COMPETENCY BASED FRAMEWORK FOR GEOLOGIST

Version 1.0

Department of Geology & Mines
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1   Background

1.1   About the Department (Brief function, its origin, milestones)

Geology (or Geo-science) is the study of earth and all its processes. It includes the study of the natural processes that shape the earth, natural mineral resources, soil, natural hazards such as earthquakes, landslides, glacial lake outburst floods (GLOF), and more. Geologists provide knowledge and experience to build resilience to hazards, and to meet the nation and the society's demand for natural resources. They also locate and estimate mining resources, and delineate how to extract them.

Geological studies in the country initially began with the objective to carry out geological mapping for locating and extracting mineral resources in the country under the establishment of the Geological Survey of India which later evolved into the Department of Geology and Mines (DGM). Over the years DGM has expanded its roles to carry out geo-tech and geophysical studies to assess geo-hazards, foundation studies, and explore groundwater resources on both local and regional levels.

1.2   Vision and Mission of the Department

The Department of Geology and Mines is entrusted with the vision "To contribute to sustainable socio-economic development through geoscientific studies and scientific management of mineral resources in the kingdom." And under this vision, the department aims to carry out the following missions:

-   To enable the optimal development of mineral resources in a scientific manner compatible with the social and economic policy of the Royal Government and within the framework of sustainable development, protection of the environment, mineral conservation and preservation of country's precious religious and cultural heritage

-   To provide input for national development and social welfare to the citizens of Bhutan by opening up a venue for investment and employment;

-   To apply geo-scientific expertise in prevention and mitigation of natural disasters resulting from geological hazards, thus contributing to the welfare of all Bhutanese citizens leading to Gross National Happiness.

1.3   Core Values

The Department is guided by the following set of core values to promote professionalism in client-driven services:

- Integrity in research and service delivery
- Teamwork for unity and efficient performance
- Professionalism
- Innovation
- Accountability

- Transparency
- Safety, health, and the environment

1.4 Core Functions

Presently the department is responsible for carrying out the following activities:

- Conduct geological mapping of the country (e.g., Toposheet wise to deposit scale).
- Explore the mineral resources of the country.
- Study of construction material
- Carry out and regulate geoscientific studies (earthquake, landslide, site suitability, geohazard risk assessment, road alignment, groundwater, hydropower projects, etc.) in the country.
- Monitor seismic activity and disseminate post-event information to stakeholders.
- Disseminate real-time intensity information to stakeholders for disaster relief measures.
- Periodically update seismic hazard maps
- Provide geological advisory services.

Table 1. Core Functions of DGM and DHPS

Core Functions of DGM	
Divisions	**Roles/Function**
Exploration and Mapping (Geoscience and Mineral Division)	- To carry out Toposheet-wise Geological mapping of Bhutan. - Exploitation of minerals resources of Bhutan in a scientific and environmentally friendly manner with minimal impact on nature. - Collaboration with the universities and government agencies to carry out geoscientific studies in the country.
Engineering Geology (Geoscience and Mineral Division)	- Plan and carry out engineering-geological/ geotechnical to assess the suitability of the site for human settlement and other land use - Plan and conduct landslide inventory mapping, hazard, and risk assessment;

Earthquake and Geophysics Division	- Plan and carry out geophysical studies to assess the suitability of the site for human settlement and other land use; - Plan and execute seismic studies and establishment of seismic networks
Core Functions of DHPS	

- Carry out Reconnaissance Study for feasibility of hydropower projects from geological/ geotechnical aspects.
- Plan geotechnical investigations at the identified hydropower site for Pre-feasibility study.
- Carry out geological mapping
- Monitor and supervise all the investigations
- Review DPR and PFS reports prepared by other agencies for hydropower projects and issue technical sanctions
- Carry out Construction Material Survey for hydropower projects
- Review technical appraisals submitted by projects under construction
- Make sure all the investigations carried out for hydropower projects strictly comply with Bhutan Hydropower Guideline prepared by DHPS with assistance from World Bank.

1.5   Organogram
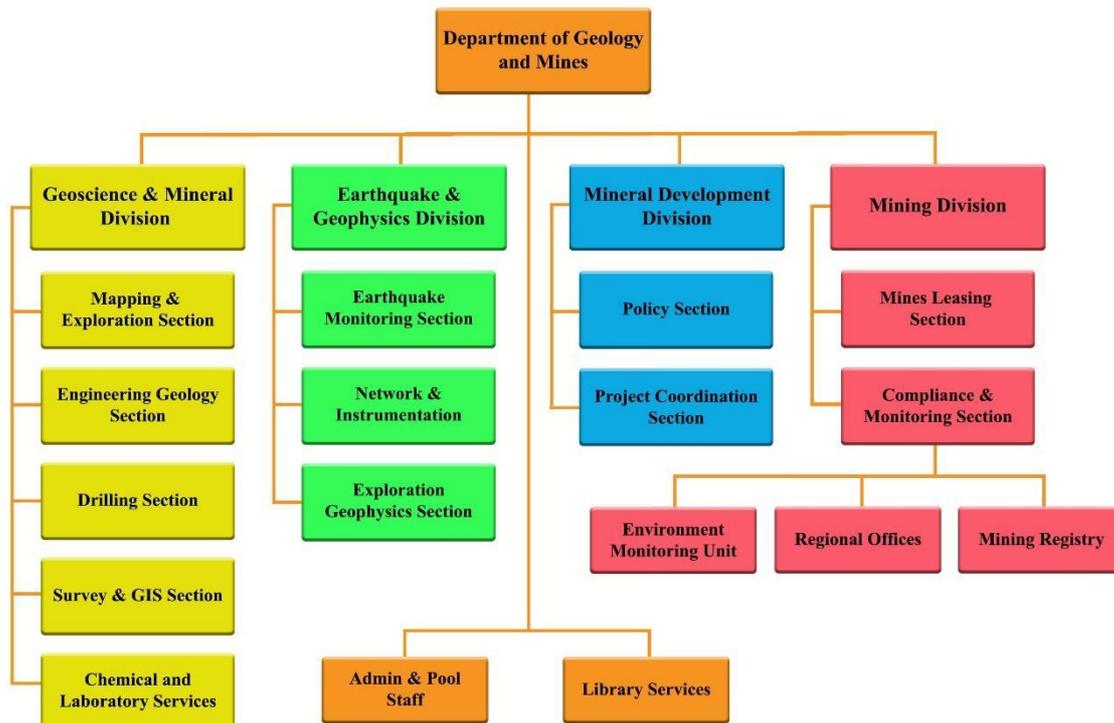
Figure 1. Organogram of DGM

2   Competency-Based framework for Geologists

2.1   Introduction

The Royal Civil Service Commission (RCSC) has introduced the Competency-Based Framework (CBF) with the objective of enhancing the service delivery of the civil servants by providing a platform for desired professional development. In absence of a relevant framework to guide the professional development of the civil servants in the country, competency and efficiency at the workplace have always been a concern to realize the national goals and objectives. The RCSC has recognized the need to enhance the service delivery of civil servants through professional and personal development which will have a sustainable impact on the system. With the introduction of CBF across all the major occupational groups, civil servants will be guided by the principles of knowledge, skills, and ability and are expected to enhance performance and service delivery. The Competency-Based Framework of the Mining Engineer has been developed to enhance the capacity and competencies of the Mining Engineer to improve the working efficiency and service delivery, in line with the Department's vision and mission, and core values. Therefore, this Competency-Based Framework is a living document and is subject to periodical review and improvement.

