



**ANNUAL PERFORMANCE AGREEMENT  
BETWEEN  
CHAIRMAN, GOVERNING BOARD  
AND  
DIRECTOR, NATIONAL CENTRE FOR  
HYDROLOGY AND METEOROLOGY  
(NCHM)**

**July 1, 2022 – June 30, 2023**

National Centre for Hydrology and Meteorology

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**Preamble**

The Performance Agreement is entered into between the Prime Minister and the Head of the Government Bodies.

The objective of this Performance Agreement are:

- a) To establish clarity and consensus about annual priorities consistent with the 12<sup>th</sup> Five Year Plan and Government's priorities
- b) To make the agency fully responsible for driving implementation and delivering the results against the annual priorities;
- c) To provide an objective and fair basis for evaluating the overall performance at the end of the year.

The Performance Agreement represents an important accountability mechanism for inculcating a performance-based culture at all levels of the government.

**THEREFORE**, the parties hereto agree as follows:

## **Section 1: Vision, Mission and Objectives**

### **Vision**

Centre of excellence in Hydrology, Meteorology and Cryosphere Science and Services.

### **Mission**

Monitoring and understanding of Hydrology, Weather, Climate and Cryosphere for timely provision of information and services to protect lives and property and support national needs for ecologically balanced sustainable development. Core values, commitment and loyalty in delivery of products and services integrity; Professionalism in support of science, research, objectivity, impartiality, and excellence; Mutual respect, cultural sensitivity and non-discrimination.

### **Objectives**

1. Hydro-meteorological and cryosphere disaster assessed and reduced
2. End-to-End operational National Framework for Climate Services (NCFS)
3. Access to Hydrological Information and understanding of national water availability improved
4. Water quality improved
5. To provide effective and efficient admin, HR, ICT, direction and related support services
6. Transparent, accountable and integrity consciousness and culture strengthened
7. To ensure full utilization of budget
8. To institutionalize and strengthen Government Performance Management System

<b>Name of the Autonomous Agency: National Centre for Hydrology and Meteorology</b>					
<b>Vision: Centre of Excellence in Hydrology, Meteorology and Cryosphere Sciences and Services.</b>					
<b>Mission: Monitoring and understanding of hydrology, weather, climate and cryosphere, for timely provision of information and services to protect lives and property and support national needs for ecologically balanced sustainable development.</b>					
<b>FYP Resource Outlay: 101 million</b>					
<b>FYP Outcomes (AKRA)</b>	<b>AKRA KPIs</b>	<b>Unit for the AKRA KPI</b>	<b>Target Baseline</b>	<b>FYP Target for the AKRA KPI</b>	<b>Current Status</b>
Hydro-meteorological & Cryosphere disaster assessed & reduced	National Hydro-met Observation network enhanced and operationalized	Number	221	247	240
	Flood/GLOF Early Warning Services (EWS) provided	Number	1	8	7
	Hydrological and flood hazard and risk assessed	Number	6	18	15
	Cryosphere (Glaciers, galcier lakes, permafrost and snow) monitored and hazard assessed	Number	25	44	38
	Research work/papers published, standardisation and calibration facilities established and operationalized	Number	0	3	0
End-to-end operational National Framework for Climate Services (NFCS)	Public Weather Service (PWS) provided	Number	6	8	7
	Aviation meteorological services provided	Number	3	6	5
	Climate data, information and services provided	Number	6	10	9
Access to hydrological information and understanding of national water availability improved	Hydrology and water resources data, information generated and disseminated	Number	0	4	3
Water quality improved	Sediment and ambient water quality monitoring network enhanced	Number	15	20	18
Mandatory indicators from MOF					
Mandatory indicators from RCSC		Days	5	2	3

Section II A: Annual Performance and Targets ( Yearly Breakdown)					
Name of Autonomous Agency: National Centre for Hydrology and Meteorology					
Annual Objectives (Relevant NKRRAs/AKRAs)	KPI	Weight	Unit	Baseline	Target
Hydro-meteorological & Cryosphere disaster assessed & reduced	National Hydro-met Observation network enhanced and operational	10	Number	240	247
	Hydrological data, flood early warning services provided	5	Number	6	8
	Hydrological and flood hazard and risk assessed	12	Number	15	18
	Cryosphere monitored and hazard assessed	16	Number	38	44
	Research work/papers published, calibration facilities established and operational	5	Number	0	3
End-to-end operational National Framework for Climate Services (NFCS)	Weather monitored and public Weather Service (PWS) provided	10	Number	0	4
	Airport weather monitored and aviation meteorological services provided	10	Number	5	6
	Climate data, information and services provided to users	9	Number	9	10
Access to hydrological information and understanding of national water availability improved	Hydrology and water resources data, information generated and disseminated	9	Number	3	4
Water quality improved	Sediment and ambient water quality monitoring network enhanced	5	Number	18	19
RCSC		4			
MOF		5			
		100			

Section II B					
KPI	KPI Description	Key Interventions	Risk Mitigation Plan	Budget Requirement	Means of Verification
National Hydro-met Observation network enhanced and operational	This KPI will measure the measure taken to enhance and maintain existing critical hydromet infrastructures and networks. Furthermore this KPI will also measure the quality infrastructures developed to enhance the current critical systems	To achieve the KPI the following works/activities will be implemented: 1. Annual maintenance hydromet and aviation stations and structures. 2. Establishment of Hydromet structures. 3. Establishment of Automatic Weather Stations at Gyalsung sites. 4. Establishment of Flood Early Warning System	To mitigate risk associated with the KPI the following measure will be carried out: i. Strategic monitoring and critical intervention with the approval form approving authority during the process of enhancement and upgradation of critical hydromet infrastructure and network. ii. Timely monitoring	48.6	Reports, progress report, Annual publication
Hydrological data, flood early warning services provided	This KPI will measure the services and information provided related to river flow and advisory issued during extreme events.	This KPI will measures the number of activities carried out as follows: 1. Hydrological forecasting model developed 2. Provide Hydrological services and information dissemination on Flood/GLOF related disasters.	To mitigate risk associated with the KPI the following measure will be carried out: Manual backup to be continued to counter the automated EWS system failure	2.01	Advisories, Map and reports issued
Hydrological and flood hazard and risk assessed	This KPI will measure the information generated in flood-risk areas.	This KPI will measures the generation of flood hazard map based on models and identify flood risk area of the vicinity.  □	In case of failure to execute the said fieldwork within the timeframe, the following remote activity will be initiated: 1. Study using remote sensing and GIS tools will be initiated.	5.12	Map and technical reports

