ANNUAL REPORT
(2021-22)

Submitted to:

SSTP DIVISION,
DEPARTMENT OF SCIENCE AND TECHNOLOGY
GOVERNMENT OF INDIA
TECHNOLOGY BHAWAN
NEW MEHRAULI ROAD, NEW DELHI – 110016

Submitted by:

SIKKIM STATE COUNCIL OF SCIENCE & TECHNOLOGY
VIGYAN BHAWAN
P.O. DEORALI, GANGTOK, EAST SIKKIM - 737102

Annexure-I

SIKKIM STATE COUNCIL OF SCIENCE & TECHNOLOGY

1. NAME OF SECRETARY
CUM-MEMBER SECRETARY- **Shri B. P. Pradhan, IFS**

ADDRESS: SECRETARY
-CUM-
MEMBER SECRETARY,
Sikkim State Council of
Science & Technology,
Vigyan Bhawan
P.O Deorali-Gangtok
East Sikkim-737102

E-Mail secydst@gmail.com

Office-Phone 03592-280002

Office FAX 03592-280004

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INTRODUCTION

The Department of Science & Technology was created in year 1996. Major activities of the department constitute for promotion of Science & Technology relevant to the State, generation of awareness, Research, Development and Transfer of Technologies through public interface, Research Scholars, Educational Institutions (Schools/colleges/Universities/R&D institutions), Government and non-Government agencies involve in the various fields of Science & Technology.

Sikkim State Council for Science & Technology was created during 1997 as an autonomous body with the primary objective on expediting decision making process through reduction of time consuming decision making process and cutting the administrative procedures being followed under Government Departments.

The Sikkim State Council is an autonomous body registered under Society Act and managed by Governing Body with the Hon'ble Chief Minister as its Chairman and Hon'ble Minister for Science & Technology as Vice- Chairman and Secretary, DST&CC as Member Secretary. Apart from this line Department like Agriculture, Horticulture, Animal Husbandry/ Mines, Mineral and Geology/ Forest, Environment and Wildlife Management/Rural Management Department members are also drown from various scientific agencies of the Government of India

All major activities on promotion of Science & Technology are being undertaken by the Sikkim State S&T Council. The DST&CC is administrative department to supervise the activities of the Council including implementing the programme/ Schemes/Policies of the both Central and State Governments.

Keeping in view the importance of Science & Technology for overall development of the state and with a view to provide sufficient autonomy for implementation of various scientific programmes, The S&T Council has taken up various scientific programmes related to

(i) Bio-Technology: Bioinformatics & Tissue Culture, study on Medicinal and Aromatic Plants, Scientific programme on Planting and Stock Improvement of cultivars; Establishment of Sikkim Biotechnology Research and Application Centre at Sajong, Rumtek and Establishment of Biotech Hub and Patent Information Centre

ii) Remote Sensing and GIS: Establishment of State Remote Sensing Application Centre. Study on Geographical Information System, Glaciers and Climate Studies. A full-fledged Climate Change Cell has been established in the Council.

iii)Technology Transfer: Technology: Scouting, Incubation and diffusion of Appropriate Technology in the state, Capacity Building and Skill Development programmes and Environmental Information System.

iv) Scientific Awareness on various Science Technology and Innovation outreach for communication and popularization of science to general public and students in particular.

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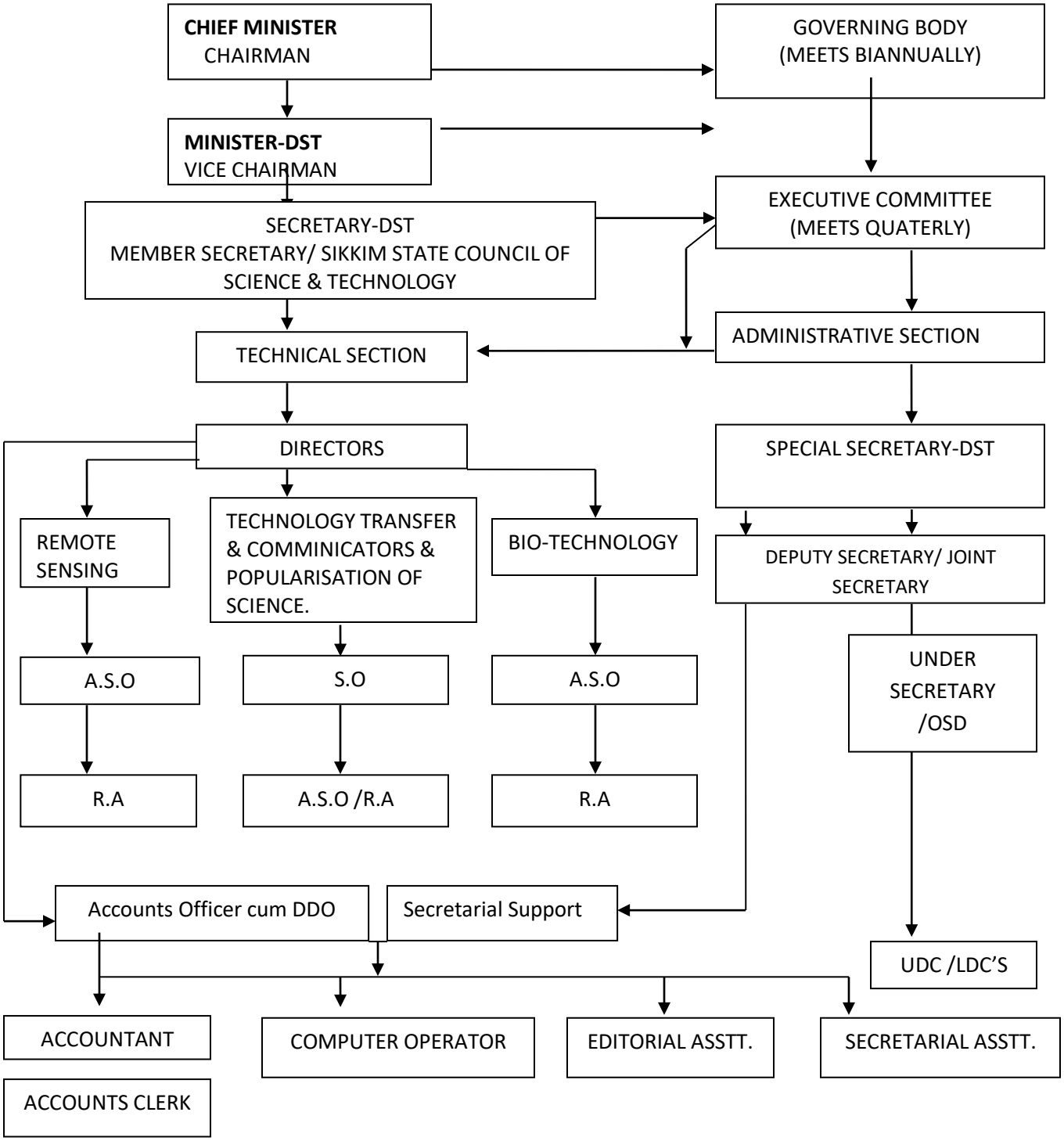
1. **Structure of the Council:**
   a. **Date of Establishment: November 1997.**
   b. **Organization Structure**

ORGANISATIONAL STRUCTURE OF THE DST & SIKKIM STATE COUNCIL OF SCIENCE & TECHNOLOGY.



Strength of approved Manpower (Both Central (DST) & State Support
CORE MANPOWER OF SIKKIM S&T COUNCIL -2021-2022.

Name	Designation	Pay scale Upto June 2021 (Rs)	Pay scale from July 2021 (Rs)	Approximate monthly emoluments (Rs.)
Shri B. P. Pradhan, IFS	Member Secretary			
Supported by DST,GOI Grants-in-Aid				
Shri Suman Thapa	Additional Director	80000	83700	1,23,876
Shri Nabeen Sharma	Research Assistant	35200	36300	54,224.00
Shri Dadul Lepcha	Accountant	31300	32200	48,156.00
Shri Rajdeep Gurung	Sr. Research Asst.	37,100	37,100	55,408.00
Shri Laydong Lepcha	Sr. Research Asst.	37,100	37,100	55,408.00
Dr. Sushen Pradhan	Sr. Research Asst.	37,100	37,100	55,408.00
Shri Radha Kri. Sharma	Sr. Research Asst.	37,100	37,100	55,408.00
Shri Pranay Pradhan	Sr. Research Asst.	37,100	37,100	55,408.00
Shri Tseten Pradhan	Sr. Research Asst.	37,100	37,100	55,408.00
Mr Prabhakar Gurung	Research Assistant	33,700	33,700	50,376.00
Mrs Binita Shrestha	Research Assistant	33,700	33,700	50,376.00
Ms P. Pradhan	Research Assistant	33,700	33,700	50,376.00
Ms. Ongkit Lepcha	Editorial Assistant	25,400	25,400	38,544.00
Ms Pema Z. Lepcha	ASO (Consolidted)	25000	25000	3,00,000.00
Supported by State Grants-in-Aid				
Shri Bhasker Gurung	Peon	Fixed	-	9,300.00
Mrs Yden Bhutia	Peon	Fixed	-	9,300.00
Ms Bashanti Rai	Peon	Fixed	-	9,300.00
Shri Shrep P.Dong	Peon	Fixed		9,300.00
Ms Puja Pradhan	Peon	Fixed		9,300.00
Shri Arpan Lepcha	Peon	Fixed		9,300.00

LIST OF PROJECT STAFFS

Sl. No	Name of Project Staff	Designation
1	Mr Baichung Lepcha	Sr. Research Fellow
2	Mrs. Deepa Rupa Sharma	Project Assistant
3	Ms. Bhawana Chetrri	Project Scientist
4	Ms. Priya Darshini Gurung	Project Scientific
5	Dr. Sundeep Chettri	Research Assistant
6	Mr. Niraj Sharma	Information Officer
7	Mr. Arpana Thapa	Project Assistant
8	Ms. Tseten Chung Lachungpa	D.E.O (ENVIS)
9	Ms. Palmu Bhutia	I. T. Officer/GIS
10	Ms Jamyang Palmu Bhutia	Scientist B
11	Ms Bhawana Chettri	Project Scientist
12	Mr Youa Raj Cintury	Field Asst.
13	Mr Dup Wangyal Tamang	Project Asst.
14	Mr. Yuwa Raj Century	Field Asst.
15	Dr. Smriti Subba	Project Coordinator
16	Ms. Sushnim Golay	Field Worker
17	Mr. Kishore Psd. Sharma	Project Asst.
18	Mr. Dup Wangyal Tamang	Project Asst.
19	Mr. Udai Biswakarma	Field Worker.
20	Ms Kalzen Dolma Tamang	Project Associate-I
21	Ms Pema Youden Bhutia	Project Associate-I
22	Mr Bayvesh Luitel	Project Asst.
23	Mr Suman Subba	Technical Asst.