2.2   Purpose

The CBF highlights the knowledge, skills, and abilities required for Geologists to achieve a high level of professional competence and deliver the highest standard of services. The framework is developed with the following aim and objectives.

2.3   Aim

Build a fraternity of Geologists who are highly knowledgeable, skillful, and competent in delivering efficient and effective services of the highest standard.

2.4   Objectives

The objectives of the framework are as follows:

- Provide clarity on the role of a Geologist.
- Evaluate performance gaps and identify mandatory training needs for Geologists at different proficiency levels to optimize maximum work performance.
- Upgrade competency and professionalism of Geologists.

2.5   Framework Development Processes

The development of the framework involved identifying Role Profiles, Competency Areas, Key Competencies, Behavioural Indicators, and Proficiency Levels through a rigorous, consultative, and inclusive process with key stakeholders. The framework is endorsed by the 43rd Departmental Human Resource Committee (DHRC) held on April 1 2022, 411th Ministerial Human Resource Committee (MHRC) meeting of the Ministry of Economic Affairs held on April 8 2022. And, subsequently presented to Focal Commission on 21st April, 2022 and final endorsement of the document during 139th Commission meeting held on 17th May 2022.

2.6   Structure: An overview of CBF
Brief explanation and diagrammatic overview of the CBF

The framework has identified clear key roles, competencies, and behavioural indicators of each proficiency level to achieve professional excellence. The framework comprises 3 Key Roles identifying 6 Competency areas. The 6 Competency domains cascade into 14 Key Competencies supported by 22 Behavioural Indicators spreading over 4 Levels of Proficiencies (Foundation, Intermediate, Experienced & Advanced levels).

Figure 2. Diagrammatic overview of the CBF for Geologists.

Key Roles	3
Competency Area	6
Key Competencies	14
Behavioural Indicators	22
Proficiency Levels	4

2.6.1 Identification of Key Role

The key role is an organized set of behaviours that are crucial to achieving the current and future goals of the Department of Geology and Mines. Following are the key roles expected to be performed by the Geologist:

1. Geoscientific Mapper

2. Geoscientific Researcher
3. Geoscientific Advisor

2.6.2 Description of Role Profile

The role profile is the description of roles that Geologists are expected to demonstrate in achieving the outcomes of the department. It defines outcomes and competencies for an individual role. It concentrates on outcomes rather than duties, which provides better guidance than a job description on expectations. It does not constrain Geologists to carry out a prescribed set of tasks.

2.6.3 Role Profile of Geologists

Table 2. Role profile of Geologists

Sl.no	Key Role	Role Description
1.	Geoscientific Mapper	1. Plan and execute geological mapping; mineral prospecting and exploration; mineral and groundwater resources mapping; construction materials (fine and coarse and aggregates, slabs, etc.)
		2. Plan and carry out engineering-geological/ geotechnical/ geophysical studies to assess the feasibility of structures (dams, tunnels, bridges, etc) and the suitability of the site for human settlement and other land use.
		3. Plan and conduct landslide inventory mapping, hazard and risk assessment;
		4. Plan and execute seismic studies to precisely provide seismic parameters for the safe design of structures and establishment of seismic networks
		5. Conduct data analysis and interpretation of field and laboratory data and use results/inferences adequately.
		6. Prepare and produce maps, models, and reports on geology; mineral and groundwater resources; construction materials; landslide inventory; geo-hazard, and its risk
		7. Provide geoscience-related services to government agencies/corporates/business entities/institutes/public

		8. Carry out stage-wise detailed geotechnical investigations to build geotechnical models to minimize encountering any weak geological surprises during the construction.
		9. Plan and prepare a safe methodology for any tunnelling works.
		10. Installation, monitoring, and analysis of instrumentation in the projects under construction and implementation.
2.	Geoscientific Researcher	1. Conduct research in the field of geoscience/ geotechnical/ engineering geology.
		2. Provide findings and recommendations of the research to policy and decision-makers
		3. Share findings and recommendations to relevant professionals through seminars and workshops
		4. Publish the research findings in National and International Journals.
		5. Build professional networks and institutional tie-ups with domestic and foreign institutions, geoscientists, or researchers.
		6. Prepare Geotechnical Baseline Reports
3.	Geoscientific Advisor	Technical vetting of the reports.
		Provide technical advice and guidance for decision-making processes, advocacy, and knowledge management
		Provide expertise in the respective subject domain to clients (public, private entities, and other agencies)
		Recommend best practices or technological breakthroughs.

2.6.4 Identification of Competency areas

The competency area is the clustering of key competencies by related behaviour and functions of each role. It comprises a set of Knowledge, Skills, and Abilities (KSA) that result in essential behaviours expected from Geologists. The framework has identified six competency areas as follows:

Table 3. Key Role and Competency Area for Geologists

Sl.no	Key Role	Competency Area
1.	Geoscientific Mapper	Project Management
		Data acquisition and analysis
2.	Geoscientific Researcher	Geoscientific Research
		Outreach and Networking
3.	Geoscientific Advisor	Evaluation of Geoscientific research
		Advisory

2.6.5   Identification of Key Competencies

The key competency is an observable behaviour that indicates the presence of the particular competency. Generally, it is broadly divided into core competency, leadership competency, and technical or functional competency. The framework has identified fourteen key competencies are presented below: -

Table 4. Key Role, Competency Area, and Key Competency Area for Geologists.

Sl.no	Key Role	Competency Area	Key Competency
1.	Geoscientific Mapper	Project Management	Project Planning
			Project Execution and Monitoring
			Project Closure and Reporting
		Data acquisition and analysis	Domain knowledge/skills in Data Acquisition (For the use of appropriate techniques and tools for Data Acquisition)
			Domain knowledge/skills in Data Analysis and Interpretation (Numerical, graphical and various other methodologies for Data Analysis and Interpretation)

			Cognizant of limitations and constraints
2.	Geoscientific Researcher	Geoscientific Research	Research Knowledge and skills
			Work ethics
		Outreach and Networking	Data Sharing/ Findings dissemination
			Networking skills
3.	Geoscientific Advisor	Evaluation of Geoscientific research	Domain Knowledge and skills (Knowledge of geoscience)
			Communication skills
		Advisory	Domain knowledge and Research skills (Aware of Geoscience Policy and Research skills)
			Advocacy and communication skills

2.6.6 Identification of Behavioural indicators

The Behavioural Indicators are the description of competencies based on various proficiency levels. It outlines a collection of desired and observable motives, traits, and behaviours when executing or carrying out the assigned task. It serves as a tool to guide evaluations of employee performance. The framework has identified twenty-two behavioural indicators.