<p>Cryosphere monitored and hazard assessed</p>	<p>This KPI will measure the assessment and monitoring of glaciers and glacial lakes along with the associated hazards. Furthermore, there are <b>five</b> specific activities that will be carried out to achieve the targets.</p>	<p>This KPI will measure the number of cryosphere activities conducted such as monitoring of glaciers, glacial lakes, and associated hazards as follows:</p> <ol style="list-style-type: none"> <li>1. Time series monitoring of annual glacier mass balance on the benchmark glaciers and information dissemination.</li> <li>2. Assessment of glacial lakes for GLOF risk and information dissemination</li> </ol>	<p>Identified risks and mitigation plan:</p> <p><b>1. Budget</b> : Budget not approved as proposed;  <b>Mitigation</b>: Field work carried out with some key interventions compromised.</p> <p><b>2. Logistics (transportation)</b> : Transportation of from roadend to glacier site depends on concern dzongkhag;  <b>Mitigation</b>: Failure to arrange transportation by the concerned dzongkhag only few Key Interventions(KI) will be implemented through Remote Sensing (RS). Arranging transportation by the centre will result in cost escalation beyond approved budget.</p> <p><b>3. Unforeseen events</b>: pandemic, natural calamities  <b>Mitigation</b>: Only few Key Interventions (KI) will be implemented through Remote Sensing(RS).</p>	<p>2.990</p>	<p>Technical Report</p>
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Reseach work/papers published, calibration facilities established and operational	This KPI will provide scientific and technical expertise and advice in support of policy and decision-making and implementation	To achieve this KPI following works/activities would be implemented: 1.Handbook for hydrological observation developed 2.Guidelines on calibration of Weather instruments developed 3.Calibration of AWS and AWLS instruments initiated.	No risk is involved as it is routine services that are mandated to be provided and facilitated	0	Technical Report
Weather monitored and public Weather Service (PWS) provided	This KPI provides weather forecasts, weather remarks and advisories on extreme weather events	To achieve this KPI following works/activities would be implemented: 1. Weather forecasts, remarks, advisories, warnings and reports generated 2. Impact based forecasting issued	To mitigate risk associated with the KPI the following measure will be carried out: i.Incase of failure of Numerical Weather Prediction(NWP) runs for preparation of forecast at national level, the regional and global forecast system will be utilized .	0.974	Advisories, forecast and reports issued
Airport weather monitored and aviation meteorological services provided	This KPI would provide aviation meteorological services for safe, efficient and regular flight operations	To achieve this KPI following works/activities would be implemented: 1. Provide aeronautical meteorological observations and forecasts 2. Disseminate aeronautical climatological information	No risk is involved as it is routine services that are mandated to be provided and facilitated	3.541	Advisories, forecast and reports issued

Climate data, information and services provided to users	This KPI provides information on climate change, climate prediction, monitoring and historical climate data	To achieve this KPI following works/activities would be implemented 1. Medium, extended and seasonal predictions generated and disseminated 3. Generate in-situ climate monitoring report and climate data book. 3. Provide agromet services.	Sensitization programme will be conducted virtually in case of travel restriction.	0.925	Forecast, predictions and reports issued
Hydrology and water resources data, information generated and disseminated	This KPI will measure the assessment, monitoring, and information generated for water resources.	The indicator will include the following: 1. Assessment/ Modelling of surface water availability. 2. Hydrological Data Processing and Database Management. 3. Hydrological Information generation and dissemination.	In case of failure conduct fieldwork related to this activity: 1. Study using remote sensing and GIS tools will be initiated.	0	Technical Report
Sediment and ambient water quality monitoring network enhanced	This indicator will measure to enhance and collect data for water quality assessment.	The KPI will include the following activities: 1. Set up sediment laboratory. 2. Generation of suspended sediment load and ambient water quality information.	To mitigate risk associated with the KPI the following measure will be carried out: i. Strategic monitoring and critical intervention with the approval from approving authority during the process of enhancement of sediment laboratory.	9.5	Technical report, work progress report

**Section III - Annexure (Budget and Human Resources)**

**Details on Human Resources (HR)**

**Table A**

**Existing HR information**

Sl. No	Position Title	Number	Qualification	Total	Place/Division
1	Director	1	Masters degree	1	Office of the Director
	Personal Asst	1	Class XII	1	
2	Procurement Officer	1	PGDFM	1	Secretariat
	Store Asst	1	Class XII	1	
	Accounts Asst	1	DFM	1	
	HR Officer	1	PGDPA	1	
	HR/Admin Asst	2	Class XII	2	
	ICT Officer	1	Bachelors	1	
	ICT Technical Associate	1	DIMS	1	
	Driver	8	Class VIII and above	8	
	Sweeper	1	NA	1	
3	Specialist III	1	Masters	1	CSD
	Geologist	3	Bachelors of Engineering and above	3	
	Met/Hyd Officer	1	Bachelors of Engineering and above	1	
	Engineer	1	Bachelors of Engineering and above	1	
	Met/Hyd Technician	1	Class XII	1	
4	Specialist III	1	PhD	1	WCSD
	Met/Hyd Officer	6	Bachelors of Engineering and above	6	
	Statistical Officer	1	Bachelors	1	

4	Environment Officer	1	Bachelors	1	WCSD
	Engineer	1	Bachelors of Engineering and above	1	
	Met/Hyd Technician	22	Class XII	22	
5	Chief Met/Hyd Officer	1	Masters	1	HWRSD
	Met/Hyd Officer	2	Bachelors of Engineering and above	2	
	Engineer	2	Bachelors of Engineering and above	2	
	Statistical Officer	1	Bachelors	1	
	Asst Engineer I	1	Diploma Civil Engineering	3	
	Met/Hyd Technician	6	Class XII	6	
6	Principal Engineer	2	Diploma Civil Engineering and Masters	2	HOID HQ
	Met/Hyd Officer	3	Bachelors of Engineering and above	3	
	Met/Hyd Technician	4	Class X and above	4	
	Engineer	2	Bachelors of Engineering and above	2	
	Lab Assistant	2	Class XII	2	
7	Met/Hyd Officer	1	Bachelors	1	East Region, HOID
	Met/Hyd Technician	52	Class XII	52	
8	Asst Engineer	1	Diploma	1	West Region, HOID
	Met/Hyd Technician	40	Class XII	40	
9	TMO	1	B. Tech (Electronics and Communication Engineer)	1	TMO Office, GoI program under HOID
	Asst. Engineer	1	Class XII with Diploma	1	
	Met/Hyd Technician	3	Class XII	3	
	Admin Assistant	1	Class XII	1	
	ESP/GSP	13	Class VIII and above	13	
		<b>197</b>			
<b>Table B</b>					