2. Budget allocation to your State S & T Council for last five financial years including Central Government, State Government & any other sources.

(Amount in lakhs)

Sl. No	Financial Year	State Govt. Grants in Aid	Central Govt. Allocation	Remarks
1	**2019-20**	**35.00**	**104.63**	**Received**
2	**2020-21**	**48.00**	**78.00**	**Received**
3.	**2021-22**	**70.30.**	**82.76**	**Received**
4	**2022-23**	**213.00**		

4. KEY ACTIVITIES UNDER TAKEN

I. *Technology Development*

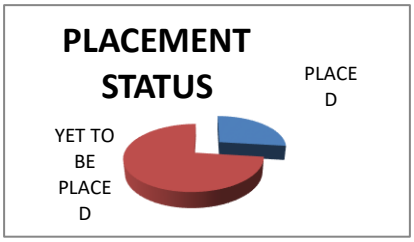
A. **Development of Insar based techniques for high resolution surface topography and ice Velocity under Microwave and Hyper Spectral Techniques for Earth Resources Application and Management (MAHTRAM / □□□□□□).**

Glacier is considered as one of the important indicator of climate change. Field based study of glacier is very tedious work. It involves working is very extreme environment which often result in serious casualties. Satellite based studies is another good option for glacier studies which has the capability of covering large areas under study. However, there are many limitations of satellite based studies which varies from availability of cloud free images specially during the ablation season, lack of technology etc. However, with the availability of SAR images, it has opened the possibility to study in multiple areas. Generation of Digital elevation model (DEM) and glacier velocity mapping are the two most important applications of SAR interferometry or interferometric SAR (InSAR)used in cryosphere. Space- borne InSAR techniques for measuring ice flow velocity and topography have developed rapidly over the last decade. InSAR is capable of measuring ice motion that has radically changed the science of glaciers and ice sheets. Space-borne InSAR has contributed to major evolution in many research areas of glaciological study by measuring ice-stream flow velocity, improving understanding of ice-shelf processes, yielding velocity for flux-gate based mass- balance assessment, and mapping flow of mountain glaciers. In order to demonstrate the technology, the project is taken up by SCS&T in collaboration with Space Application Centre, ISRO. The role and responsibility of SCS&T, Sikkim is the validation of elevation and glacier velocity derived from the module in the Himalayan Glacier area through field as well as data based studies. The technology is developed by SAC and its applicability will be ascertain with the success of the ongoing project.

B. Green Skill Development Programme – 2021-22

A Certificate Course of 400 hrs on Value Addition and Market of NTFPs (Plant Origin): Bamboo Crafts under Green Skill Development Programme of NSQF level – 5 was conducted by Sikkim State Council of Science & Technology under the project ENVIS RP Sikkim on Ecotourism from 9th December 2021 – 22nd January 2022 in Patuk Singbel, Singtam and Dragon Inn, Tathanchen, Gangtok. The project is funded by Ministry of Environment, Forests and Climate Change, Government of India.

1. National Skill Qualification Framework (NSQF) level- 5
2. Number of unemployed youths skilled – 26
3. Number of Placement – 7
4. Duration – 9th December 2021 – 22nd January 2022



C. Development of dryer for Cardamom, and other Agri-Products and allied farming activities energized by Nano-hydel power generated from local water stream.

Objective of the Project:

- To develop technology for drying large cardamom without compromising its quality in Sikkim.
- To develop Nano-hydel Power Generation projects to generate power through locally available water stream which will provide energy to these driers.

S&T component in the project:

The proposed project shall be "run-of-the-river" type of power generation by Nano hydel plant.

The proposed S&T shall consist of following Component;

- Development of Nano hydel projects for drying cardamom and other vegetables.
- Use of Batch and Auto Temperature/Humidity controlled 'Drying Ovens' for drying of large cardamom to match International Competition/requirements:
- Study of essential oil retention in Cardamom.
- Moisture contains and retention of natural colour and flavour in the finished product of cardamom.

II. Technology Demonstration

A. Himalayan Aerosol Experiment @ SIKKIM

Aerosol are airborne particles that are formed from both natural sources, such as gases released by plants, and pollutants emitted by human activities. The Himalayas act as giant barrier to wind flow, facilitating the accumulation of aerosols that are then transported to high altitudes by mountain winds. However there was a large gap of database on the quantities and kinds of aerosols accumulation. In order to fill this data gaps, a monitoring station established in Lachung, North Sikkim. The continuous measurements of aerosols in this region will contribute to the regional aerosol database and climate models.

B. Vulnerability Assessment (VA): VA is the first step towards the adaptation planning. It helps measure the vulnerability across different sectors for climate change and adaption planning. It is envisaged that the VA report will assist the state climate change cell as well as planning and development of state in Sikkim. The VA was done at the district level, considering all the important sectors viz. agriculture, socioeconomic, disaster, forest, health and gender. The assessment report showed varied vulnerability for all the four district of Sikkim, implying unique interventions in different sectors and districts.

C. Climate Projection

Detailed analysis of past and future climate change trends has been carried out, including changes in temperature and precipitation, discussing specific impacts, climate risks, and socioeconomic consequences. The analysis was mainly done based on the topographical and climatological similarities of the state. The analysis projected a slight increase in different temperature variables however the annual rainfall showed high variability .

D. Monitoring of Integrated Watershed Management Programme (IWMP) watersheds using Geospatial technologies

Watershed management is one of the key interventions for improving water resources and conserving soil in the rain fed areas of the country. Under this Integrated Watershed Management Programme (IWMP) activities undertaken are Afforestation, Agriculture, Capacity Building, Check dams, Checks and Plugs, Percolation tanks, Entry point activities and others. There are total of 11 (eleven) IWMP sites for Sikkim under various Batch (1 to 5). The monitoring period is different for different batch. After the monitoring was done various conclusions had to be drawn from the LULC changes and the Matrix table.

E. Space based Information Support for Decentralized Planning (SISDP) Phase II

This project was developed in order to help Panchayati Raj Institutions. The major deliverables viz. High Resolution Satellite Image (HRSI) of 2.5 m resolution for the entire country and thematic maps at 1:10000 scale. These products were generated for the first time in the country and are extremely useful in meeting the requirements for the developmental planning , implementation and monitoring of activities at panchayat level. The SISDP Phase-II aimed at "Generation of value added geospatial products and services to meet Gram Panchayat Development Planning (GPDP) requirements by using latest high resolution satellite data and updated thematic database through user friendly web GIS portal.

F. North Eastern Spatial Data Repository (NeSDR)

The main goal of this project is to catalogue all the geospatial layers maintained by various Government Department and agencies of the region in a single window system with common database standard to enable maximum utilization of data for planning activities, effective data sharing mechanism and reduce duplication of geospatial efforts.

G. GeoTagging and Monitoring of NEC funded Projects/schemes in NE region using Geospatial Technology and Tools

The North Eastern Council (NEC), Government of India, Shillong is the nodal agency for the economic and social development of the North Eastern Region which consists of eight states of Arunachal Pradesh, Assam, Mizoram, Manipur, Meghalaya, Nagaland, Sikkim and Tripura. Being a regional planning body under Government of India, NEC has been playing a vital role for formulating sector wise outline of the development plans and project with a view to accelerating the pace of development with adequate funding provision to the state departments and other Central agencies. The major objectives of project is to Geotag the existing projects sites in NE region using smart phone and GAGAN dongles in quarterly intervals as per the directive of NESAC.

H. Pradhan Mantri Van Dhan Yojana

Pradhan Mantri Van Dhan Yojana is the scheme of Ministry of Tribal Affairs Government of India being implemented through TRIFED. The scheme aim at marketing of Minor forest produce through minimum support price and development of value chain development for minor forest produce .

Sikkim State Council is the State Nodal Agency of PMVDY in Sikkim and being implemented through the State Implementing Agency the Cooperation Department.

Objective:

- To mobilize communities of cluster level and facilitate capacity building, had holding, infrastructure creation and MSP support to realize economy and MFP's traditional art and crafts there by supporting rural livelihood.
- To create employment opportunities among different tribal and other communities by way of self-employment under MSME sector.
- To facilitate marketing linkage for MFP with other agricultural produce besides promoting local art and craft on indigenous scale.

Achievements:

- Formation of 80 Van Dhan Clusters each having 300 members thus involving 24000 tribal beneficiaries.
- Fund amounting to Rs. 11.69 crores transferred to the State Implementing Agency which is being disbursed to beneficiary SHGs
- Training provided to the Van Dhan Clusters for processing of local produce for value addition branding and marketing.
- Products by Tribals are being marketed through various outlets within the state

I. Training on Egg incubators and Distribution:

Egg incubator and Hatchery at Village level:

a) Hon'ble Minister of Science and Technology Shri Karma Loday Bhutia inaugurated the training programme on Egg Incubator for hatching of Chicken at the Household level. The training was attended by identified self help groups.

b) Poultry farming is quite popular among rural youth and one of their sources of employment and income. They often buy young chicks and feed them till they grow to a certain age for resale. However, if they install an egg incubator, they can produce the chicks in their farm itself. This will work out very economical for them. The incubators available in the market are very expensive and run on electricity. But in rural areas, there are frequent power cuts. The egg incubator developed by Milan Jyoti Das solves these problems. It is cheaper in comparison with the ones available in the market and its power source is both electricity and kerosene lamp.

c) After the completion of Training programme Hon'ble Minister handed over the hatcheries Machine to the beneficiaries. The programme was funded by National Innovation Foundation, an autonomous organization under Department of Science & Technology, Government of India.