Table 5. Behaviour Indicators for the 3 Key Roles.

Key Role 1: Geoscientific Mapper		
Competency Area	Key Competency	Behavioural Indicators
Project Management	Project Planning	1.1.1.1. Ability to plan projects and field activities based on FYP and budget resource allocation/outlay to work within long-term national goals, budget, resource, and time constraints for efficient project and fieldwork management.
		1.1.1.2. Ability to identify risks and accordingly plan mitigation to have better outcomes.

	Project Execution and Monitoring	1.1.2.1. Ability to carry out site investigation and mapping using knowledge and appropriate technologies to ensure professional output.
		1.1.2.2. Shows prowess to monitor and addressing issues to ensure smooth and timely implementation of projects.
	Project Closure and Reporting	1.1.3.1. Competent in monitoring works and maintaining quality outputs in alignment with the project objectives.
		1.1.3.2. Capable of preparing reports, maps, and models and incorporating comments of peer-review.
		1.1.3.3. Capable of presenting to the management/ decision-makers for further directives.
		1.1.3.4. Demonstrates proper closure of the project (e.g., settlement of the account, publication of reports, updating in database and library)
Data acquisition and analysis	1.2.1. Domain knowledge/ skills in Data Acquisition (For the use of appropriate techniques and tools for Data Acquisition)	1.2.1.1. Possess knowledge and use appropriate tools and technologies required for geosciences data acquisition.
		1.2.1.2. Ability to keep abreast with technological advancements in the geosciences field to maintain competency.
	1.2.2. Domain knowledge/ skills in Data Analysis and Interpretation (Numerical, graphical, and various other methodologies for Data Analysis and Interpretation)	1.2.2.1. Capable of analysing the data collected and interpreting the information to correlate with the site and lab results.

	1.2.3. Cognizant of limitations and constraints	1.2.3.1. Demonstrates awareness of the limitations in data collection, analysis, and interpretation to ascribe credibility to the results, conclusions, and recommendations.

Key Role 2: Geoscientific Researcher		
Competency Area	**Key Competency**	**Behavioural Indicators**
2.1. Geoscientific research	2.1.1. Research Knowledge and skills	2.1.1.1. Demonstrates the ability to identify research areas concerning geoscience fields and prepare a research proposal.
		2.1.1.2. Possess sound domain knowledge, skills, and aptitude to carry out effective and comprehensive scientific research.
	2.1.2. Work Ethics	2.1.2.1. Demonstrates integrity and professionalism in research and its findings.
2.2. Outreach and Networking	2.2.1. Data Sharing/ Findings dissemination	2.2.1.1. Ability to disseminate findings and publish research articles.
		2.2.1.2. Ability to communicate research findings and recommendations for policy planning and intervention.
	2.2.2. Networking skills	2.2.2.1. Demonstrate interpersonal skills to build professional networks among relevant professionals.

Key Role 3: Geoscientific Advisor		
Competency Area	**Key Competency**	**Behavioural Indicators**
3.1. Evaluation of geoscientific reports.	3.1.1. Domain Knowledge and skills (Knowledge of geoscience)	3.1.1.1. Exhibit the ability to evaluate reports received from other agencies and individuals to provide correct assessment and advisory.
	3.1.2. Communication skills	3.1.2.1. Ability to communicate the report comments to the clients.

3.2. Advisory	3.2.1. Domain knowledge and Research skills (Aware of Geoscience Policy and Research skills)	3.2.1.1. Demonstrate knowledge and skills to research geosciences to support policy and scientific decision-making.
	3.2.2. Advocacy and communication skills	3.2.2.1. Possess skills to disseminate research findings for policy intervention and public awareness.

2.6.7   Classification of Proficiency levels

The proficiency level is categorised based on the level of expertise. It describes the levels of competency required to perform a specific job successfully. There is a progression of proficiencies at each level. The proficiency level of Geologists is categorised into four levels

1.   Foundation (P4),
2.   Intermediate (P3),
3.   Experienced (P2)
4.   Advanced (P1).

The framework has identified **22** behavioural indicators across four levels of proficiency.

The proficiency will enable individual officials to distinguish the type of competencies expected in their career path, which will give them an opportunity to enhance competency in achieving current as well future career goals. Further, the proficiency level will set a benchmark for recruitment and deployment. The proficiency levels of each key competency are detailed below:

Table 6. Number of Behaviour Indicators for the Proficiency Levels of 3 Key Roles.

Key Role 1: Geoscientific Mapper			
Competency Area: 1.1. Project Management			
Key Competency: 1.1.1. Project Planning			
Behaviour Indicator: 1.1.1.1. Ability to plan projects and field activities based on FYP and budget resource allocation/outlay to work within long-term national goals, budget, resource, and time constraints for efficient project and fieldwork management.			
Foundation	Intermediate	Experienced	Advanced

1a. Understand and be able to provide assistance in planning projects.	1b. Be able to plan short-term projects with minimal guidance.	1c. Be able to plan larger projects independently.	1d. Be able to plan large complex projects independently.

Behaviour Indicator: 1.1.1.2. Ability to identify risks and accordingly plan mitigation to have better outcomes.

Foundation	Intermediate	Experienced	Advanced
2a. Identify social risks and simple technical risks.	2b. Identify risks and suggest different approaches to mitigate the risks at a moderate level.	2c. Identify higher-level risks and plan appropriate mitigation measures.	2d. Identify complex risks and plan amicable mitigation measures.

Key Competency: 1.1.2. Project execution and monitoring

Behaviour Indicator: 1.1.2.1. Ability to carry out site investigation and mapping using knowledge and appropriate technologies to ensure professional output.

Foundation	Intermediate	Experienced	Advanced
1a. Possess the basic knowledge and skills to carry out site investigation and mapping.	1b. Apply basic knowledge and use standard technologies to carry out site investigation and mapping independently.	1c. Possess advanced level domain knowledge and makes optimal use of technologies to carry out mapping and site investigation.	1d. Provide guidance and propose new technologies to carry out mapping and site investigation.

Behaviour Indicator: 1.1.2.2. Shows prowess to monitor and address issues to ensure smooth and timely implementation of projects.

Foundation	Intermediate	Experienced	Advanced
2a. Monitor the progress of the projects and report issues to the supervisor.	2b. Monitor the progress and address minor issues independently.	2c. Able to address prime issues.	2d. Provide support and intervention at the policy level for timely implementation of projects.

Key Competency: 1.1.3. Project Closure and Reporting

Behaviour Indicator: 1.1.3.1. Competence to monitor to maintain quality outputs and alignment with project objectives.

Foundation	Intermediate	Experienced	Advanced

1a. Understands the main objectives of the project.	1b. Monitor the quality and alignment of the outputs with the project objectives.	1c. Ensure quality outputs are in alignment with the project objectives.	1d. Oversee and evaluate quality and project outcome.