**HR recruitment plan for the Year 2023**

Sl. No	Position Title	Number	Qualification	Total	Place/Division
1	Met/Hyd Officer	1	Bachelors	1	WCSD

2	Program Officer	1	PGDPA	1	Secretariat (Replacement for transfer)
3	Finance Officer	1	PGDFM	1	Secretariat (Replacement for transfer)
<b>Details on Budget</b>					
<b>Sl. No</b>	<b>Recurrent/Operational Budget</b> <i>(total for the Agency in millions )</i>		<b>Capital Budget</b> <i>(total for the Agency in millions )</i>		<b>Total</b>
1	36.84		73.66		<b>110.5</b>
	<b>Total</b>		<b>Total</b>		

Section II A: Annual Performance and Targets					
Name of Division: Hydrology and Water Services Division.					
Output relevant to division	KPI	Weight	Unit	Baseline	Target
Operational of national hydro-met observation network.	Flood EWS on Ammochhu basin established	8	Percent	0	100
	Flood EWS on Wangchhu basin (Pachhu and Thimchu) established	5	Percent	0	50
	Construction of FWS site office Completed. (Tingtibi )	5	Percent	0	100
	Procurment of Hydrologcail equipment and spare parts completed	4	Percent	0	100
	Renovation of cableway completed	5	Percent	0	100
	Annual maintenance of hydrological stations.	7	Percent	0	100
	Construction of flood warning and monitoring site office at Gakiling, Haa Completed	4	Percent	40	100
	Monitoring and Transmission of hydrological data to HQ	7	Percent	0	100
Hydrological data, flood early warning services provided	Flood/flow forecasting model setup	5	Number	4	8
	Operation of Flood Monitoring and Common Room (FMCR) of National Weather and Flood Warning Center (NFWFC) and basin control rooms	10	Percent	0	100
	Awareness/mock drill on GLOF/Rainstorm EWS conducted	4	Number	3	4
Hydrological and flood hazard and risk assessed	Flood hazard map prepared	8	Number	15	18
Hydrology and water resources data, information generated	Basin-wise water resources availability assessment conducted.	4	Number	1	4
	Hydrological Data Processing and Database Management	5	Percent	0	100
	Channel Rating of AWLS sites for Rating Curve development	4	Number	12	17

and disseminated	Data collection for Hydrological Information System development and publication of report/article in hydromet journal	5	Number	6	16
Monitoring of suspended sediment and ambient water quality	Procurement of equipment and setup of sedimentary laboratory at Tama chhu	5	Percent	0	100
	Installation and monitoring of ambient water quality	5	Percent	0	100
		100			
<b>Section II B</b>					
<b>KPI</b>	<b>KPI Description</b>	<b>Key Interventions</b>	<b>Risk Mitigation Plan</b>	<b>Budget Requirement</b>	<b>Means of Verification</b>
Flood EWS on Ammochhu basin established	Establishment of Early Warning System(EWS) for Amochu basins completed	In this activity the following activity will be carried out: i. Survey for the establishment of the hydrological station ii. Procurement of the equipment iii. EWS concept development iv. install/established EWS iv. Generation of Hazard map	Procurement to be conducted through direct contract through OEM. Interim EWS to be continued to function OEMs experts to be involved virtually to train NCHM engineers and technician for installation, testing and commissioning of EWS, in case of travel restrictions due to pandemics	27.7	EWS on Amochu established and operational
Flood EWS on Wangchhu basin (Pachhu and Thimchu) established	Wangchhu basin the EWS design concept and hazard map completed.	In this activity the following activity will be carried out: i. Survey for the establishment of the hydrological station ii. Procurement of the equipment iii. EWS concept development iv. Generation of Hazard map	JICA consultants and experts to be involved virtually in case of travel restrictions due to pandemics.	0.3	EWS design concept on Wangchhu basin completed

Construction of FWS site office Completed. (Tingtibi )	Site office construction at Tingtibi will be carried out. All civil and electrical works.	<ol style="list-style-type: none"> <li>1) Budget estimate and design drawing will be carried out.</li> <li>2) Tendering process and work order issued as per the PRR 2019</li> <li>3) Site office work will be monitored</li> <li>4) handing taking and billing will be executed</li> </ol>	To mitigate risk associated with the KPI the following measure will be carried out: i.Strategic monitoring and critical intervention with the approval form approving authority during the process of enhancement and upgradation of critical hydromet infrastructure and network. ii.Timely monitoring	4.477	Completion report
Procurment of Hydrologcail equipment and spare parts completed	There are hydromet station across the country and for the annual maintenance, spare parts procured.	<ol style="list-style-type: none"> <li>1) Assessment on which equipments that needs to be procured.</li> <li>2)Note Sheet approval for direct contracting</li> <li>3)Get Quotation from Original equipment manufacturer(OEM)</li> <li>4)Present to the TAC</li> <li>5)Form a negotiation team</li> <li>6)Present to the TAC</li> <li>7)Finalize and provide supply order</li> <li>8)Billing</li> </ol>	To mitigate risk associated with the KPI the following measure will be carried out: i.Strategic monitoring and critical intervention with the approval form approving authority during the process of enhancement and upgradation of critical hydromet infrastructure and network. ii.Timely monitoring	3.05	Final Payment receipt and picture
Renovation of cableway completed	All the maintenance and repair works needed at the cableway station will be carried out.	<ol style="list-style-type: none"> <li>1) Budget estimate and design drawing will be carried out.</li> <li>2) Tendering process and work order issued as per the PRR 2019</li> <li>3) Site office work will be monitored</li> <li>4) handing taking and billing will be executed</li> </ol>	To mitigate risk associated with the KPI the following measure will be carried out: i.Strategic monitoring and critical intervention with the approval form approving authority during the process of enhancement and upgradation of critical hydromet infrastructure and network. ii.Timely monitoring	0.264	Completion report
Annual maintenance of hydrological stations.	Annual maintenance of all the hydrology, meteorology and GLOF stations across the country carried out by the hydromet officers.	-All minor and major maintenance will be carried out and all stations will be made up and running.	Incuse of travel restriction site staff will carry out maintenance with instruction from officer through video call	0.995	Annual Maintenance report