III: Popularization of Science

1.Two Awareness Generation Programme on Remote Sensing and Climate Change Student and Panchayat
2. Two number of capacity Building Programme for the use of Differential GPS for the official Science and Technology and Student of Sikkim University
3. Two Hands on training on the Use of Remote Sensing & GIS Software to the student of Sikkim Government Collage
4. Awareness programme on Organic Farming to farmers / NGOS and Panchayat Members in all four districts of Sikkim
5. Awareness workshop on Climate Change Adaptation in Colleges and senior Secondary Schools on all four districts of Sikkim
6. Awareness programme on Biodiversity and its preservation and sustainable utilization
7. Master Trainers Workshop on Low Cost Teaching Aid for teaching Physics and Chemistry to 100 science teachers at Sikkim Science Centre, Marchak
8. COVID 19 Sero survey and awareness among tribal; population around Gangtok , Sikkim
9. Vigyan Sarvatra Pujyate funded by Vigyan Prasar, DST, Govt of India, New Delhi
10. INSPIRE MANAK.
11. Virtual programme of Vigyan Utsav under Azadi Ka Amrit Mahotsav 2021-2022
12. Innovation Hub awareness and activities at Sikkim Science Centre
13. Training on operation of Innovation Laboratory equipments at 88 senior secondary schools of Sikkim
14. Training on tools and techniques of Biotechnology to Research Scholars and College Students of Sikkim at Biotechnology laboratory at Vigyan Bhawan, Deorali, Gangtok
15. Biotechnology outreach and awareness programmes in 30 schools in all four districts of Sikkim
16. Awareness lecture series on Intellectual Property Rights in Colleges, University and students and public
17. Training on Bioinformatics to Research Scholars and College faculty
18. Laboratory exposure of science students of various schools of Sikkim.
19. National Science Day
20. National Children Science Congress
21. National Mathematics Day

IV. Any New Innovation and Activities

Development of dryer for Cardamom, and other Agri-Products and allied farming activities energized by Nano-hydel power generated from local water stream.

V. Has the council developed any specific state related S&T and innovation policy? If so the details to be provided.

NA

VI. How strong are the links between other state government / departments if so provide details.

- Sikkim State council of Science & Technology works in close coordination with the line departments as well as the state government
- Sikkim State Council of Science & Technology is the Nodal Institution in the State for Climate Change initiatives. Second Phase of State Action Plan for Climate Change has been under preparation with the support of GIZ All government departments are involved as the member of the steering committee for Climate Change.
- Linkages with UNDP, Swiss Development Cooperation and GIZ on Climate Change adaptation programmes.
- INSPIRE Programme of DST; Govt. of India has been taken up in coordination with Human Resource Development Department. State Nodal Office is the Council while District Joint Directors of HRDD are the district Coordinators.
- Support to the user departments/ agencies**:** S&T Council being nodal for Remote Sensing and GIS applications in Sikkim, has contributed technical support to many user department and agencies in Sikkim. Some of the support includes-
- Catchment area mapping for the various projects of Irrigation and Flood Control Department.
- GIS maps provided for Agriculture Department, Govt. of Sikkim.
- Council is responsible for all patent work related to intellectual property in the state.

VII. How strong are the links of the council with local industry units/associations?

Sikkim being a hilly landlocked state, there is not many local industries except for cottage industries and handicraft. The council is striving to have linkages with such local industries by formulating projects in the areas of handicraft.

S&T Council with the support of GIZ organized one training on weaving of fine handlooms

VIII. List 5 major technology area, where the council can play an important role by finding convergent technological solutions.

(i) Biotechnology and tissue culture
(ii) Climate Change Adaptation and Mitigation
(iii) Remote sensing
(iv) Non renewable energy
(v) Post harvest technology
(vi) Framing of State STI Policy

IX . Proposed Programmes:

1. Establishment of Science Center in South Sikkim.
2. Establishment of Technology Demonstration Centre at Marchak, East Sikkim.
3. Establishment of Technology Incubation Centre in Sikkim.
4. Establishment of Science & Technology Complex at Namli, Marchak.
5. Establishment of Woman Technology Park.
6. Establishment of Science Technology and Innovation Hubs in Sikkim.
7. Development of INSAR based technique for high resolution surface topography and ice velocity under microwave and hyper spectral techniques for earth resources application and management.
8. Development of First Fire Spread Model using Satellite RS.

9. Climate Change Risk reduction for potentially Dangerous Glacial Lakes In Sikkim
10. Sikkim State centre for Glaciology
11. Experimental Study on Reglaciation of Deglaciated Valley in Sikkim through Artificial Glaciation
12. Mass production of ginseng (*P. sokpayensis)* for livelihood security and economic growth of rural people of Sikkim, North East India.
13. Glacier studies of basins in Sikkim and Bhutan region under Brahmaputra basin
14. Deployment of early warning system for minimizing the floods hazards in potentially vulnerable glacial lakes in Sikkim using space based technology
15. Estimation of Crop Acreage area in the state of Sikkim
16. Bathymetry Study of 10 Vulnerable Lake in Sikkim Using the Unmanned Surface Vehicle
17. Climate Change impacts on the Alpine ecosystem of Sikkim Himalaya.
18. Skill Development Programmes on Bioinformatics for the PhD, Research Scholars and Post Graduate Students in different areas of Life Sciences.
19. Faculty Improvement Programme on Bioinformatics for the Professors, Assistant Professors, Post-graduate, Graduate & Undergraduate Science Faculty Working in Different Areas of Life Sciences in Sikkim.
20. Mass production of ginseng (P. sokpayensis) for livelihood security and economic growth of rural people of Sikkim, North East India.

SUCCESS STORIES
SIKKIM STATE COUNCIL OF SCIENCE AND TECHNOLOGY

The Department of Science & Technology was created in year 1996. Major activities of the department constitute for promotion of Science & Technology relevant to the State, generation of awareness, Research, Development and Transfer of Technologies through public interface, Research Scholars, Educational Institutions (Schools/colleges/Universities/R&D institutions), Government and non-Government agencies involve in the various fields of Science, Technology and Innovation ecosystem.

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The department has taken up through the Council various scientific programmes related to

(i) Bio-Technology: Bioinformatics & Tissue Culture, study on Medicinal and Aromatic Plants, Scientific programme on Planting and Stock Improvement of cultivars; Establishment of Sikkim Biotechnology Research and Application Centre at Sajong, Rumtek and Establishment of Biotech Hub and Patent Information Centre

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iv) Scientific Awareness on various Science Technology and Innovation outreach for communication and popularization of science to general public and students in particular.

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PROJECTS AND ACTIVITIES UNDER TECHNOLOGY TRANSFER DIVISION

1. Setting Up of Schedule Tribe Cell in Sikkim

Schedule Tribe cell was established in March 2021 under Sikkim State Council of Science & Technology supported by DST, Government of India. The project was started in month of July 2021for period of 36 Months. This project was initiated for Schedule Tribe people to provide S& T based solution through science for socio-economic upliftment & skill development to boost up their well-being and improve food security.

Deliverables through ST cell:

1. Analysis of predominant livelihood System in context of five capital in identified project areas.
3. Mapping of indigenous traditional knowledge and upgrade the skill building on local Innovation and knowledge system.
4. Establishment database of promising technology for widespread adaptation.
5. Mapping of data in spatial domain

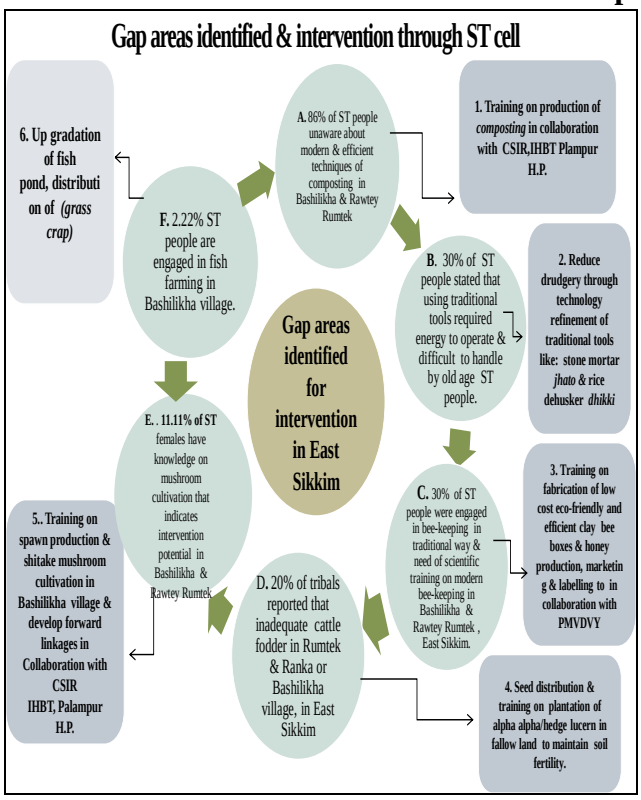
capacity building and sustainable development of SC/ST communities in the State.