Behaviour Indicator: 1.1.3.2. Capable of preparing reports, maps, and models and incorporating comments of peer-review.

Foundation	Intermediate	Experienced	Advanced
2a. Able to compile data and prepare reports, models, and maps under supervision.	2b. Draft report, prepares maps and models, and seeks peer review.	2c. Provide peer review and prepare a final draft of reports, maps, and models.	2d. Reviews and approves the finalized draft of the report, maps, and models.

Behaviour Indicator: 1.1.3.3. Capable of presenting to the management/ decision-makers for further directives.

Foundation	Intermediate	Experienced	Advanced
3a. Possess basic presentation skills; Presents among their peers for further verification and clarifications.	3b. Present minor projects independently to agencies.	3c. Present larger projects to management/ decision-makers.	3d. Provide guidance to peers and subordinates; Presents to high-level decision-makers.

Behaviour Indicator: 1.1.3.4. Demonstrates proper closure of the project (e.g., settlement of the account, publication of reports, updating in database and library)

Foundation	Intermediate	Experienced	Advanced
4a. Take charge of project report submission and updates in the library.	4b. Maintain clear accounts and update project reports in the database.	4c. Look into the overall closure of the project and give directives for the publication of reports.	4d. Ensure all works delegated to subordinates are completed.

Competency Area: 1.2. Data Acquisition and Analysis

Key Competency: 1.2.1. Domain Knowledge/skills in Data acquisition (For the use of appropriate techniques and tools for Data Acquisition)

Behaviour Indicator: 1.2.1.1. Possess knowledge and use appropriate tools and technologies required for data acquisition during the field investigations as well as laboratory analysis.			
Foundation	Intermediate	Experienced	Advanced
1a. Understand the use of various equipment, software, and its application for data acquisition.	1b. Possess the specific required knowledge and uses appropriate tools for data acquisition	1c. Understand the correlation between different tools to enhance data acquisition; Guide subordinates on the use of the tools and technology.	1d. Provide training on the use of existing tools and technology

Behaviour Indicator: 1.2.1.2. Ability to keep abreast with technological advancements in the geosciences field to maintain competency.			
Foundation	Intermediate	Experienced	Advanced
2a. Familiarize oneself with new tools and technologies for data acquisition under guidance from seniors.	2b. Explore and assess new tools and technology and their applicability.	2c. Promotes innovative technologies for effective geoscientific and engineering studies.	2d. Evaluate and select measuring technology and lead adaptation to changes brought in by new technologies and help subordinates to rate the value and benefits of new technology.

Key Competency: 1.2.2. Domain Knowledge/skills in Data Analysis and Interpretation (Numerical, graphical, and various other methodologies for Data Analysis and Interpretation)			

Behaviour Indicator: 1.2.2.1. Capable of analyzing the data, its interpretation, and correlation with other methods of investigations or analyses.			
Foundation	Intermediate	Experienced	Advanced
1a. Compile data; Possess basic knowledge of data analytic tools and interpretation of	1b. Be able to prepare data for analysis; Carry out basic analysis and interpretation of the data.	1c. Has the capacity to carry out advanced data analysis with the most appropriate analytic tool and interpret data.	1d. Has the expertise in conducting complex data analysis and interpretation.

results under supervision.			

Key Competency: 1.2.3. Cognisant of the limitations and constraints			
Behaviour Indicator: 1.2.3.1. Demonstrates awareness of the limitations in data collection, analysis, and interpretation to ascribe credibility to the results, conclusions, and recommendations.			
Foundation	Intermediate	Experienced	Advanced
2a. Understands the limitations of the geoscientific methodologies applied.	2b. Understands the limitations in implementing the methods for data collection, and analytical tools.	2c. Understands the limitations in implementing analytical tools and the methods of interpretation.	2d. Can identify the limitations relating to the scope of work and the lack of previous studies in terms of data collection, analysis, and interpretation.

Key Role 2: Geoscientific Researcher			
Competency Area: 2.1. Geoscientific and Engineering research			
Key Competency: 2.1.1. Research Knowledge and skills			
Behaviour Indicator: 2.1.1.1. Demonstrates the ability to identify research areas and prepare research proposals.			
Foundation	Intermediate	Experienced	Advanced
1a. Be aware of potential research areas and acquire the basic concept of research proposals.	1b. Identifies potential research areas and gaps, and drafts research proposals.	1c. Prepare research proposals and analyse the likely implications of the proposals.	1d. Provides guidance to undertake research; Visualises the implications and impact of carrying out the study on various research areas and subsequently recommends the most pertinent research area to be studied.

Behaviour Indicator: 2.1.1.2. Possess sound domain knowledge, skills, and aptitude to carry out effective and comprehensive scientific research.

Foundation	Intermediate	Experienced	Advanced
2a. Demonstrates basic knowledge of research methodologies and carries out a simple research project under supervision.	2b. Able to carry out small-scale research projects and analyses and interprets data under supervision.	2c. Carries out simple research works independently in compliance with international practices and supervises subordinates.	2d. Carries out complex research projects and leads research activities and guides the team

Key Competency: 2.1.2. Work ethics

Behaviour Indicator: 2.1.2.1. Demonstrates integrity and professionalism in research and its findings

Foundation	Intermediate	Experienced	Advanced
1a. Demonstrate understanding of the need for integrity and professionalism in a research setting. 2a. Ensure reliable and unbiased data collection, analysis, and report publication for the research work under supervision.	1b. Demonstrate understanding of the need for integrity and professionalism in a research setting 2b. Ensure reliable and unbiased data collection, analysis, and report publication for the research works independently	1c. Demonstrate supervision in ensuring reliable and unbiased data collection, analysis, and report publication for the research works.	1d. Review and approve the research works ensuring credible publication.

Competency Area: 2.2. Outreach and networking

Key Competency: 2.2.1. Data Sharing/ Findings dissemination

Behaviour Indicator: 2.2.1.1. Ability to disseminate findings and publish research articles.

Foundation	Intermediate	Experienced	Advanced
1a. Understands basic dissemination and publishing skills. 2a. Conduct knowledge-sharing seminars at	1b. Disseminate findings and publish research articles under supervision. 2b. Conducts knowledge-sharing	1c. Verifies and recommends dissemination of information and publishes research	1d. Provides guidance on the use of appropriate dissemination channels. Disseminates

Division/Department level under guidance from seniors/supervisors.	workshops/seminars at Division/department level independently and at the inter-departmental level with guidance from seniors.	articles independently. 2c. Coordinates and conducts workshops and seminars at the inter-departmental level; Provides guidance to subordinates;	findings and publishes research articles for a larger audience. 2d. Facilitate knowledge-sharing workshops/ seminars at the National/ International level; Provide guidance to subordinates.

Behaviour Indicator: 2.2.1.2. Ability to communicate research findings and recommendations for policy planning and intervention.

Foundation	Intermediate	Experienced	Advanced
3a. Understand the methods and mediums to communicate research findings.	3b. Recommend the research findings at the Department level for further discussions.	3c. Recommend research findings at the Ministry level for implementation and policy planning.	3d. Recommend research findings at the national levels for implementation and policy planning.

