024	NRSC	358G	GL	5165	Sun Kosi	Ganga	Nepal	28
806	02_72I_026	NRSC	112G	GL	5188	Sun Kosi	Ganga	Nepal	18
807	02_72I_028	NRSC	146G	GL	4408	Sun Kosi	Ganga	Nepal	26
808	02_72I_030	NRSC	480G	GL	4624	Sun Kosi	Ganga	Nepal	7
809	02_72I_031	NRSC	14G	GL	4777	Sun Kosi	Ganga	Nepal	26
810	02_72I_001	NRSC	198G	GL	5333	Sun Kosi	Ganga	Nepal	13
811	02_72I_005	NRSC	483G	GL	4715	Sun Kosi	Ganga	Nepal	#
812	02_72I_006	NRSC	-	GL	4741	Sun Kosi	Ganga	Nepal	17
813	02_72I_008	NRSC	99G	GL	5040	Sun Kosi	Ganga		36
814	02_72I_009	NRSC	-	GL	5292	Sun Kosi	Ganga	Nepal	18

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
815	02_72I_010	NRSC	263G	GL	5125	Sun Kosi	Ganga	Nepal	14
816	02_72I_012	NRSC	113G	GL	4409	Sun Kosi	Ganga	Nepal	40
817	02_72I_013	NRSC	694G	GL	5497	Sun Kosi	Ganga	Nepal	18
818	02_72I_015	NRSC	814G	GL	5416	Sun Kosi	Ganga	Nepal	44
819	02_72I_016	NRSC	739G	GL	5231	Sun Kosi	Ganga	Nepal	28
820	02_72I_017	NRSC	49G	GL	5018	Sun Kosi	Ganga	Nepal	7
821	02_72I_018	NRSC	776G	GL	5370	Sun Kosi	Ganga	Nepal	35
822	02_72I_019	NRSC	757G	GL	5510	Sun Kosi	Ganga	Nepal	17
823	02_72I_020	NRSC	763G	GL	5436	Sun Kosi	Ganga	Nepal	21
824	02_72I_021	NRSC	764G	GL	5276	Sun Kosi	Ganga	Nepal	20
825	02_72I_022	NRSC	287G	GL	5344	Sun Kosi	Ganga	Nepal	30
826	02_71L_029	NRSC	747G	GL	5237	ArunKosi	Ganga	China	52
827	02_71P_044	NRSC	557G	GL	5555	Arun Kosi	Ganga	China	9
828	02_71P_046	NRSC	317G	GL	4898	Arun Kosi	Ganga	China	28
829	02_71P_048	NRSC	283G	GL	5094	Arun Kosi	Ganga	China	18
830	02_77D_010	NRSC	590G	GL	5127	Arun Kosi	Ganga	China	37
831	02_77D_011	NRSC	393G	GL	5305	Arun Kosi	Ganga	China	45

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
832	02_78A_001	NRSC	498G	GL	5201	Arun Kosi	Ganga	China	20
833	02_78A_002	NRSC	668G	GL	5397	Arun Kosi	Ganga	China	14
834	02_72M_001	NRSC	737G	GL	5675	Arun Kosi	Ganga	China	7
835	02_72M_003	NRSC	823G	GL	5608	Arun Kosi	Ganga	China	18
836	02_72M_004	NRSC	336G	GL	5293	Arun Kosi	Ganga	China	56
837	02_78A_006	NRSC	676G	GL	5743	Arun Kosi	Ganga	China	16
838	02_72M_011	NRSC	86G	GL	4865	Arun Kosi	Ganga	Nepal	#
839	02_72M_013	NRSC	518G	GL	5233	Arun Kosi	Ganga	Nepal	12
840	02_78A_008	NRSC	199G	GL	5032	TamurKosi	Ganga	Nepal	26
841	02_72M_008	NRSC	376G	GL	4722	TamurKosi	Ganga	Nepal	38
842	02_78A_007	NRSC	429G	GL	5618	TamurKosi	Ganga	Nepal	15
843	02_72M_012	NRSC	69G	GL	4932	TamurKosi	Ganga	Nepal	16

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
844	02_72M_014	NRSC	47G	GL	5217	TamurKosi	Ganga	Nepal	22
845	02_72M_015	NRSC	115G	GL	4969	TamurKosi	Ganga	Nepal	13
846	03_77H_032	NRSC	-	GL	5056	Ø	Brahmaputra	China	12
847	03_78A_004	NRSC	-	GL	5456	Ø	Brahmaputra	China	23
848	03_78E_016	NRSC	-	GL	5004	Ø	Brahmaputra	China	17
849	03_78E_018	NRSC	-	GL	5164	Ø	Brahmaputra	China	#
850	03_78A_005	NRSC	-	GL	5201	Teesta	Brahmaputra	India	12
851	03_78A_006	NRSC	-	GL	5004	Teesta	Brahmaputra	India	14
852	03_78A_023	NRSC	-	GL	4547	Teesta	Brahmaputra	India	33
853	03_78A_026	NRSC	-	GL	4736	Teesta	Brahmaputra	India	12