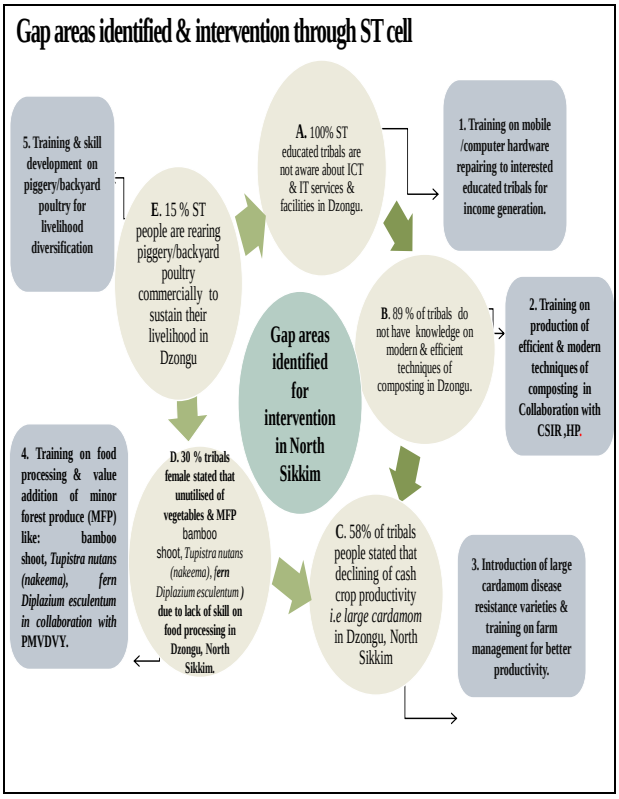
Achievement

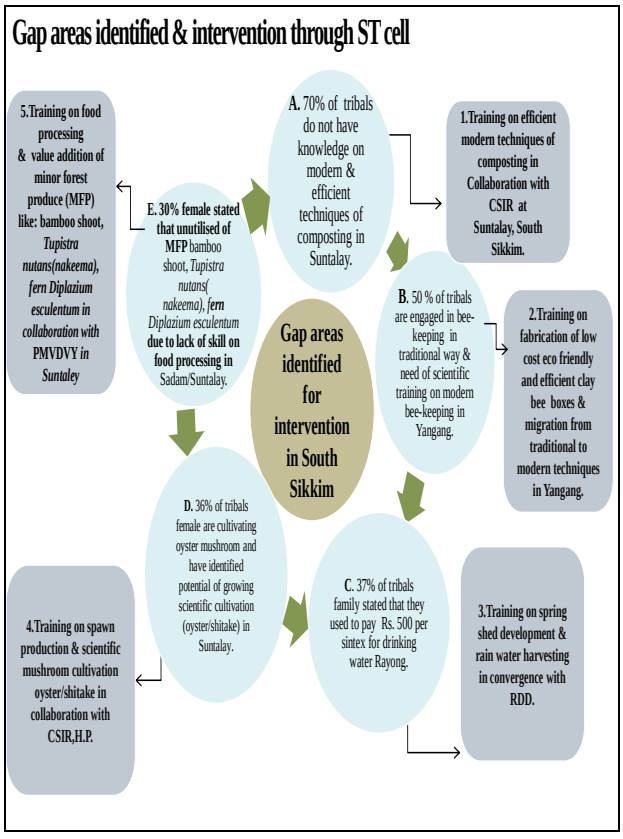
1. Complete Identification and categorization of S&T needs of ST community of Sikkim
2. Identification & categorization of S&T needs of SC & ST community of Sikkim
3. Identification and Spatial representation of livelihood capitals and S&T gaps within the state

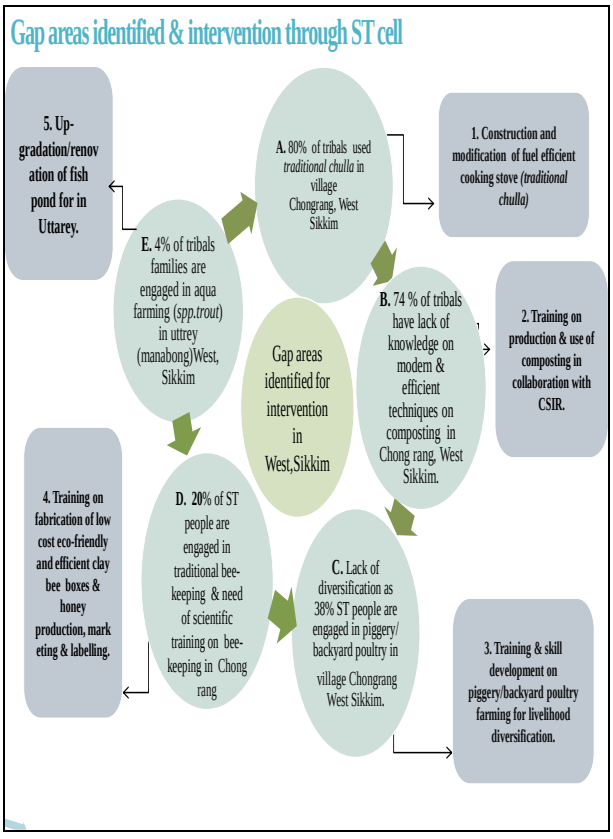
4. Establishment of a database of promising technologies that can be taken up for widespread adaptation
5. Mapping of the above data and resources on a Spatial Domain

Identification of Predominant Livelihood Gap Areas









2. Pradhan Mantri Van Dhan Yojana

Pradhan Mantri Van Dhan Yojana is the scheme of Ministry of Tribal Affairs Government of India being implemented through TRIFED. The scheme aim at marketing of Minor forest produce through minimum support price and development of value chain development for minor forest produce .

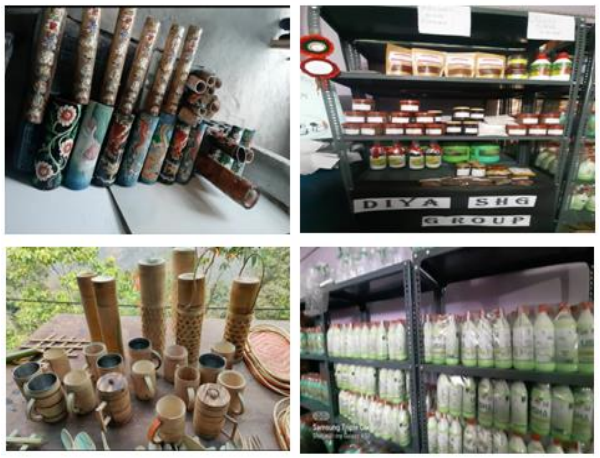
Sikkim State Council is the State Nodal Agency of PMVDY in Sikkim and being implemented through the State Implementing Agency the Cooperation Department.

Objective:

1. To mobilize communities of cluster level and facilitate capacity building, had holding, infrastructure creation and MSP support to realize economy and MFP's traditional art and crafts there by supporting rural livelihood.
2. To create employment opportunities among different tribal and other communities by way of self-employment under MSME sector.
3. To facilitate marketing linkage for MFP with other agricultural produce besides promoting local art and craft on indigenous scale.

Achievements:

1. Formation of 80 Van Dhan Clusters each having 300 members thus involving 24000 tribal beneficiaries.
2. Fund amounting to Rs. 11.69 crores transferred to the State Implementing Agency which is being disbursed to beneficiary SHGs
3. Training provided to the Van Dhan Clusters for processing of local produce for value addition branding and marketing.
4. Products by Tribals are being marketed through various outlets within the state



BRANDING

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3. Development of dryer for Cardamom, and other Agri-Products and allied farming activities energized by Nano-hydel power generated from local water stream

Objective of the Project :

- To develop technology for drying large cardamom without compromising its quality in Sikkim.
- To develop Nano-hydel Power Generation projects to generate power through locally available water stream which will provide energy to these driers.

S&T component in the project:

The proposed project shall be "run-of-the-river" type of power generation by Nano hydel plant. The proposed S&T shall consist of following Component;

- Development of Nano hydel projects for drying cardamom and other vegetables..
- Use of Batch and Auto Temperature/Humidity controlled 'Drying Ovens' for drying of large cardamom to match International Competition/requirements.
- Study of essential oil retention in Cardamom.
- Moisture contains and retention of natural colour and flavor in the finished product of cardamom.

Summary of Progress:

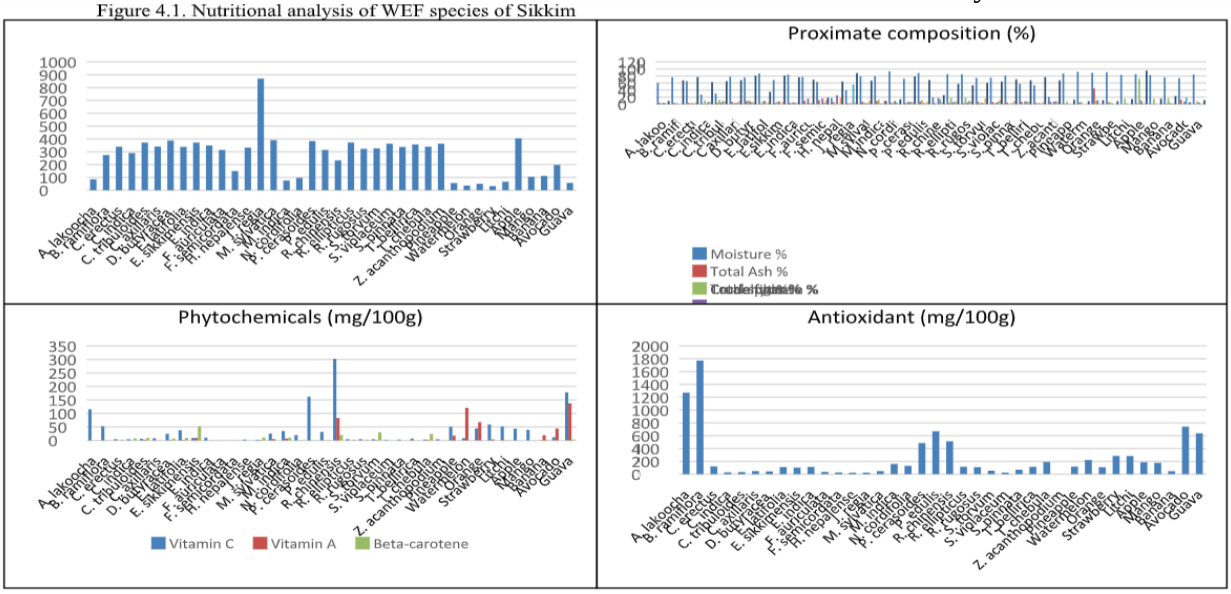
- Site identification and Selection completed in consultation with the Central Power Research Institute (CPRI) Bangalore and Block Administrate Centre.
- Assessment of discharge of selected stream, Contour survey completed.
  Work initiated by respective Block Administrative Centre.
- Civil construction along with laying of penstock, completed.
- Installation of Electro-Mechanical components, completed.
- Power generated by electro-mechanical components check, completed.
- Batch type ovens 3 nos. procured installed and trial at site completed.