Construction of flood warning and monitoring site office at Gakiling, Haa Completed	Construction of site office at Gakiling, haa to monitor water level and flood related activities	1) Site office work will be monitored 2) handing taking and billing will be executed	To mitigate risk associated with the KPI the following measure will be carried out: i.Strategic monitoring and critical intervention with the approval form approving authority during the process of enhancement and upgradation of critical hydromet infrastructure and network. ii.Timely monitoring	2.8	Completion report
Monitoring and Transmission of hydro-met data to HQ	This indicator will measure the timely monitoring and data observation of field stations across the country by the Site staff. The data collected on a daily basis from field stations are transmitted monthly to HQ for data processing and archival in National Database.	- Data is transmitted daily to HQ via social media. -Raw data is compiled monthly in hard copy and submitted to the data manager for archival in the database.	No risk involved since it is daily routine services that are mandated to be provided and facilitated	0	Raw datas, data recorded
Flood/flow forecasting model setup	Model set up using HEC-HMs for river flow forecasting and flood forecasting for 3 days. Following forecasting model will be developed: 1.Dagachu 2.Chamkhar-Magde chu 3.Gongrichu 4.Amochu	In this activity the following activity will be carried out: i. Data preparation (Hydrological and meteorological data) ii. Model set up using HEC-HMS iii. Calibration and verification of the forecast	Verification and calibration for to be continued using other input data for higher accuracy of forecast result	1.46	Hydrological model set up and reports
Operation of Flood Monitoring and Common Room (FMCR) and basin contro rooms.	Monitoring of the early warning system 24/7.Dissemination of daily river flow status and flood forecast during the extreme events to the relevant stakeholder. Global, regional and national products such as FFGS, streamflow prediction, flood DSS and WRF are monitored for issuance of advisory and information.	In this activity the following activity will be carried out: i. Daily monitoring of the system ii. Issue water level and discharge information to relevant stakeholders. iii. Issue advisory during extreme events	Manual backup to be continued to counter the automated EWS system failure Redundant wireless communication to be continued to counter communication failure during extreme events.	0.55	Log Book, Advisory, Action taken report

Awareness/mock drill on GLOF/Rainstorm EWS conducted	Conduct mock drills for EWS with communities and local government with updated identification of the safe zone in collaboration with DDM for Punatshangchhu, Chamkhar-Mangde and Amochu basins.	In this activity the following activity will be carried out: i. Awareness program to vulnerable communities/ stakeholders ii. Updating information in the SOP iii. Mock Drill conducted for the schools.	The awareness program will be conducted virtually in case of face to face meeting is not possible due to the pandemic. DDM engagement in this activity is important.	0	Report
Flood hazard map	The flood hazard map developed will delineate areas that are susceptible to flooding. The various return years simulation will present multiple scenarios for development of flood risk mapping.	Following activity will be carried out: i. Field survey ii. Data preparation iii. Model development using HEC-Ras iv. Consultation meeting with DDM and sharing of hazard map to DDM	In case of failure to conduct fieldwork for this activity: 1. Study using remote sensing and GIS tools will be initiated. 2. procure high-resolution DTM for the area of interest	5.12	Hazard map and report
Assessment of basin-wise water resources availability	Surface water availability will be assessed in this activity for the selected sub-basins of Amochu, Punatshangchu, and Manas	The following activity will be carried out: i. Data preparation and analysis ii. Modelling, and verification using lean flow spot measurement data.	No budget is allocated for this activity, field visit travel expenses are to be met from the pool travel budget. In case a field visit for spot measurement is not possible, the available previous spot measurement to be used for verification.	0	Report
Hydrological Data Processing and Database Management	Hydrological Data Processing and Database Management of Hydrological data collection from the National Hydrological Observation networks and dissemination of data and river monitoring and status.	The following activity will be carried out: i. Data quality control iii. Data archival in HYDATA and iii. Migration of historical data from HYDATA to central DMS iv. Verification and validation of AWLS data with manual data of co-located 3 stations.	Central DMS system may not be ready for the migration of data, however, data shall be prepared as per the format for migration. To avoid loss of data, a secure data backup shall be created.	0	Surface Hydrological Book, Updated data entry in HYDATA system, verification report and central DMS

Channel Rating of AWLS sites for Rating Curve development	The rating curve of the AWLS stations will be developed through this activity which will be used to convert the water level in to discharge	Following activity will be carried out: i. River Cross-section and aerial survey ii. Discharge measurement iii. Development of rating equation and curve. iv. Integration of rating equation into AWLS system	In-house training on integration of rating equation into AWLS system. No fund allocated for this activity, it shall be conducted along with annual maintenance work.	0	Technical report
Data collection for Hydrological Information System development and publication of report/article in hydromet journal	Data collection for Hydrological Information System development and publication of report/article in hydromet journal	Following activity will be carried out: i. Aerial survey of the observation site ii. Station information and metadata preparation iii. River cross-section survey iv. DEM/ DTM preparation	No fund allocated for this activity, it shall be conducted along with annual maintenance work.	0	Report and Metadata of the stations
Set up a Sediment laboratory at Tamchhu	The center already has an hydrological station at tamchu, the proposed activity is to set up a fully functional sediment laboratory at tamchu, so the sediment analysis can be done at the site station. This activity is planned in view of the 12th Five year plan and to address the need of continue data on suspended sediment load on major rivers.	The following activities will be initiated to implement the KPI: 1) Procurement of laboratory equipments as per PRR rules and regulation 2) Set up and operational of suspended sediment loads		1	Sedimnet laboratory set up picture and final payment receipt
Installation and monitoring of ambient water quality	Monitoring of ambient water quality by installing equipment used for the water quality monitoring in the existing stations of Gunitsawa, Bondey, Dodena and Lungtenphu.	The following activities will be initiated to implement the KPI: 1) Procurement of equipment 2) Installation of the equipment 3) Monitoring and analysis.	Experts to be involved virtually to train NCHM engineers and technician in case of travel restrictions due to pandemics	8.5	Reports.