Key Competency: 2.2.2. Networking skills

Behaviour Indicator: 2.2.2.1. Demonstrate interpersonal skills to build professional networks among relevant professionals and institutions.

Foundation	Intermediate	Experienced	Advanced
1a. Builds professional relationships within the Department.	1b. Builds professional relationships within the Ministry.	1c. Builds professional relationships within and outside the Ministry.	1d. Builds professional networks and recommends institutional tie-ups at the national/ international level.

Key Role 3: Geoscientific Advisor

Competency Area: 3.1. Evaluation of Technical reports.

Key Competency: 3.1.1. Domain knowledge and skills (Knowledge of geoscience)

Behaviour Indicator: 3.1.1.1. Exhibits the ability to evaluate reports received from other agencies and individuals to provide correct assessment and advisory.

Foundation	Intermediate	Experienced	Advanced
1a. Able to understand and evaluate reports of the basic context under supervision.	1b. Able to understand and evaluate reports of basic to moderately complex contexts independently.	1c. Supervise and evaluate reports of complex contexts.	1d. Review and approve comments submitted by the reviewer. 1e. Give technical vetting to the research papers.

Key Competency: 3.1.2. Communication skills

Behaviour Indicator: 3.1.2.1. Ability to communicate the report comments to the clients.

Foundation	Intermediate	Experienced	Advanced
1a. Able to communicate comments/approval of reports' basic context and clarify related queries.	1b. Able to communicate comments/approvals of reports of basic to moderately complex contexts and clarify related queries.	1c. Able to communicate comments/approvals of reports of complex contexts and clarify related queries.	1d. Communicate the approved comments and the ability to clarify or resolve any grievances.

Competency Area: 3.2. Advisory

Key Competency: 3.2.1. Domain knowledge and research skills (Aware of Geoscience Policy and Research skills)

Behaviour Indicator: 3.2.1.1 Demonstrate knowledge and skills to support policy and technical decision-making.

Foundation	Intermediate	Experienced	Advanced
1a. Able to carry out basic research topics and provide technical policy recommendations under supervision.	1b. Able to carry out basic research topics and provide technical policy recommendations independently.	1c. Able to carry out /Supervise complex research topics and provide technical policy recommendations.	1d. Review and submit technical policy recommendations to higher committees.

Key Competency: 3.2.2. Advocacy and communication skills

Behaviour Indicator: 3.2.1.2. Possess skills to disseminate research findings for policy intervention and public awareness.

Foundation	Intermediate	Experienced	Advanced
1a. Able to disseminate findings on basic research topics for policy intervention and create public awareness under supervision.	1b. Able to disseminate findings on basic to moderately research topics for policy intervention and create public awareness independently.	1c. Supervise and able to disseminate findings on complex research topics for policy intervention and create public awareness.	1d. Review and accord approval for research findings dissemination for policy intervention and public awareness.

2.7 Training Needs Analysis

The Training Needs are the difference between desired capability and current capability. The Training Needs Analysis is the process of recognizing the skills gap and needs for training. It is the procedure to determine whether the training will bring out the solution to the problem. It ensures that training is targeting the correct competencies, the correct employees, and the needs of the Department. The training can reduce, if not eliminate, the gap by equipping the Geologist with knowledge and skills. It should be the shared responsibility of the employee and Department to build and enhance their capability and competency.

The training needs analysis is carried out in consultation with the stakeholders through interviews, surveys, and FGD. The questionnaire consists of both closed and open-ended questions. The questionnaire is based on twenty-two behavioural indicators of different proficiency levels on the Likert Scale of "Competent" and "Not Competent" followed by open-ended questions asking the likely reasons for 'Not Competent" and suggesting interventions to address the gap. The behavioural indicators were assessed by proficiency level to identify the performance gaps.

2.7.1 Training Needs Assessment at Foundation Proficiency Level

Table 7. Training Needs Analysis at Foundational level.

Key Role: Geoscientific Mapper				
Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention

1.1.1 Project planning	1. Understand and be able to provide assistance in planning projects.	NC	Inadequate experience	-OJT -E-learning -Ex-country STT
	2. Identify social risks and simple technical risks.	NC	Inadequate experience	OJT
1.1.2 Project execution and monitoring	1. Possess the basic knowledge and skills to carry out site investigation and mapping.	NC	Lack of adequate skills and experience on application, methodologies and techniques on investigation and mapping.	-Ex-country STT -Seminars -OJT -Ex-country LTT
	2. Monitor the progress of the projects and report issues to the supervisor.	C	NA	NA
1.1.3. Project closure and reporting	1. Understand the main objectives of the project.	C	NA	NA
	2. Able to compile data and prepare reports, models, and maps under supervision.	NC	Lack of adequate skills and experience in geoscientific report writing and maps preparation	1.Seminar 2.OJT
	3. Possess basic presentation skills; Presents among their peers for further verification and clarifications	C	NA	NA
	4. Take charge of project report submission and updates in the library.	NC	Lack of experience	-OJT
1.2.1 Domain Knowledge/ skills in Data acquisition (For the	1. Understand the use of various equipment, software, and its application for data acquisition.	NC	Inadequate experience in use of geoscientific equipment and data collection software	-E-learning -OJT -Ex-country STT -Ex-country LTT

use of appropriate techniques and tools for Data Acquisition)	2. Familiarize oneself with new tools and technologies for data acquisition under guidance from seniors.	NC	Inadequate knowledge, skills and experience	-Ex-country STT -E-learning
1.2.2 Domain Knowledge/ skills in Data analysis and interpretation (Numerical, graphical, and various other methodologies for Data Analysis and Interpretation)	1. Compile data; Possess basic knowledge of data analytic tools and interpretation of results under supervision.	NC	Inadequate experience on using geoscientific data processing, analysis tools and methods of interpretation.	-OJT -E-learning -Ex-country STT -Ex-country LTT
1.2.3 Cognizant of the limitations and constraints	1. Understand the limitations of the geoscientific methods.	NC	Inadequate experience on applying various geoscientific methodologies	-OJT -Ex-country seminars -In-country seminars
Key Role: Geoscientific Researcher				

Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
2.1.1. Geo-scientific research	1. Be aware of potential research areas and acquire the basic concept of research proposals.	NC	Lack of experience, inadequate skills	-In-country seminars -E-learning -OJT
	2. Demonstrate basic knowledge of geoscience research methodologies and carries out a simple research project under supervision	NC	Inadequate experience in conducting research	-E-learning -OJT -Seminars
2.1.2. Work ethics	1a. Demonstrate understanding of the need for integrity and professionalism in a research setting. 2a. Ensure reliable and unbiased data collection, analysis and report publication for the research works under supervision.	NC	Inadequate experience maintaining scientific ethics	-Seminars -OJT -E-learning
2.2.1 Data Sharing/ Findings dissemination	1a. Understand basic dissemination and publishing skills. 2a. Conduct knowledge-sharing seminars at Division /Department level under guidance from seniors/ supervisors.	NC	Lack of adequate experience	-OJT - Seminars - E-Learning
	3a. Understand the methods and mediums to communicate research findings.	NC	Lack of adequate experience	-OJT - Seminars - E-Learnings
2.2.2. Networking skills	1a. Build professional relationships within the Department.	C	NA	NA
Key Role: Geoscientific Advisor				

Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
3.1.1. Domain Knowledge and skills (Knowledge of geoscience)	Able to understand and evaluate reports of the basic context under supervision.	NC	Lack of adequate experience	-OJT
3.1.2. Communication skills	1a. Able to communicate comments/approval of reports basic context and clarify related queries.	C	NA	NA
3.2.1 Domain knowledge and Research skills (Aware of Geoscience Policy and Research skills)	1a. Able to carry out research on basic geoscience topics and provide scientific policy recommendations under supervision.	C	NA	NA
3.2.2. Advocacy and communication skills	1a. Able to disseminate findings on basic geoscience research topics for policy intervention and create public awareness under supervision.	C	NA	NA

2.7.2   Training Needs Assessment at Intermediate Proficiency Level

Table 8. Training Needs Analysis at Intermediate level

Key Role: Geoscientific Mapper

Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
1.1.1 Project planning	1b. Be able to plan short-term projects with minimal guidance.	C	NA	NA
	2b. Identify risks and suggest different approaches to mitigate the risks at a moderate level.	C	NA	NA
1.1.2 Project execution and monitoring	1b. Apply basic knowledge and use standard technologies to carry out site investigation and mapping independently.	NC	Lack of adequate skills and experience on application of standard technologies on investigation and mapping.	-Seminars - Ex-country STT -Ex-country LTT
	2b. Monitor the progress and address minor issues independently.	C	NA	NA
1.1.3. Project closure and reporting.	1b. Monitor the quality and alignment of the outputs with the project objectives.	C	NA	NA
	2b. Draft report, prepares maps and models and seeks peer review.	C	NA	NA
	3b. Present minor projects independently to agencies.	C	NA	NA
	4b. Maintain clear accounts and update project reports in the database.	C	NA	NA
1.2.1 Domain Knowledge/skills in Data	1b. Possess the required knowledge and uses appropriate tools for data acquisition	NC	Inadequate applied skills in use of geoscientific equipment and data collection	-E-learning -Ex-country STT -Ex-country LTT

acquisition. (For the use of appropriate techniques and tools for Data Acquisition)			software in a more complex setting	
	2b. Explore and assess new tools and technology and their applicability.	NC	Limited access to new emerging technologies and inadequate knowledge and skills required for application.	-E-learning -Ex-country seminar -In-country seminar
1.2.2 Domain Knowledge/skills in Data analysis and interpretation (Numerical, graphical, and various other methodologies for Data Analysis and Interpretation)	1b. Be able to prepare data for analysis; Carry out basic analysis and interpretation of the data.	NC	Inadequate applied skills in processing, analysis tools and methods of interpretation of increasingly complex data.	-E-learning -Ex-country STT -Ex-country LTT
1.2.3 Cognizant of the limitations and constraints	2b. Understand the limitations in implementing data collection methods, and analytical tools.	C	NA	NA
Key Role: Geoscientific Researcher				

Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
2.1.1 Geoscientific research	1b. Identifies potential research areas and gaps, and drafts research proposals.	C	NA	NA
	2b. Able to carry out small-scale research projects and analyses and interprets data under supervision.	C	NA	NA
2.1.2. Work ethics	1b. Demonstrate understanding of the need for integrity and professionalism in a research setting 2b. Ensure reliable and unbiased data collection, analysis and report publication for the research works independently	C	NA	NA
2.2.1 Data Sharing/ Findings dissemination	1b. Disseminate findings and publish research articles under supervision. 2b. Conduct knowledge-sharing workshops/seminars at Division/department level independently and at the inter-department level with guidance from seniors.	C	NA	NA
	3b. Recommend the research findings at the Department level for further discussions.	C	NA	NA
2.2.2. Networking skills	1b. Build professional relationships within the Ministry.	C	NA	NA

Key Role: Geoscientific Advisor				
Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
3.1.1. Domain Knowledge and skills (Knowledge of geoscience)	1b. Able to understand and evaluate reports of basic to moderately complex contexts independently.	C	NA	NA
3.2.1 Communication skills	1b. Able to communicate comments/approvals of reports of basic to moderately complex contexts and clarify related queries.	C	NA	NA
3.2.1 Domain knowledge and Research skills (Aware of Geoscience Policy and Research skills)	1b. Able to carry out research on basic to moderate geoscience topics and provide scientific policy recommendations independently.	C	NA	NA
3.2.2. Advocacy and communication skills	1b. Able to disseminate findings on basic to moderately geoscience research topics for policy intervention and create public awareness independently.	C	NA	NA

2.7.3   Training Needs Assessment at Experienced Proficiency Level

Table 9. Training Needs Analysis at Experienced level

Key Role: Geoscientific Mapper				
Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
1.1.1 Project planning	1c. Be able to plan larger projects independently.	C	NA	NA
	2c. Identify higher-level risks and plan appropriate mitigation measures.	C	NA	NA
1.1.2 Project execution and monitoring	1c. Possess advanced level domain knowledge and makes optimal use of technologies to carry out mapping and site investigation.	NC	Lack of applied skills in new technologies	-Ex-Country STT -Ex-Country LLT -E-Learning
	2c. Able to address prime issues.	C	NA	NA
1.1.3. Project closure and reporting.	1c. Ensure quality outputs in alignment with the project objectives.	C	NA	NA
	2c. Provide peer review and prepare a final draft of reports, maps, and models.	C	NA	NA
	3c. Present larger projects to management/ decision maker.	C	NA	NA
	4c. Look into the overall closure of the project and give directives for publication of reports.	C	NA	NA

1.2.1 Domain Knowledge/skills in Data acquisition (For the use of appropriate techniques and tools for Data Acquisition)	1c. Understand the correlation between different tools to enhance data acquisition; Guide subordinates on the use of the tools and technology.	NC	Inadequate applied skills in the use of geoscientific equipment and data collection software in a more complex setting	-E-learning -Ex-country STT -Ex-country LTT
	2c. Promote innovative technologies for effective geoscientific studies.	NC	Limited access to new emerging technologies and inadequate knowledge and skills required for application.	-E-learning -Ex-country seminar -In-country seminar
1.2.2 Domain Knowledge/skills in Data analysis and interpretation (Numerical, graphical, and various other methodologies for Data Analysis and Interpretation)	1c. Has the capacity to carry out advanced data analysis with the most appropriate analytic tool and interpret data.	NC	Inadequate applied skills in processing, analysis tools, and methods of interpretation of increasingly complex data.	-E-learning -Ex-country STT -Ex-country LTT
1.2.3 Cognizant of the limitations and constraints	2c. Understand the limitations in implementing analytical tools and the methods of interpretation.	C	NA	NA
Key Role: Geoscientific Researcher				
Key Competencies	Description of Proficiency Level	Perfor mance (C/NC)	Likely reason for performance gap	Capacity Development Intervention