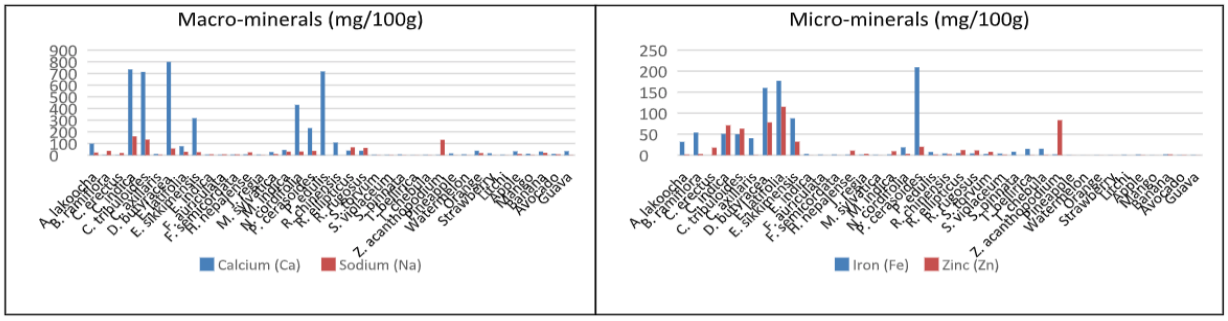
4. Wild Edible fruits of Sikkim Himalaya: A study on nutritional potential, Sustainable Socio Economy, Ecology and Conservation for Tribal Population of Sikkim

Objectives:

- To document and delimit the wild edible fruits consumed in Sikkim Himalaya
- To study ecological distribution and socio-economy of common wild edible fruits.
- To determine nutritional composition such as moisture content, ash, protein, fat, carbohydrate, crude fibre, caloric content, vitamin c, beta - carotene, anti-oxidants and minerals.
- To propose a model for domestication of wild edible fruits based on nutritive value.
- To map and delimit the potential distributional areas of less-familiar wild edible fruits in Sikkim Himalaya.
- To document and delimit the wild edible fruits consumed in Sikkim Himalaya.

Figure 4.1. Nutritional analysis of WEF species of Sikkim





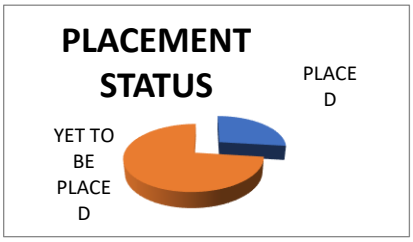
Achievements

- 39 wild edible fruits species of Sikkim Himalaya with family, local names (Nepali) and their physical characteristics have been documented.
- Field survey: Household survey of East, West and South districts of Sikkim have been conducted: West Sikkim – 111 houses, South Sikkim – 118 houses, East Sikkim – 77 houses have been surveyed for information on local/ traditional uses of WEFs;
- Wild edible fruit samples were collected for nutrient analysis through field survey and market surveys.
- Nutrient analysis of 28 WEF samples of India. The results showed that most of the WEF species of Sikkim performed well in comparison with commercial fruits.
- 24 WEF species provide good energy source as of commercial fruits, where Juglans regia being highest (870.14 kcal/100g). Rhus chinensis had highest vitamin C and A (302.00 & 83.00 mg/100g respectively) while Baccaurea ramiflora had highest antioxidant (1771.53 mg/100g). Diploknema butyracea (799.00mg/100g) with highest calcium, Castanopsis indica (161.00 mg/100g) with highest sodium, Prunus cerasoides (209.12 mg/100g) with highest iron and Elaeagnus latifolia (115.18 mg/100g) with highest zinc content were recorded. Altitudinal range vary from Calamus erectus (100m) to Castanopsis tribuloides and Litsaea citrata (2700 m) amsl.

5. Green Skill Development Programme – 2021-22

A Certificate Course of 400 hrs on Value Addition and Market of NTFPs (Plant Origin): Bamboo Crafts under Green Skill Development Programme of NSQF level – 5 was conducted by Sikkim State Council of Science & Technology under the project ENVIS RP Sikkim on Ecotourism from 9th December 2021 – 22nd January 2022 in Patuk Singbel, Singtam and Dragon Inn, Tathanchen, Gangtok. The project is funded by Ministry of Environment, Forests and Climate Change, Government of India.

1. National Skill Qualification Framework (NSQF) level- 5
2. Number of unemployed youths skilled – 26
3. Number of Placement – 7
4. Duration – 9th December 2021 – 22nd January 2022



Activity under Communication and Popularisation of Science

Communication and Popularisation of Science is one of the area of activity of the Council which pervades through all activities and initiatives of the council. This is a common platform where all divisions meet for popularization of extension work. The communication and information sharing is taken up at various levels and by identifying various location specific problems in which science & technology can play a manifested role for preparing young minds for future. Many planned activities are taken up every year which can be summarized as follows:

6. Setting up of Innovation Laboratory in Eighty eight Schools and Innovation Hub in Science Centre

An innovation Laboratory have been set up in eighty eight government senior secondary schools where state of the art science and geography equipments have been provided to the schools which will benefit the schools in terms of setting up science based experiments and study and data collection on weather and climate change which will help in baseline study and reference for researchers and professionals, Some of the equipments which have been installed in the laboratory are :-

- LCD/ Digital Microscope
- Automatic Weather Station for weather data documentation
- Work Station for data mining, collection, processing and collation
- Digital camera / Binocular/ Herbarium for study of nature study and documentation of biodiversity
- Laboratory equipments

Further Innovation Hub laboratory has been set up in Sikkim Science Centre which will be the nodal point for all the innovative laboratory. All schools and students have taken the membership of the Innovation Hub at Sikkim Science Centre. The Innovation Hub project aims to the benefit of rural as well as urban students who are innovative and will provide platform for experimenting in the problems and encourage the students to express their innovative ideas. The Innovation Hub has been set up under central funding 'Scheme for Promoting Innovation, Creativity and Engagement in Science' (SPICE) to inspire young minds and to develop a culture of innovation in the country. Following components will be made available:

- Discovery Hall
- Innovation Resource Centre & Hall of Fame
- Idea Laboratory
- Design Studio
- Mentor/ Guides

7. Innovation in Science Pursuit for Inspired Research (INSPIRE):

INSPIRE Programme is centrally funded programme of the Department of Science & Technology, Govt. of India which is being implemented through State Governments and UT administrations. The objective of this programme is to develop scientific temper amongst the young and to motivate them to take up scientific career for the scientific and technological advancement of the country. This programme has five components covering entire range of education and research from class VI to post-doctoral stage of a student. The first component of this programme is INSPIRE Award which recognizes the talents among students at a very early stage is being implemented by Sikkim State Council of Science & Technology as the Nodal Agency for this programme.

So far 1714 students from Sikkim have taken the benefit of INSPIRE Award. Out of these 10 students were selected for exchange and exposure programme to Japan

8. Vigyan Sarvatra Pujyate:

Sikkim State Council of Science &Technology in collaboration with VIGYAN PRASAR, an autonomous organization under DST, GOI organized the week long VIGYAN SARVATRA PUJYATE programme under AZADI KA AMRIT MAHOTSAV under SCoPE (Science Communication Popularization & its Extension)- Science Festival from February 22nd to 28th 2022.Theprogramme comprised of various activities like Poster Display/QUIZ competition/Video Screening/Panting Competition/Lecture & Science Awareness at different districts. Total outreach was 15000 public and students

Remote Sensing and Climate Change Division

9. Vulnerability Assessment (VA): Vulnerability profile of Sikkim, a sectoral analysis at district level

Introduction:

Based on the framework presented in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2014), the 'risk' of climate change is determined at the interaction of "Hazard – Exposure – Vulnerability" (Intergovernmental Panel on climate Change, 2014). Among the three drivers, in the short to medium term, government and development agencies can address climate change most effectively by reducing vulnerability. The vulnerability of a natural ecosystem or socio-economic system is assessed as a function of its 'sensitivity' (i.e. the susceptibility to harm that determines the first-order impact of a hazard/stressor on the system) and lack of 'adaptive capacity' to cope with or to overcome such sensitivity (Dasgupta, Barua, Vyas, & Ravindranath, 2019-20). Therefore, assessing vulnerability to climate change is an important first step towards adaptation planning as it helps to understand the impact of potential climate risks and provides information to formulate measures to be taken to adapt to climate change (Sharma, et al., 2018).

Objective:

- To conduct sectoral vulnerability assessment at the district level for the state of Sikkim for agriculture, socioeconomic, disaster, forest, health, and gender sectors.