**Section II A: Annual Performance and Targets**

**Name of Division: Cryosphere Services Division**

Output relevant to division	KPI	Weight (%)	Unit	Baseline	Target
Assessment and monitoring of cryosphere and associated hazards	1. Annual glacier mass balance on the benchmark glaciers ( <b>Thana Glacier</b> ) monitored.	20	Percentage	0	100
	2. Annual glacier mass balance on the benchmark glaciers ( <b>Gangju La Glacier</b> ) monitored	20	Percentage	0	100
	3. Assessment of glacial lakes for GLOF risk at Chamkhar Chhu ( <b>Burtsham glacial lake</b> ) conducted	20	Percentage	0	100
	3. Assessment of glacial lakes for GLOF risk at Paa Chhu ( <b>Jichudarkey/Karma glacial lake</b> ) conducted	20	Percentage	0	100
	3. Assessment of glacial lakes for GLOF risk at Mo Chhu ( <b>Sintaphu glacial lake</b> ) conducted	20	Percentage	0	100

**Section II B**

KPI	KPI Description	Key Interventions	Risk Mitigation Plan	Budget Requirement (in millions)	Means of Verification
1. Monitoring of annual glacier mass balance on the benchmark glaciers (Thana Glacier)	This activity is part of annual monitoring of Benchmark <b>Thana</b> glacier at <b>Chamkhar Chhu headwater</b> .	In this activity the following technical surveys will be carried out: i. Geodetic Survey ii. Snow density measurement and snow depth survey iii. Stake Survey and data retrieval iv. Terminus Survey v. Photogrammetry survey vi. Discharge measurement	Identified risks and mitigation plan: <b>1. Budget</b> : Budget not approved as proposed; <b>Mitigation</b> : Field work carried out with some key interventions compromised.  <b>2. Logistics (transportation)</b> : Transportation of from roadend to glacier site depends on concern dzongkhag; <b>Mitigation</b> : Failure to arrange transportation by the concert dzongkhag, only Key Interventions i & iv will be implemented through Remote Sensing(RS). Arranging transportation by the centre will result in cost escalation beyond approved budget.  <b>3. Unforeseen events</b> : pandemic, natural calamities <b>Mitigation</b> : Only Key Interventions i & iv will be implemented through Remote Sensing(RS).	0.7	Technical Report, Annual Report and administrative records.
2. Monitoring of annual glacier mass balance on the benchmark glaciers (Gangju La Glacier)	This activity is part of our annual monitoring of Benchmark <b>Gangju la</b> glacier at <b>Pho Chhu headwater</b> .	In this activity the following technical surveys will be carried out: i. Geodetic Survey ii. Snow density measurement and snow depth survey iii. Terminus Survey iv. Photogrammetry survey	Identified risks and mitigation plan: <b>1. Budget</b> : Budget not approved as proposed; <b>Mitigation</b> : Field work carried out with some key interventions compromised.  <b>2. Logistics (transportation)</b> : Transportation of from roadend to glacier site depends on concern dzongkhag; <b>Mitigation</b> : Failure to arrange transportation by the concert dzongkhag, only Key Interventions i & iv will be implemented through Remote Sensing(RS). Arranging transportation by the centre will result in cost escalation beyond approved budget.  <b>3. Unforeseen events</b> : pandemic, natural calamities <b>Mitigation</b> : Only Key Interventions i & iv will be implemented through Remote Sensing(RS).	0.66	Technical Report, Annual Report and administrative records.

<p>3. Assessment of glacial lakes for GLOF risk at Chamkhar Chhu (<b>Burtsham glacial lake</b>) conducted</p>	<p>Assessment of glacial lake which are of potential risk are being carried out on annual basin. For this fiscal year <b>Burtsham Glacial lake</b> at head water of <b>Chamkhar chhu</b> basin will be studied.</p>	<p>The following technical surveys will be carried out:  i. Bathymetry survey of the lake  ii. Geotechnical studies  iii. Geomorphological studies of the moraine.  iv. Photogrammetry survey</p>	<p>Identified <b>risks</b> and mitigation plan:  <b>1. Budget</b> : Budget not approved as proposed;  <b>Mitigation</b>: Field work carried out with some key interventions compromised.  <b>2. Logistics (transportation)</b> : Transportation of from roadend to glacier site depends on concern dzongkhag;  <b>Mitigation</b>: Failure to arrange transportation by the concert dzongkhag, only Key Interventions i &amp; iv will be implemented through Remote Sensing(RS). Arranging transportation by the centre will result in cost escalation beyond approved budget.  <b>3. Unforeseen events</b>: pandemic, natural calamities  <b>Mitigation</b>: Only Key Interventions iii will be implemented through Remote Sensing(RS).</p>	<p>0.54</p>	<p>Technical Report, Annual Report and administrative records.</p>
<p>4. Assessment of glacial lakes for GLOF risk at Paa Chhu (<b>Jichudarkey/Karma glacial lake</b>) conducted</p>	<p>Assessment of glacial lake which are of potential risk are being carried out on annual basin. For this fiscal year <b>Jichudarkey Glacial lake</b> at head water of <b>Paa chhu</b> basin will be studied.</p>	<p>The following technical surveys will be carried out:  i. Bathymetry survey of the lake  ii. Geotechnical studies  iii. Geomorphological studies of the moraine.  iv. Photogrammetry survey</p>	<p>Identified risks and mitigation plan:  <b>1. Budget</b> : Budget not approved as proposed;  <b>Mitigation</b>: Field work carried out with some key interventions compromised.  <b>2. Logistics (transportation)</b> : Transportation of from roadend to glacier site depends on concern dzongkhag;  <b>Mitigation</b>: Failure to arrange transportation by the concert dzongkhag, only Key Interventions i &amp; iv will be implemented through Remote Sensing(RS). Arranging transportation by the centre will result in cost escalation beyond approved budget.  <b>3. Unforeseen events</b>: pandemic, natural calamities  <b>Mitigation</b>: Only Key Interventions iii will be implemented through Remote Sensing(RS).</p>	<p>0.49</p>	<p>Technical Report, Annual Report and administrative records.</p>