2.1.1. Geo-scientific research	1c. Prepare research proposals and analyse the likely implications of the proposals.	C	NA	NA
	2c. Carry out simple research works independently in compliance with international practices and supervises subordinates.	C	NA	NA
2.1.2. Work ethics	1c. Demonstrate supervision in ensuring reliable and unbiased data collection, analysis and report publication for the research works.	C	NA	NA
2.2.1 Data Sharing/ Findings disseminatio n	1c. Verify and recommend dissemination of information and publish research articles independently. 2c. Coordinate and conduct workshops and seminars at the inter-departmental level; Provides guidance to subordinates;	C	NA	NA
	3c. Recommend research findings at the Ministry level for implementation and policy planning.	C	NA	NA
2.2.2. Networking skills	1c. Build professional relationship within and outside the Ministry.	C	NA	NA
Key Role: Geoscientific Advisor				

Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
3.1.1. Domain Knowledge and skills (Knowledge of geoscience)	1c. Supervise and evaluate reports of complex contexts.	C	NA	NA
3.1.2. Communication skills	1c. Able to communicate comments/approvals of reports of complex contexts and clarify related queries.	C	NA	NA
3.2.1 Domain knowledge and Research skills (Aware of Geoscience Policy and Research skills)	1c. Able to carry out /Supervise complex geoscience topics and provide scientific policy recommendations.	C	NA	NA
3.2.2. Advocacy and communication skills	1c. Supervise and able to disseminate findings on complex geoscience research topics for policy intervention and create public awareness.	C	NA	NA

2.7.4   Training Needs Assessment at Advanced Level

Table 10. Training Needs Analysis at Advanced level

Key Role: Geoscientific Mapper

Key Competencies	Description of Proficiency Level	Perfor-mance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
1.1.1 Project planning	1. Be able to plan large complex projects independently.	C	NA	NA
	2. Identify complex risks and plan amicable mitigation measures.	NC	Limited experience and exposure to different geotechnical investigations.	-Ex-country STT -E-Learning - OJT - Journal papers
1.1.2 Project execution and monitoring	1. Provide guidance and propose new technologies to carry out mapping and site investigation.	NC	Inadequate access and experience on new technologies and methods	-Ex-country STT -E-Learning - Journal papers
	2. Provide support and intervention at policy level for timely implementation of projects.	C	NA	NA
1.1.3. Project closure and reporting	1. Oversee and evaluate quality and project outcome.	C	NA	NA
	2. Review and approve the finalized draft of report, maps and models.	C		
	3. Provide guidance to peers and subordinates; Presents to high-level decision makers.	C	NA	NA
	4. Ensure all work delegated to subordinates are completed.	C	NA	NA

1.2.1. Domain Knowledge/skills in Data acquisition (For the use of appropriate techniques and tools for Data Acquisition)	1. Provide training on the use of existing tools and technology	C	NA	NA
	2. Evaluate and select measuring technology and lead adaptation to changes brought in by new technologies and help subordinates to rate the value and benefits of new technology.	NC	Inadequate access and experience to new technologies and methods	-Ex-country STT -E-Learning - Journal papers
1.2.2 Domain Knowledge/skills in Data analysis and interpretation (Numerical, graphical, and various other methodologies for Data Analysis and Interpretation)	1. Has the expertise in conducting complex data analysis and interpretation.	NC	Inadequate applied skills in processing, analysis tools and methods of interpretation of increasingly complex data.	-E-learning -Ex-country STT -Ex-country LTT
1.2.3 Cognizant of the limitations and constraints	1. Can identify the limitations relating to the scope of work and the lack of previous studies in terms of data collection, analysis, and interpretation.	C	NA	NA
Key Role: Geoscientific Researcher				
Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
2.1.1. Geo-scientific research	1. Provide guidance to undertake research; Visualize the implications and impact	C	NA	NA

	of carrying out the study on various research areas and subsequently recommends the most pertinent research area to be studied.			
	2. Carry out complex research projects and lead research activities and guide the team	NC	Lack of adequate skills to independently conduct complex and advanced geoscientific research. Skills such as advanced data synthesis, complex numerical modelling, data analysis, and advanced writing skills for publishing geoscientific books	Ex-Country LTT
2.1.2. Work ethics	1. Review and approve the research works ensuring credible publication.	C	NA	NA
2.2.1 Data Sharing/ Findings dissemination	1. Provide guidance on the use of appropriate dissemination channels. Disseminate findings and publish research articles for a larger audience. 2. Facilitate knowledge-sharing workshops/ seminars at National/International	C	NA	NA

	level; Provide guidance to subordinates.			
	3. Recommend research findings at the national levels for implementation and policy planning.	C	NA	NA
2.2.2. Networking skills	1. Builds professional networks and recommend institutional tie-ups at the national /international level.	C	NA	NA

Key Role: Geoscientific Advisor

Key Competencies	Description of Proficiency Level	Performance (C/NC)	Likely reason for performance gap	Capacity Development Intervention
3.1.1. Domain Knowledge and skills (Knowledge of geoscience)	1. Review and approve comments submitted by the reviewer.	C	NA	NA
3.1.2. Communication skills.	1. Communicate the approved comments and ability to clarify or resolve any grievances	C	NA	NA
3.2.1. Domain knowledge and research skills (Aware of Geoscience Policy and Research skills)	1. Review and submit scientific policy recommendations to higher committees.	C	NA	NA
3.2.2. Advocacy and communication skills	1. Review and accord approval for research findings dissemination for policy intervention and public awareness.	C	NA	NA

2.7.5 Proposed Long-term Program (Specialisation)

Table 11. Proposed Long Term Trainings

Program	Specialisation
Ph.D. in Geosciences/ Engineering Science*	Seismology, Engineering Geology, Geophysics, Geotechnical Engineering, Ore Deposits Geology, Geological Hazards, other Geosciences fields
Masters of Geosciences/ Engineering Science	Seismology, Engineering Geology, Geophysics, Geotechnical Engineering, Ore Deposits Geology, Geological Hazards, other Geosciences fields

Note*: *No funds committed, however, based on the availability of the scholarship or funding support it will be allowed to pursue with study leave since it is highly technical and critical requirement.*

2.8 Short-term Program and Learning Objectives

The framework has highlighted the likely reasons for the gaps and interventions proposed above. In order to provide a capacity-building program, the following are the expected learning objectives. The respective proficiency level officials will be able to achieve the objectives mentioned against each of the training.

2.8.1 Orientation/ Workshop/Seminars

Table 12. Proposed Orientation/ Workshop/ Seminars

Orientation/Workshop/ Seminar Themes/Topics	Target Group(s)	Learning Objectives
International Seminars on relevant fields of geosciences/ geotechnical/engineering geology	All	1. Get introduced to new methodologies. 2.To be able to identify research areas and gaps in the related fields 3.Get introduced to new emerging technologies and their application. 4.To keep abreast with the continuously developing geoscience field.