- To assign the vulnerability ranking of districts to help policymakers prioritize the districts for adaptation interventions and to formulate climate-resilient policies in each sector.
- To identify and categorize the most vulnerable district in Sikkim and the drivers of vulnerability for each sector and each district.
- To assist the state to prioritize adaptation planning and investment at a district-level for the identified sectors

Key findings:

- The assessment showed that the vulnerability indices (VI) of 4 districts across 6 sectors are within a small range (0.30 - 0.67). This indicates that all districts are vulnerable (with no district having VI value <0.3) with little difference. This means all districts across the selected sectors should consider efforts to reduce their vulnerability in the face of growing climate concerns. However, some sectors in some districts are relatively more vulnerable than the others, potentially requiring prioritization of adaptation interventions.
- The assessment indicates that the sectoral vulnerability for each district varies, which implies that vulnerability is unique for each district and so the interventions needs to be sector/ district specific.
- In the North district, vulnerability is driven by socio economic factors, whereas in the South both forest and disaster drives the vulnerability. In the East district, vulnerability to agriculture sector is highest compared to other sectors and for the West district health sector needs to be prioritised to reduce vulnerability (Figure 1)
- The gender vulnerability is although not very pronounced across all the sectors there should be an effort to increase women's participation in the labour force and to provide better health facility to cater to the specific needs of women and the state must prepare adaptation plans with a gender lens.

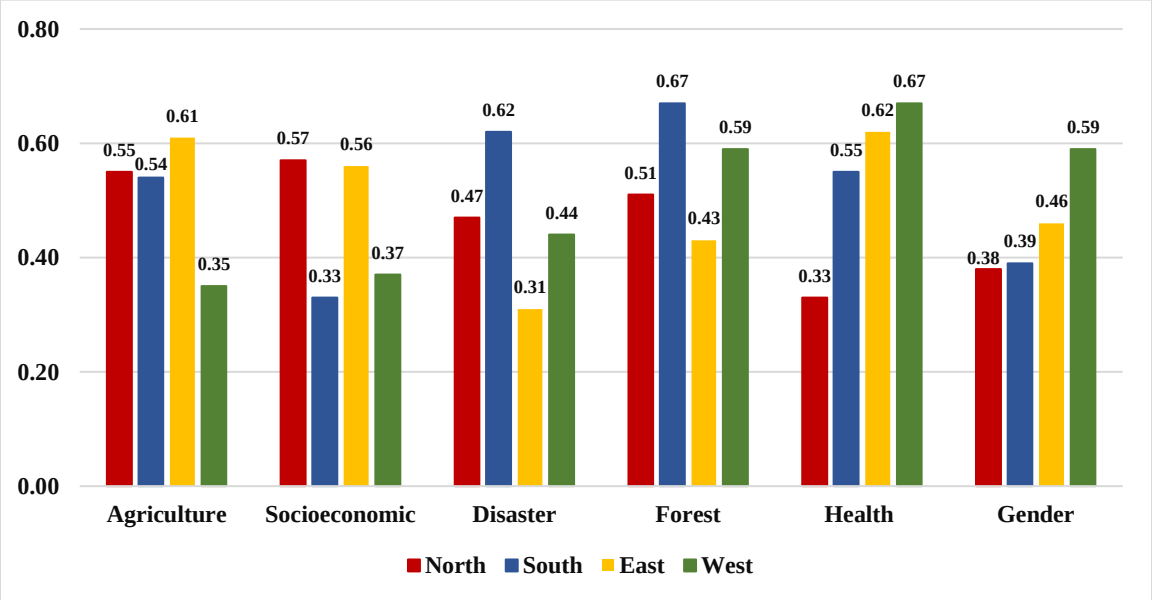


Figure: Ranking of districts in each sector

10. Climate Projection

Introduction/Objectives

The primary goal of climate profiling is to better understand the region's past and present climate and to assess how changes in global societal, demographical, and economic scenarios (quantified through shared socioeconomic pathways) are going to impact the statistics of essential climate variables (e.g., temperature and precipitation) of interest. This chapter discusses the climate profile and characteristics such as annual average temperature, rainfall, and climatic variability. Specifically, a detailed analysis of past and future climate change trends, including changes in temperature and precipitation, discussing specific impacts, climate risks, and socioeconomic consequences is presented. Further, the projections of temperature and precipitation (both means and extremes) using multiple models, multiple initial condition ensembles are analyzed.

Key findings:

Northern Sikkim:

The historical annual maximum temperature from IMD and CMIP6 exhibit a similar trend. However, the variability in the observed data (from IMD) is more than that of model data. The future projections of annual maximum temperature show an increasing trend, much higher than that of observed data under all the scenarios. The yearly maximum temperature goes up to 17.5 degrees Celsius in 2045, which is approximately 1.5 degrees Celsius above the current temperature. The historical annual minimum temperature from model CMIP6 shows an increasing trend because it fails to consider the cyclicity present in the observed minimum temperature from IMD. The future projections of annual minimum temperature show an upward trend under all the scenarios. The yearly minimum temperature goes up to 6 degrees celsius in 2045, approximately 1 degree Celsius above the current annual temperature.

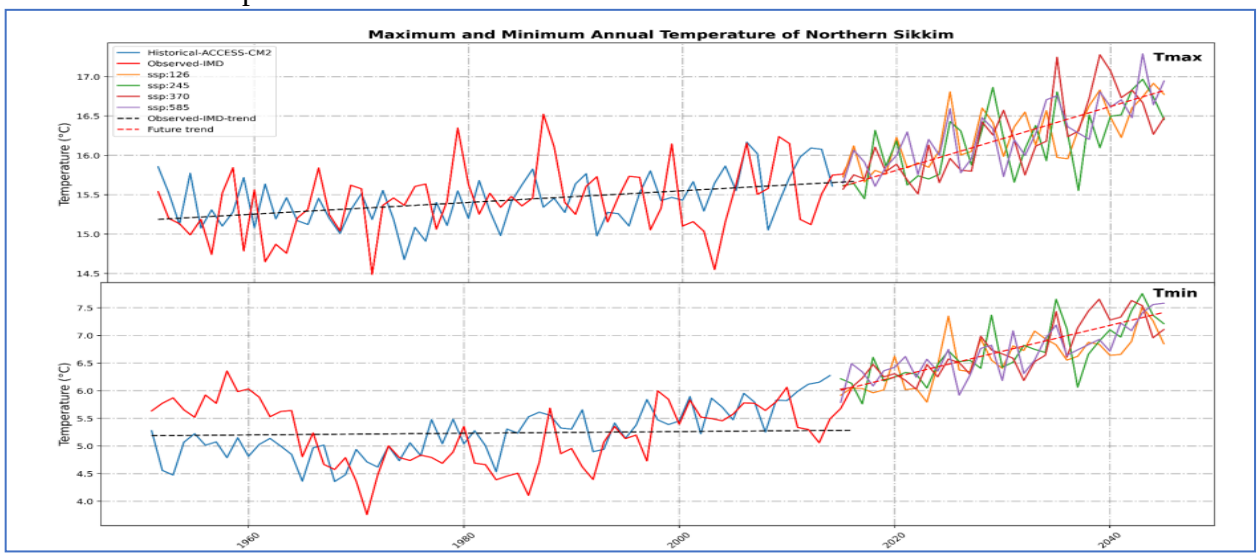


Figure: Historical and future projections (under four different SSPs) of maximum and minimum temperature from CMIP6 model ACCESS-CM2 along with observed temperature from IMD for Northern Sikkim

Southern Sikkim:

The historical annual maximum temperature from IMD and CMIP6 exhibit comparative trends. However, the variability in the observed data (from IMD) is more than that of model data. The future projections of annual maximum temperature show an increasing trend, much higher than that of observed data under all the scenarios. The maximum yearly temperature goes up to 26.2 degrees Celsius in 2045, which is around 1.3 degrees Celsius above the current temperature. The historical annual minimum temperature from model CMIP6 shows a increasing trend , due to the fact that it fails to consider the cyclicity that is present actually in observed minimum temperature from IMD.

The future projections of annual minimum temperature shows an increasing trend under all the scenarios. The minimum yearly temperature goes up to 17 degrees celsius in 2045, around 0.8 degrees Celsius above the current annual temperature.

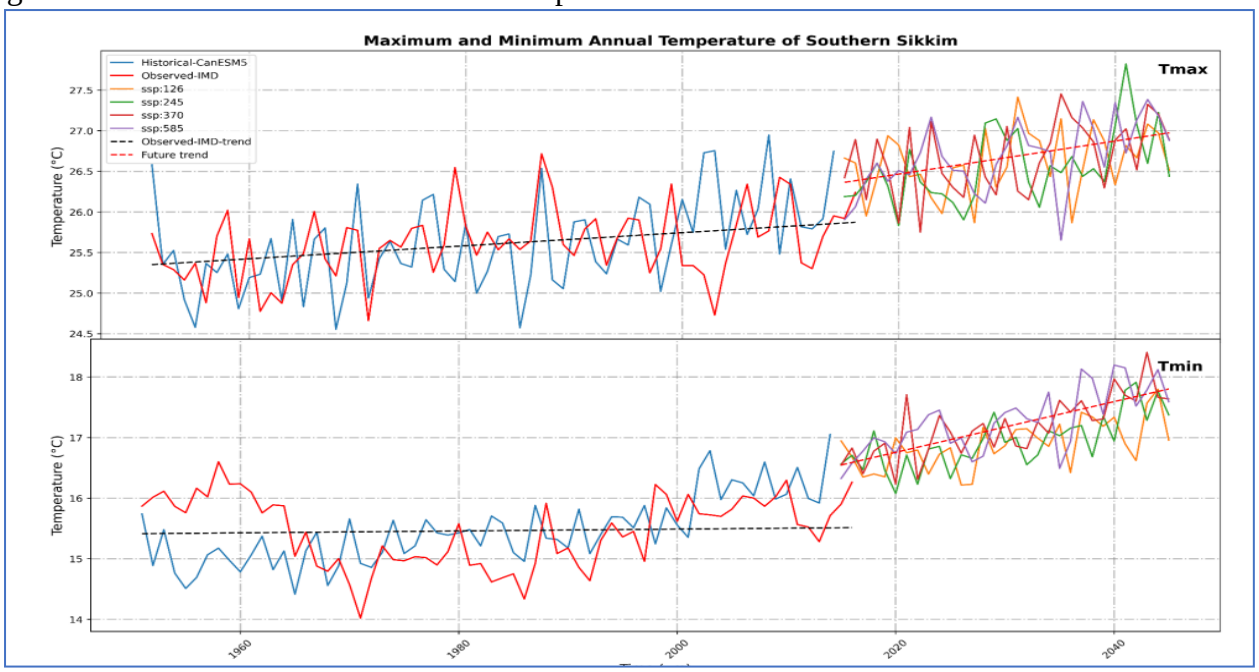


Figure: Historical and future projections (under four different SSPs) of maximum and minimum temperature from CMIP6 model CanESM5 along with observed temperature from IMD for Southern Sikkim