<p>5. Assessment of glacial lakes for GLOF risk at Mo Chhu (Sintaphu glacial lake) conducted</p>	<p>Assessment of glacial lake which are of potential risk are being carried out on annual basin. For this fiscal year <b>Sintaphu Glacial lake</b> at head water of Mo <b>chhu</b> basin will be studied.</p>	<p>The following technical surveys will be carried out:  i. Bathymetry survey of the lake  ii. Geotechnical studies  iii. Geomorphological studies of the moraine.  iv. Photogrammetry survey</p>	<p>Identified risks and mitigation plan:  <b>1. Budget</b> : Budget not approved as proposed;  <b>Mitigation</b>: Field work carried out with some key interventions compromised.   <b>2. Logistics (transportation)</b> : Transportation of from roadend to glacier site depends on concern dzongkhag;  <b>Mitigation</b>: Failure to arrange transportation by the concert dzongkhag, only Key Interventions i &amp; iv will be implemented through Remote Sensing(RS). Arranging transportation by the centre will result in cost escalation beyond approved budget.   <b>3. Unforeseen events: pandemic, natural calamities</b>  <b>Mitigation</b>: Only Key Interventions iii will be implemented through Remote Sensing(RS).</p>	<p>0.6</p>	<p>Technical Report, Annual Report and administrative records.</p>
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Section II A: Annual Performance and Targets					
Name of Division: Technical Standard and Research Division					
Output relevant to division	KPI	Weight (%)	Unit	Baseline	Target
Research and standardization of hydro-met services	Handbook for hydro-met observation developed	30	Number	0	2
	Guidelines on calibration developed	25	Number	0	3
	Calibration of hydro-met equipments initiated	25	Number	0	20
	Technical sanction accorded	10	Number	0	5
	Publication of Hydromet journal, data year book and annual reports	10	Number	0	1
		100			
Section II B					
KPI	KPI Description	Key Interventions	Risk Mitigation Plan	Budget Requirement (in millions)	Means of Verification
1. Handbook for hydro-met observation developed	Standarization of hydromet operation procedures and to create the uniformity in the field of operation	Review the regional and international standards, guidelines and develop a hand book related to our system for future references	No risk is involved as it is routine services that are mandated to be provided and facilitated	0	Technical Report
2. Guidelines on calibration developed	Standard operating procedure for carrying out the calibration of different equipments	Review the international guidelines and develop the standard procedures for carrying out calibration for thermometer, dry and wet thermometer and barometer	No risk is involved as it is routine services that are mandated to be provided and facilitated	0	Technical Report
3. Calibration of hydro-met equipments initiated	To check for the accuracy of the instruments used in the field for measuring various parameters	Calibration for following equipments will be carried out: -Thermometer barometer psychrometer	No risk is involved as it is routine services that are mandated to be provided and facilitated	0	Reports and Administrative Records
4. Technical sanction accorded	According approval for the work or goods and services palnned by repective service Division	Following activities will be carried out: 1. review the detail estimates and drawing submitted, checked for approved brands and quality of materials proposed, also if it's estimates are within the approved budget	No risk is involved as it is routine services that are mandated to be provided and facilitated	0	Administrative Records



5. Publication of Hydromet journal, data year book and annual reports	coordinate and publish the hydromet journal	The hydromet journal, data year book and annual report will be published	No risk is involved as it is routine services that are mandated to be provided and facilitated	0	Technical Report/ Books
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Section II A: Annual Performance and Targets					
Name of Division: Weather and Climate Services Division (WCSD)					
Output relevant to division	KPI	Weight	Unit	Baseline	Target
Weather forecast and advisories on extreme weather events issued	Daily weather forecast (365 days) provided	7	Number	0	365
	72 hour forecast/weather reports provided	7	Number	0	365
	Extreme weather advisories and impact based forecasting issued	7	Percentage	0	100
	Aviation forecasts	3	Number	0	365
	Tailor made forecasts	3	Percentage	0	100
	City forecast of 8 points to WMO Weather Information System provided	3	Number	0	365
Aviation met services provided	Aviation met equipment at all airports operated and maintained	4	Percentage	0	100
	Meteorological observations and reports (METAR/SPECI) provided	7	Percentage	0	100
	Aeronautical climatological information provided	3	Numbers	0	12
	Services for operators and flight crew members (briefing) provided	4	Percentage	0	100
	Forecasts and warnings (TAF/SIGMET) piloted	7	Percentage	0	100
Climate services provided	Seasonal prediction (summer & winter outlook) provided, NCOF conducted	3	Number	0	1
	Climate monitoring (monthly), state of the climate and climate data book generated	3	Number	0	12
	Agromet services, forecast data for Agromet services provided	2	Number	0	365
	Climate data provided and archived	4	Percentage	0	100
	Extended range weather forecast provided	5	Number	0	52
	Medium range weather forecast provided	5	Number	0	52
Climate projection, information and services	3	Number	0	1	

The critical hydro-met/GLOF infrastructures & network enhanced & maintained	Construction of AWS at Gyalsung sites	6	Number	1	5
	Annual maintenance meteorological stations.	7	Percentage	0	100
	Monitoring and Transmission of meteorological data to HQ	5	Percentage	0	100
	Procurement of meteorological Spare Parts	2	Percentage	0	100
		100			
<b>Section II B</b>					
<b>KPI</b>	<b>KPI Description</b>	<b>Key Interventions</b>	<b>Risk Mitigation Plan</b>	<b>Budget Requirement</b>	<b>Means of Verification</b>
Daily weather forecast (365 days) provided	Provide daily weather forecast and disseminate it to the users	In this activity following works will be carried out: 1. Monitor Himawari Sattelite 2. Refer forecasts from other regional and global sources 3. Prepare forecast using NWP 4. Disseminate forecasts as per the SOP	Incase of failure of Numerical Weather Prediction(NWP) runs for preparation of forecast at national level, the regional and global forecast system will be utilized .	0	Forecast report
72 hour forecast/weather reports provided	Provide 3-Day weather forecast and disseminate it to the users/stakeholders/public	In this activity following works will be carried out: 1. Monitor Himawari Sattelite 2. Refer forecasts from other regional and global sources 3. Prepare forecast using NWP 4. Disseminate forecasts as per the SOP	Incase of failure of Numerical Weather Prediction(NWP) runs for preparation of forecast at national level, the regional and global forecast system will be utilized .	0	Forecast report
Extreme weather advisories and impact based forecasting issued	Issue advisories when there is extreme weather forecast		Incase of failure of Numerical Weather Prediction(NWP) runs for preparation of forecast at national level, the regional and global forecast system will be utilized .	0	Advisories
Aviation forecasts	Provide forecasts for aviation met	In this activity following works will be carried out: 1. Prepare forecast using NWP as per the requirement of aviation met 2. Disseminate forecasts to the concerned authority (ies)	Incase of failure of Numerical Weather Prediction(NWP) runs for preparation of forecast at national level, the regional and global forecast system will be utilized .	0.474	Forecast report