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
854	03_78A_031	NRSC	-	GL	4305	Teesta	Brahmaputra	India	13
855	03_78A_035	NRSC	-	GL	4998	Teesta	Brahmaputra	India	7
856	03_78A_010	NRSC	-	GL	5078	Teesta	Brahmaputra	India	33
857	03_78A_012	NRSC	-	GL	5130	Teesta	Brahmaputra	India	29
858	03_78A_016	NRSC	-	GL	5451	Teesta	Brahmaputra	India	11
859	03_78A_017	NRSC	-	GL	5545	Teesta	Brahmaputra	India	#
860	03_78A_020	NRSC	-	GL	5219	Teesta	Brahmaputra	India	16
861	03_78A_025	NRSC	-	GL	4888	Amo Chhu	Brahmaputra		#
862	03_78A_030	NRSC	-	GL	4447	Amo Chhu	Brahmaputra		16
863	03_78A_011	NRSC	-	GL	5168	Amo Chhu	Brahmaputra	China	16

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
864	03_78M_013	NRSC	-	GL	4232	KuriChhu	Brahmaputra	Bhutan	#
865	03_83A_003	NRSC	-	GL	5188	Dangme Chhu	Brahmaputra	India	82
866	03_83A_004	NRSC	-	GL	5109	Dangme Chhu	Brahmaputra	India	16
867	03_83A_005	NRSC	-	GL	4994	Dangme Chhu	Brahmaputra	India	12
868	03_83A_007	NRSC	-	GL	5028	JiaBhareli	Brahmaputra	India	17
869	03_78I_014	NRSC	-	GL	5087	Puna Tsang Chhu	Brahmaputra	Bhutan	19
870	03_78I_015	NRSC	-	GL	5116	Puna Tsang Chhu	Brahmaputra	Bhutan	15
871	03_78E_001	NRSC	-	GL	5157	Puna Tsang Chhu	Brahmaputra	Bhutan	28
872	03_78E_003	NRSC	-	GL	5152	Puna Tsang Chhu	Brahmaputra	Bhutan	22
873	03_78I_025	NRSC	-	GL	5194	Puna Tsang Chhu	Brahmaputra	Bhutan	13

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
874	03_78I_036	NRSC	-	GL	5028	Puna Tsang Chhu	Brahmaputra	Bhutan	12
875	03_78I_038	NRSC	-	GL	5143	Puna Tsang Chhu	Brahmaputra	Bhutan	10
876	03_78E_008	NRSC	-	GL	5045	Puna Tsang Chhu	Brahmaputra	Bhutan	12
877	03_78I_040	NRSC	-	GL	5167	Puna Tsang Chhu	Brahmaputra	Bhutan	21
878	03_78E_011	NRSC	-	GL	4952	Puna Tsang Chhu	Brahmaputra	Bhutan	18
879	03_78E_027	NRSC	-	GL	4808	Puna Tsang Chhu	Brahmaputra	Bhutan	19
880	03_78E_025	NRSC	-	GL	4341	Puna Tsang Chhu	Brahmaputra	Bhutan	14
881	03_78I_019	NRSC	-	GL	5224	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	24
882	03_78I_020	NRSC	-	GL	5331	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	18

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
883	03_78I_022	NRSC	-	GL	5048	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	17
884	03_78I_026	NRSC	-	GL	5233	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	13
885	03_78I_028	NRSC	-	GL	4792	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	23
886	03_78I_037	NRSC	-	GL	5159	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	15
887	03_78I_043	NRSC	-	GL	5000	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	21
888	03_78I_046	NRSC	-	GL	5168	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	22
889	03_78I_054	NRSC	-	GL	5138	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	15

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
890	03_78I_057	NRSC	-	GL	5060	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	45
891	03_78I_058	NRSC	-	GL	5041	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	26
892	03_78I_064	NRSC	-	GL	4976	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	20
893	03_78I_065	NRSC	-	GL	4668	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	14
894	03_78I_067	NRSC	-	GL	4918	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	21
895	03_78I_072	NRSC	-	GL	4788	Manas Chhu&MangdeChhu	Brahmaputra	Bhutan	13
896	03_77D_006	NRSC/SDC	/Very High Risk	GL	5084	Teesta	Brahmaputra	India	25
897	03_77D_007	NRSC/SDC	/Very High	GL	5015	Teesta	Brahmaputr	India	26

S.No	Lake_ID	Inventory Developed by	Rank of Vulnerability	Lake Type	Elevation (m)	River	Basin	Country	Area of June-2022 (ha)
			Risk				a		
898	03_78A_002	NRSC/SDC	/Very High Risk	GL	4952	Teesta	Brahmaputra	India	41
899	03_78A_007	NRSC/SDC	/Very High Risk	GL	4977	Teesta	Brahmaputra	India	17
900	03_78A_027	NRSC/SDC	/Very High Risk	GL	4888	Teesta	Brahmaputra	India	30
901	03_78A_015	NRSC/SDC	/Medium Risk	GL	4970	Teesta	Brahmaputra	India	10
902	03_78A_019	NRSC/SDC	/Very High Risk	GL	4809	Teesta	Brahmaputra	India	609

G stands for Ganga, I for Indus and B for Brahmaputra under the rank of vulnerability

# indicates frozen/ dried lakes,

- Unobservable (as per NRSC), Ø indicates small rivulet/first order stream