In-house seminars on relevant emerging technologies	All	To keep abreast with the continuously developing field.
In-house Seminars and OJT training related to geosciences/geotechnical/ engineering geology	Foundational Group	To enhance applied skills and competency of the target group in the various fields.
Seminar on Scientific report writing	Foundational Group	Able to write technical reports

2.8.2   Short-Term Training intervention

Table 13. Proposed Short Term Trainings

Foundation Proficiency Level			
Sl. #	Training/Intervention	Methods of Implementation	Learning Objectives
1.	Applications of basic Remote Sensing and GIS Technologies in the field of Geosciences	Ex-country/In-country STT/ OJT	Be able to apply basic Remote Sensing and GIS for geoscientific studies.
2.	Geologists Orientation Course by Geological Survey of India	Ex-country/In-country STT/ OJT	To enhance practical skills in various geosciences studies
3.	Training of geological mapping, mineral exploration, engineering geological and geophysical investigations, seismological studies etc.	OJT	To enhance skills in data acquisition, processing and interpretation in various geosciences fields.
4.	Global Seismology Course under JICA KCCP	Ex-country/In-country STT	To develop skills in seismic data acquisition, processing and interpretation
5.	Training related to seismic/GNSS data acquisition (Network	OJT	To be able to upkeep seismic and GNSS stations for seismic event monitoring

	configuration, system configuration in servers, etc).		
6.	Training on Seis-comp	Ex-country/In-country STT/ OJT	1. Monitoring of seismic events 2. Basic seismic event processing 3. Seismic data retrieval and archival
7.	Training on Slope Stability Analysis in advance software for 2D/3D modelling	Ex-country/In-country STT/ OJT	For the assessment of stability of the slopes using software for modelling purposes
8	Hands-on training on the installation, monitoring, and analysis of instrumentation in the projects under construction and implementation.	Ex-country/In-country STT/ OJT	To monitor any local movements in the tunnels, slopes, etc.
9	Training on lineament mapping	Ex-country/In-country STT/ OJT	For the desktop and reconnaissance study of a project through remote sensing and limited field visits, delineating major geological weak features so as to plan for detailed investigations

Intermediate Proficiency Level

Sl. #	Training/Intervention	Methods of Implementation	Learning Objectives
1.	Training on new and emerging technologies, techniques and methodologies in various geosciences areas	Ex-country/In-country STT/ OJT	To keep abreast with the new methodologies, techniques and technologies and their applications. To enhance skills in data acquisition, processing, analysis and interpretation
2.	Short/Certificate courses in Gemmology	Ex-country/In-country STT/ OJT	1. Identification of gemstones 2. Grade classification of gemstones

3	Training on site-specific seismic study	Ex-country/In-country STT/ OJT	Derive seismic parameters like PGA values for the design of any structures.

Experienced Proficiency Level

Sl. #	Training/Intervention	Methods of Implementation	Learning Objectives
1.	Training on new and emerging technologies, techniques and methodologies in various geosciences areas	Ex-country/In-country STT/ OJT	To keep abreast with the new methodologies, techniques and technologies and their applications. To enhance skills in data acquisition, processing, analysis and interpretation
2.	Short/Certificate courses in Gemmology	Ex-country/In-country STT/ OJT	1. Identification of gemstones 2. Grade classification of gemstones
3	Training on tunnelling methodology	Ex-country/In-country STT/ OJT	For the safe design of tunnelling works

Advanced Proficiency Level

Sl. #	Training/Intervention	Methods of Implementation	Learning Objectives
1.	Training on new and emerging technologies, techniques and methodologies in various geosciences areas	Ex-country/In-country STT/ OJT	To keep abreast with the new methodologies, techniques and technologies and their applications. To enhance skills in data acquisition, processing, analysis and interpretation
2	Advanced training on the use of Soil and Rock Stability Analysis tools (2D/3D)	Ex-country/In-country STT	Be able to carry out the stability analysis and interpret the result for both Soil and Rock

3	Geologic Hazard and Risk assessment Training	Ex-country/In-country STT	Be able to produce hazard maps for Land Use Land Planning (LULP).
4	Advanced hands-on training on different geotechnical investigations (in-situ as well as laboratory) which are deemed critical for assessment of weak Himalayan Geology like Bhutan	Ex-country/In-country STT OJT	Be able to do all those tests for stability and design purposes without the need to hire expertise from other countries in future which is exorbitantly expensive. This will also help in building the country's human resource assets.
5	Training on seismic waveform modelling and focal mechanism	Ex-country/In-country STT	Be able to analysis seismic waveforms for determining the nature of faulting during earthquakes
6	Specialised training on Seismic Shake Cast system	Ex-country/In-country STT	Be able to precisely generate immediate damage information of infrastructure during earthquakes and the associated risks that ensue thereafter.

2.9   Implementation of Competency-based Framework

The implementation of training and other intervention has to be based on the mandatory program/interventions listed under the section under the training needs analysis (Section 2.7) of this document. The mandatory list of training/interventions includes all the programs against the behaviour indicators that are found to be "Not Competent" under the Training Needs Analysis. However, for implementation, it has to be prioritized based on the following:

- Annual prioritization
- The most critical area of intervention
- Rationalization of selection of participants
- Availability of the resource allocation

3   Recommendation

1. RCSC to initiate resource mobilisation through RGoB, GoI and other donor agencies for implementation of the training since most of the trainings identified remain unexecuted because of resource scarcity.
2. With the initiation of this CBF, there is a need to enhance and advance the capabilities with the prioritised training for the Geologists.
3. Training should be allocated based on annual prioritisation and the critical need for expertise through rational selection of participants and availability of resource.
4. Monitoring and Evaluation systems should be instituted to assess training impact and make interventions wherever necessary.

4   Conclusion

The DGM developed this Competency-Based Framework (CBF) for Geologists as the parent agency. The CBF has been developed to enhance the capacity and capabilities of the Geologists for exceptional implementation of our vision and missions. The CBF was formulated by the TFM comprising Geologists from all Divisions. In the formulation of the CBF, a series of online surveys were carried out with geologists from all agencies and sectors in the country, and in-house and online meetings were carried out with officials from DGM for the finalization of this document.

This CBF highlights the Knowledge, Skills, and Abilities (SKA) required for Geologists at various levels to achieve a high level of professional competence and deliver the highest standard services. The competency framework has identified 3 Key Roles, 6 Competency Areas, 14 Key Competencies, and 22 Behavioural Indicators. This framework shall ensure the continuous development of Geologists in providing service with the highest standards of competency and professionalism.

It has identified various training and development methods to enhance proficiency levels. However, this will need to be further developed to prioritize them and budget them accordingly. Lastly, this CBF is intended to be a dynamic and living document so that future developments can be incorporated during the course of its implementation.

5   References

1. *DGM. (2021). Competency-Based Framework for Mines Inspectors. Thimphu: DGM*
2. *Royal Civil Service Commission. (2019). A Guidebook on Competency-based. Thimphu: RGoB*