Tailor made forecasts	Provide forecasts to users as per their request	In this activity following works will be carried out: 1. Prepare forecast using NWP and referring other sources as per the user request 2. Disseminate forecasts to the user	Incase of failure of Numerical Weather Prediction(NWP) runs for preparation of forecast at national level, the regional and global forecast system will be utilized .	0.5	Forecast report
City forecast of 8 points to WMO Weather Information System provided	Provide forecasts of 8 points to WMO as part of WMO WIS	In this activity following works will be carried out: 1. Monitor Himawari Sattelite 2. Refer forecasts from other regional and global sources 3. Prepare forecast using NWP 4. Disseminate forecasts	Incase of failure of Numerical Weather Prediction(NWP) runs for preparation of forecast at national level, the regional and global forecast system will be utilized .	0	Forecast report
Aviation met equipment at all airports operated and maintained	Operate and maintain aviation met equipments for safe, regular and efficient flight	In this activity following works will be carried out: 1. Observation of data 2. Maintenance of stations/equipment as and when required	Since the avation met equipment has to be up for safe, regular and efficient flights, this has to be achieved regardless of the situation	2.336	Tour report, maintenance report
Meteorological observations and reports (METAR/SPECI) provided	Provide meteorological observations and reports to flight crew	Under this activity following works will be carried out: 1. Compile meteorological data from the avation met stations 2. Prepare reports 3. Disseminate it to the flight crew	No risk involved as the sevice has to be provided for the operation of flights	0	Copy of METAR/SPECI
Aeronautical climatological information provided	Provide climatological information	Under this activity following works will be carried out: 1. Prepare data 2. Archive/store the data 3. Disseminate the data if asked by stakeholders/researchers/public	No risk involved as the data required for the preparation of the report is with the Centre.	0.7	Climate data
Services for operators and flight crew members (briefing) provided	Provide briefing to pilot and ATC	Under this activity following works will be carried out: 1. Compile data 2. Generate report 3. Brief flight crew members	No risk involved as the sevice has to be provided for the operation of flights	0.505	Briefing report

Forecasts and warnings (TAF/SIGMET) piloted	Pilot TAF/SIGMET	Under this activity following works will be carried out: 1. Prepare forecasts using NWP and other sources 2. Disseminate it to pilots and ATC	No risk involved as the service has to be provided for the operation of flights	0	TAF/SIGMET report
Seasonal prediction (summer & winter outlook) provided, NCOF conducted	Under this KPI consensus seasonal outlook using different models would be provided and shared to the public/stakeholders	Under this activity following works will be carried out: 1. Download data 2. Run different models 3. Come up with consensus outlook 4. Disseminate the outlook/prediction 5. Prepare agenda and invite stakeholders to the NCOF 6. Arrange logistics	-There might be risks such as slow internet connectivity, in that case downloading of data will be done during off hours  - If the NCOF cannot be conducted due to travel restrictions, it will be conducted virtually	0.525	Technical reports
Climate monitoring (monthly), state of the climate and climate data book generated	Under this KPI monthly climate monitoring report would be provided along with state of the climate report of the year and climate data book	Under this activity following works will be carried out: 1. Prepare data 2. Prepare format for the report/book 3. Publish report/book	No risk involved as it is a regular work	0	-Reports, data book
Agromet services, forecast data for Agromet services provided	Provide forecast data for agriculture	Under this activity forecasts data from NCHM will be pushed to the Decision support system of agriculture	There might be risks of internet connection or system error, in that case the forecasts will be sent/pushed manually	0	System
Climate data provided and archived	Provide data as per user request and archive the data	Under this activity following works will be carried out: 1. Prepare data as per the user request 2. Provide data 3. Key entry of data 4. Archival of data	No risk involved as it is the regular work	0.4	Data dissemination report
Extended range weather forecast provided	Provide ERP	Under this activity following works will be carried out: 1. Prepare data 2. Prepare ERP with the guidance IMD	No risk involved as it is the regular work	0	ERP report
Medium range weather forecast provided	Provide MRWF	Under this activity following works will be carried out: 1. Prepare data 2. Prepare MRWF with the guidance IMD	No risk involved as it is the regular work	0	MRWF report

Climate projection, information and services	Under this KPI, climate projection would be done using CMIP-6 which will be an update to the climate projection done using CMIP-5. Other information and services related to the climate would be provided	Under this activity, following works will be carried out: 1. Data preparation 2. Run models 3. Analysis of results 4. Report writing 5. Publication of reports	- Currently NCHM do not have the capacity to climate projection and it is planned to be done in WMO regional centres which would require travelling out of Bhutan. If there is travel restrictions, experts would give basic trainings virtually	0	Report
Construction of AWS at Gyalsung sites	As per the Desuung convey letter, it is mandated to carry out the work.	1) Budget estimate and design drawing will be carried out. 2) Tendering process and work order issued as per the PRR 2019 3) Site office work will be monitored 4) handing taking and billing will be executed	The following activities will be initiated to mitigate the risk for the following activities: 1) If the contractor fails to complete the work within the contract period, a detail work progress report will be presented to the approving committee for further action. (extention or termination according to PRR 2019) 2) If the Supplier/Contractor fails to perform the task within the given time frame, the Liquidity Damage and Termination clause will be applied after consultation with the Tender Committee.	2.984	Completion report
Annual maintenance meteorological stations.	Annual maintenance of all meteorology stations across the country carried out	-All minor and major maintenance will be carried out and all stations will be made up and running.	Incase of travel restriction, the site staff will carry out maintenance with instructions from officer via video conference/call	2.98	Maintenance reports
Monitoring and Transmission of meteorological data to HQ	Under this KPI, meteorological data would be observed, monitored and transmitted to the HQ by the site staff for data processing and archival in National Database.	In this activity, following works would be carried out: 1. Observation of meteorological stations 2. Tranmission of meteorological data to the HQ	No risk involved since it is daily routine services that are mandated to be provided	0	Transmission of data report