11. State Action Plan on Climate Change-II

Funding Agency: Ministry of Environment, Forest & Climate Change, Govt. of India

Introduction:

Subsequent to the introduction of National Action Plan on Climate Change (NAPCC) in 2008, State Governments were also encouraged to prepare their own State Action Plan on Climate Change (SAPCC) consistent with strategies in the NAPCC. Sikkim has formulated the State Action Plan on Climate Change (SAPCC) in 2014. The national and international climate action and policy landscape have evolved since the formulation of SAPCCs. Paris Agreement has been agreed upon in the year 2015 to limit global mean temperature within 2 degree and working towards to limit at 1.5 degree. India has submitted its Nationally Determined Contributions (NDC) goals for post-2020 with eight different goals including three major quantifiable goals related to emission reduction, renewable energy and forestry. Over the years, India has pursued major domestic policies and schemes in areas of climate change mitigation and adaptation actions, particularly in the fields of clean and renewable energy, enhancement of energy efficiency, development of less carbon-intensive and resilient urban development, promotion of waste to wealth, electric vehicles, etc. Based on the study, Sikkim State Action Plan on Climate Change (SAPCC) was formulated with strategies identified to address the challenge faced by the state. The key areas of concern for Sikkim were identified as;

1. Water.
2. Agriculture, Horticulture and Livestock.
3. Forest, Wildlife and Eco-Tourism.
4. Promotion of Energy Efficiency.
5. Urban and Rural Habitats and Communities

Objectives:

1. The main objective is to provide the implementation for up gradation of SAPCC in the presence of stakeholders involved.
2. The program would also emphasize on the revision of present work on climate change adaptation program.
3. Highlighting the methodology for Vulnerability Assessment.
4. Making future adaptation program and policy for State on climate change.

Work completed:

Under the project SAPCC we have completed the two important chapters, Vulnerability Assessment and Climate Projection.

<u>BIO-TECHNOLOGY-DIVISION</u>:

12. Registration of new rice variety under Protection of Plant Variety & Farmer's Right, Act, 2001

Sikkim State Council of Science & Technology (SSCS&T) Division, IPR (Intellectual Property Rights) has successfully registered a new rice variety developed by a local farmer of Sikkim. The new plant variety was registered for the first time from the state and as a matter of fact that, it is a matter of pride and big achievement too, of the SSCS&T, Sikkim. It was registered under the provision of Intellectual Property Rights vide Protection of Plant Variety & Farmer's Right, Act, 2001.

Certificate Distribution Programme

13. Successfully filed four (04) GI products of Sikkim namely:

 Sikkim Temi Tea (No. 796)	 Hee-Goan Seremna Cardamom (No. 783)
 Sikkim Lepcha Hat (No. 851)	 Sikkim Orange (No. 925)

<u>Low cost solar dryer</u>:

Low cost drying system of local products like cardamom, dalle chilli, turmeric, mushroom, meat etc to value add and convert into marketable product is needed to reduce the cost of production as well as to avoid the problem because of erratic power supply in the hilly terrain. Trial on development of low cost solar dryer was conduction with the use of bamboos, greenhouse plastic, shade net etc. 90% efficiency in drying is achieved.

14. Intellectual Property Rights Cell established:

Total number of 08 IPR cells has been established in different colleges and universities.

Annexure-I

Specific Achievements/outcome of the project (Projects no. With Title)

Restricted to one page only.

Approved Objective/ Activities	**Achievements/ Deliverable till date**	**Achievements/ Outcomes (Specific to utilization of funds for a period Reported upon**	**Challenges shortcoming , If any**
1. Setting Up of Schedule Tribe Cell in Sikkim Analysis of predominant livelihood Sys in context of five capital in identi project areas. 3. Mapping of indigenous traditio knowledge and upgrade the skill build on local Innovation and knowle system. 4. Establishment database of promis technology for widespread adaptation. 5. Mapping of data in spatial domain capacity building and sustainable development of SC/ST communities in the State	**Achievement** • Establishment of a database of promising technologies that can be taken up for widespread adaptation • Mapping of the above data and resources on a Spatial Domain	Complete	
2. Wild Edible fruits of Sikkim Himalaya: A study on the issues of their nutritional potential, Sustainable Socio Economy, Ecology and Conservation for Tribal Population of Sikkim • To document and delimit the wild edible fruits consumed in Sikkim Himalaya • To study ecological distribution and socio-economy of common wild edible fruits. • To determine nutritional composition such as moisture content, ash, protein, fat, carbohydrate, crude fibre, caloric content, vitamin c, beta - carotene, anti-oxidants and minerals. • To propose a model for domestication of wild edible fruits based on nutritive value. • To map and delimit the potential distributional areas of less-familiar wild edible fruits in Sikkim Himalaya. • To document and delimit the wild edible fruits consumed in Sikkim Himalaya.	**Achievement** • 39 wild edible fruits species of Sikkim Himalaya with family, local names (Nepali) and their physical characteristics have been documented. • Field survey: Household survey of East, West and South districts of Sikkim have been conducted: West Sikkim – 111 houses, South Sikkim – 118 houses, East Sikkim – 77 houses have been surveyed for information on local/ traditional uses of WEFs; • Wild edible fruit samples were collected for nutrient analysis through field survey and market surveys. • Nutrient analysis of 28 WEF samples of India. The results showed that most of the WEF species of Sikkim performed well in comparison with commercial fruits. • 24 WEF species provide good energy source as of commercial fruits, amsl.	Complete	

3. Pradhan Mantri Van Dhan Yojana Objective: • To mobilize communities of cluster level and facilitate capacity building, had holding, infrastructure creation and MSP support to realize economy and MFP's traditional art and crafts there by supporting rural livelihood. • To create employment opportunities among different tribal and other communities by way of self-employment under MSME sector. • To facilitate marketing linkage for MFP with other agricultural produce besides promoting local art and craft on indigenous scale.	**Achievements** • Formation of 80 Van Dhan Clusters each having 300 members thus involving 24000 tribal beneficiaries. • Fund amounting to Rs. 11.69 crores transferred to the State Implementing Agency which is being disbursed to beneficiary SHGs	75% complete	NIL
4. Green Skill Development Programme: Green skills contribute to preserving or restoring environmental quality for sustainable future and include jobs that protect ecosystems and biodiversity, reduce energy and minimize waste and pollution. In line with the Skill India Mission of Hon'ble Prime Minister, Ministry of Environment, Forest & Climate Change (MoEF&CC) utilising the vast network and expertise of ENVIS Hubs/RPs, has taken up an initiative for skill development in the environment and forest sector to enable India's youth to get gainful employment and/or self-employment, called the Green Skill Development Programme (GSDP). The programme endeavours to develop green skilled workers having technical knowledge and commitment to sustainable development, which will help in the attainment of the Nationally Determined Contributions (NDCs), Sustainable Development Goals (SDGs), National Biodiversity Targets (NBTs), as well as Waste Management Rules (2016).	Bamboo Crafts 9th Dec. to 22th Jan.22 Total Trainees trained: 26 Total Self Employed : 07 **Bamboo Crafts FY. 2020-21** Total Trainees trained: **25** Total Self Employed :**13**	Forward linkages have been set up for marketing and livelihood generation.	

5. "Mass production and propagation of large cardamom for livelihood sustainability of rural people in Sikkim using biotechnological intervention". Funding agency: DBT, GOI Objectives: • Development/standardization of virus indexing protocol of two viral disease of large cardamom. • Production of virus free planting material through tissue culture. • Morphological studies of large cardamom cultivars. Comparative studies on phyto-chemicals present in large cardamom cultivars.	• The virus indexing protocol of two large cardamom virus namely, Chirkey and Foorkey is developed through RTPCR/PCR method. • Multiplied virus free planting material through tissue culture done. • Morphological studies of 10 large cardamom cultivars are completed.	Virus indexing protocol of two large cardamom viruses has been developed successfully at Molecular biology lab, Vigyan bhawan, Gangtok. Morphological studies of 10 large cardamom cultivars is done and completed.	Large scale multiplication of virus free planting material could not be done due to non-receipt of fund from funding agency.
6. **Patent Information Centre** Funding agency: DST, GOI Objectives: • To create awareness on Intellectual Property Rights in Sikkim. • To guide and assist in patent, copyright, trademark etc filing and registration. • To create an ecosystem of patent generation, filing and licensing. • To assist in GI filing of local products.	a.Successfully registered a new rice variety "Kailash Rana" developed by a farmer under Protection of Plant Variety & Farmer's Right, Act, 2001. b.Filed two local products for Geographical Indication registration namely, Temi-Tea and Hee-goan Seremna (Large Cardamom). c.Opened 8 IPR cell in different colleges and universities.	Registered a new rice variety under Protection of Plant Variety & Farmer's Right, Act, 2001.	
7. Gene sequence submission	Submitted 13 gene sequence of large cardamom cultivars and fungal disease associated with it to NCBI GenBank.		
8. Long-Term Monitoring on "Glacier Dynamics of East Rathong Glacier- Sikkim Phase II **Objectives** • Glacier secular Movement studies • Glacier Hydrometry • Glacier vertical thinning and ablation Glacier Meteorology	Successfully carried out glacier studies including snout monitoring, glacier hydrology study including discharge measurement and suspended sediment analysis, glacier velocity study, Glacier surface thinning studies and glacier meteorological studies from the year 2013. In Eastern Himalaya, East Rathong Glacier is the only glacier considered for long term study. So it provides an important window for comparative study of glacier between Eastern and Western Himalaya.	• Almost 36 meters of snout retreat has been recorded in between 2013 to 2018. • The average thinning of 3.8 meters recorded during the year 2018. Comparatively, the year 2018 recorded higher melting/thinning of East Rathong glacier. The average daily discharge in the year 2017 in East Rathong melt water stream was 5.02 m^3s^{-1}, 4.69m^3s^{-1} in 2018, and 5.37m^3s-1 in 2019.	Between 2013 and till date, the study in some years hampered due to bad weather condition and failure of instruments like DGPS.
9. Monitoring of Integrated Watershed Management Programme (IWMP) **Objectives:** The main objective of Integrated Watershed Management Programme (IWMP) is to restore ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water.	**North district (11167.21 ha.):** 249 Drishti points were uploaded in the Bhuvan application showing agriculture (57), check dams (64), checks & plugs (16) and others (112). Analysis for North IWMP-I/2009-10 is done for 2009-10(T0), 2014-15(T1), 2016-17(T2), and 2017-18(T3)	**North district:** Forest has increased T0 (2009-10) to T1 (2014-15) and decreased in T1 (2014-15) to T2 (2016-17). **East district:** Forest decrease in T0 (2009-10) to T1 (2014-15), and increased, from T1 (2014-	