Procurement meteorological Parts	of Spare Under this KPI, meteorological spare parts would be procured which would be used for maintenance of stations	1) Assessment on which equipments that needs to be procured. 2)Note Sheet approval for direct contracting 3)Get Quotation from Original equipment manufacturer(OEM) 4)Present to the TAC 5)Form a negotiation team 6)Present to the TAC 7)Finalize and provide supply order 8)Billing	If the Supplier/Contractor fails to perform the task within the given time frame, the Liquidity Damage and Termination clause will be applied after consultation with the Tender Committee.	3.05	Report on procurement of spares
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Section II A: Annual Performance and Targets					
Name of Division: Secretariat					
Output relevant to division	KPI	Weight	Unit	Baseline	Target
Effective and efficient secretariat and general support services provided	Provide efficient and effective HR and general support services	27	Working days	0	3
	Deliver timely quality procurement services	24	Working days	0	5
	Provide effective and efficient Finance services on time	25	Working days	0	3
	Deliver effective ICT & technical support services	24	Hourly	4 hrs	2 hrs
		100			



Section II B					
KPI	KPI Description	Key Interventions	Risk Mitigation Plan	Budget Requirement	Means of Verification
Efficient and effective HR and general support services provided	This KPI will measure the activities related to management and development of existing manpower/human resources of the Centre as per provisions of the BCSR 2018. It is a part of daily routine jobs performed by the HR Services in facilitating and providing support services to directorate and technical divisions to achieve overall vision, mission and mandates of the Centre.	<p>In Order to achieve this KPI, the following major activities will be initiated and facilitated in FY 2022-2023 to provide effective and efficient HR and general support services;</p> <ol style="list-style-type: none"> <li>1. Review and submit HRD annual priority areas to RCSC by 10 January 2023</li> <li>2. Ensure employees has completed three max phases, conduct moderation exercise and process promotions within the deadline</li> <li>3. Conduct civil service awards by 16 December 2022</li> <li>4. Work out annual recruitment plan, manpower requisitions for January 2023</li> <li>5. Process timely separation and retirement benefits</li> <li>6. Ensure timely sanction of the civil service remunerations, rewards and benefits (LTC, encashment, increment, etc.)</li> <li>7. Coordinate and conduct HRC and Management meetings</li> <li>8. Manage Director's appointment, attendance and other directorate administrative works</li> </ol>	No major risk involved since it is a daily routine services.	-	administrative records/ZEST generated records

Timely and quality Procurement Services delivered	The procurement sections aims to provide the materials and equipment to the divisions in time and with quality to enhance the performance of the division and Centre as a whole.	<p>Besides the daily routine works performed by the Procurement Section, the following major activities will be carried out in the FY 2022-2023;</p> <ol style="list-style-type: none"> <li>1. Framework Contracting for Stationery, Furniture, Electrical Items, Hardware items, Vehicle Spare Parts executed.</li> <li>2. Supply Orders placed to the winning bidder within 5 days from receiving requisition and relevant documents.</li> <li>3. Tender for goods, works and consultancy carried out as per the requirement of the divisions</li> <li>4. Goods delivered as per the requisition</li> <li>5. Maintain proper stock register and Fixed asset Register besides updating in GIMS.</li> </ol>	<p>If the Supplier/ Contractor fails to perform the task within the given time frame, the Liquidity Damage and Termination clause will be applied after consultation with the Tender Committee.</p> <p>The goods not as per the departmental specification will be rejected and if he/she fails to supply the specified goods in time after rejecting, the supplier will be dealt as per the SBD and PRR.</p>	-	administrative records
Provide effective ICT Services and technical support services	ICT section will provide day to day essential ICT and Technical Support Services timely and efficiently	<p>Besides the daily routine works performed by the ICT Section, the following major activities will be carried out in the FY 2022-2023</p> <ol style="list-style-type: none"> <li>1. Licensing datahub and software support.</li> <li>2. Application system support (development and enhancement ,any support related to system)</li> <li>3. Network and server support for Hydromet Database.</li> <li>4. G-suite support</li> <li>5. Website management : Web content upload (news and other relevant information related to ministry).</li> <li>6. Hardware and support services provided.</li> </ol>	<p>No major risk involved since it is daily routine services that are mandated to be provided and facilitated. However, ICT works is largely dependent on internet connectivity</p>	-	Actual progress, server, uptime report

<p>Timely and quality Finance Services delivered</p>	<p>The finance section aims to provide finance services to the divisions as per the Financial Rules and Regulations</p>	<p>Besides the daily routine works performed by the Procurement Section, the following major activities will be carried out in the FY 2022-2023;</p> <ol style="list-style-type: none"> <li>1. Budget preparation and review</li> <li>2. Submit monthly BRF in consultation with division focals</li> <li>3. Monitor Budget Utilisation</li> <li>4. Timely payment of TADA and utility bills</li> <li>5. Monthly closing, Monthly BRS, Disbursement of Salary and settlements of Construction bills , Remittances.</li> </ol>	<p>No major risk involved since it is a daily routine services.</p>	<p>-</p>	<p>Administrative records</p>
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**Whereas,**

I, the Director, commit to the Chairman, the Government and the people of Bhutan to deliver the results described in this Annual Performance Agreement.

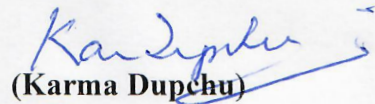
I, the chairman, commit to the Director, NCHM, on behalf of the Government and the people of Bhutan, to provide the necessary fund and resources for delivery of the results described in this Annual Performance Agreement.



**(Sonam P. Wangdi)**  
**Chairman**  
**Governing Board**  
**National Centre for Hydrology and Meteorology**

23.12.22

**Date:**



**(Karma Dupchu)**  
**Director**  
**National Centre for Hydrology and Meteorology**

23/12/2022

**Date:**