	periods. Changes in the land use and land cover of the study area for the time period from T0 (2009-10) – T2 (2016-17) were analyzed in terms of Agriculture, Built up, Forest, Wastelands and Waterbodies . **East district(6528.03 ha):** Analysis for East IWMP-II/2009-10 is done for 2009-10(T0), 2014-15(T1), 2016-17(T2), and 2017-18(T3) periods. Changes in the land use and land cover of the study area for the time period from T0 (2009-10) – T2 (2016-17) were analyzed in terms of Agriculture, Built up, Forest, Snow/Glacial area, Wastelands and Waterbodies **South district (4969.10 ha):** Changes in land use and land cover of the study area for time period from T0 (2010-11), T1 (2015-16) and T2 (2017-18) periods were analyzed in terms of Agriculture, built-up, forest, wasteland and water bodies.	15) to T2 (2016-17), which is a positive change. **South District:** Agriculture land has increased in both the monitoring cycles which are a positive change. Built up and water bodies has shown no change. Forest area has decreased because some of the forest area has been converted to wasteland.	
10. Site suitability analysis under Coordinated Horticulture Assessment and Management using geo informatics (CHAMAN) project (Phase-II) **Objectives:** The main objective of the project to find out the suitable areas/location for the cultivation of KIWI fruit using geo informatics.	The potential area for KIWI has been prepared for East District of Sikkim. Here only suitability classes were considered, there is no highly suitable, moderately suitable and marginally suitable.	The final map of suitable area of 1409 ha in East Sikkim has been uploaded in Bhuvan portal	
11. National Wetland Inventory and Assessment (NWIA), Phase-II **Objectives:** • Conduct national level wetland inventory at 1:50K scale using 2017-18 time frame Resource sat LISS-III data , Conduct change analysis in comparison to the previous assessment, conducted using 2006-07 image (Decadal change analysis),	Wetland mapping and inventory on 1:25K scale using LISS-III for 2006-7 &, 2017-18 data. Decadal wetland change analyses by comparing 2006-07 and 2017-18 LISS-III data. Mapping of wetlands <2.25ha as point layer Mapping and inventory of wetlands >0.1ha on 1:10K scale using LISS-IV data of Nov2016. **Ongoing work** • Point layer of wetlands <0.1ha, and • Base layer of road, drainage and settlement etc. on 1:10K scale using LISS-IV Nov2016 data.	Decadal wetland analysis of LISS-III 2017-18 Vs. 2006-08 showed an overall increase in wetland area (from 6755.03ha to 7138.06ha, i.e. 380.03 ha), including the number of wetlands, from 244 to 258 wetlands. Overall ~7138.06ha of wetlands using the LISS-III 2017-18 data has been calculated, adding around 1% of total geographical area of Sikkim.	

12. Characterizing Patterns and Processes of Alpine Ecosystem in Indian Himalaya, Studies on Harnessing Remote Sensing for Environment and Climate (SHRESTI) **Objectives:** The specific objective of the programme for Sikkim Himalaya is to establish the long-term ecological site in alpine ecosystem for monitoring tree-line shift, phonological changes and record changes in soil microbial community.	Long term ecological monitoring sites for tree-line shift was identified and established in Kyongnosla Alpine Sanctury, East Sikkim, which is a reserve forest in East district of Sikkim. Three summits were chosen where total 24 quadrates of 3x3m were established.	Total 56 species of plants (including tree, shrubs and herbaceous plants), were identified in the three summit belongs to approximately 20 families (identification of complete species list is under progress as our second field survey for one summit (HSP1) is still pending and will be completed by second week of September, 2021).	
13. Establishment of State Climate Change Cell, Sikkim under NMSHE Phase - II **Objectives:** • Vulnerability and Risk Assessment at district level • Institutional Capacity building and R&D for data base/Information generation as per the SAPCC and NMSHE requirements • Training programmes for stakeholders including Govt officials, researchers, community based organizations, media, etc: • Public awareness for community	• The manpower of the State Climate Change Cell trained in vulnerability assessment and now they are in position to carry out the work independently in the state. • Completed the district level vulnerability which has been presented in National level workshop held in New Delhi. • Completed Pan India District level vulnerability assessment comprising all Indian states and Union territories. State Climate Change Cell, Sikkim carried out the assessment of Sikkim. • The State Climate Change Cell are in position to carry out further work in climate change including climate change awareness programme, capacity building, Vulnerability Assessment, glaciology and GLOF, climate change based project proposal formulation etc in the state. The awareness programme has been successfully conducted in different part of the state in the project period targeting Block Administrative Centers, Schools, monasteries etc. The participants were members of Panchyats, BAC officials, local people, students, teachers etc. More than 5000-6000 individuals are sensitized on climate change in the state.	• Completed Pan India District level vulnerability assessment comprising all Indian states and Union territories. State Climate Change Cell, Sikkim carried out the assessment of Sikkim. The assessment shows that in Sikkim, the East and South district falls under highly vulnerable due to the drivers like availability of low livestock, high marginal farmers and low forest area for the rural population. At the national level, Sikkim falls under low vulnerability with the vulnerability score of 0.48. Maharashtra falls under least vulnerable state with vulnerability score of 0.42 and Jharkhand falls under very high vulnerable zone with score of 0.67.	

Annexure-II

QUANTIFIABLE OUTCOMES: PPA PROGRAMME

(Restricted to one page) only.

A	Technology Developed/Delivered	a. Bamboo Crafts Training. b. Wild Beekeeping and Processing. c. Nano-hydro-technology for Cardamom drying-cum-electricity.
B	Summary of Progress	All above three technologies have been demonstrated in the field- Completed.
C	Livelihood/Economic Benefits:	a. Bamboo Crafts & Wild Beekeeping & Processing was adopted by unemployed youth of local villages of Sikkim for their livelihood. b. Forward linkages established for marketing the product c. Marketing started for earning by trainees Nano-hydro-technology has been benefited to the local cardamom growers for efficient drying without essential oil loss, without charring and high quality is maintained . Tree felling to reduce for drying cardamom in traditional bhatti
D	New Innovations:	Cardamom Drying through Nano-hydro-power generation through local streams.
E	Social Benefits	Bamboo Crafts & Wild Beekeeping & Processing was adopted by unemployed youth of local villages of Sikkim. Income generation. Alternative source of livelihood Nano-hydro-technology has been benefited to the local cardamom growers for easy drying & high quality products
F	Details of Paper Published/ Patents Filled: 01	**Published 10 research papers:-** a. Subba, K. B.*, Prof (Dr.) Mitra, P.K. and Dr. Basistha, B.C. Molecular characterization of large cardamom cultivars using *mat*K and *rbc*L genes. Journal of Biotech Research, 2021: 12:106-113. B .Laydong Lepcha* and Bharat Chandra Basistha (2021) Molecular docking study of potential inhibitors to bind Spike (S) proteins 2AJF of SARS CoV and 7A93 of SARS CoV-2. Journal of Computational Intelligence in Bioinformatics (JCIB). Research India Publication. Volume 14, Number 1 (2021) pp. 1-20. c. Subba, K. B.*, Prof (Dr.) Mitra, P.K. and Dr. Basistha, B.C. First report of *Phyllosticta capitalensis* as one of the associated fungus of blight disease of large cardamom. Journal of Research in Agriculture and Animal Sciences. Vol. 8-Issue 6 (2021) pp: 50-52.
G	Research work which remains to be done under the Project (For on-going Projects):	-
H	Any other items:	Nil

Details about Grants-in-Aid projects received from DST and other Ministry/ Departments:

(For last five years & current financial year)

Sl.No.	Title of the Project with File No:	Name of Division & funding agency (DST/DBT…)	Date of Start & Completion/ Status	Amount (Rs in lakh)	Whether final UC/SE & Project completion report has been submitted (If yes mention date).
1	Study on Nutritional Potential Sustainable Socio Economy Ecology & Conservation for Tribal Population of Sikkim	DST-GOI	2020-21 **(on-going)**	60.88	Project started
2	Establishment of Sc/ST Cell in State Science & Technology Council of Sikkim.	DST-GOI	2020-21 **(on-going)**	98.90	Project started
3	Science Communication/Popularization Activities in Tribal Areas of Sikkim.	DST-GOI	2020-21 **(on-going)**	13.37	Project started
4	ENVIS Center on Ecotourism/GSDP	MoEF-DST-GOI	20-21 2019-20 31/12/2019 31/12/2019 2019-20 15/03/2019 04/08/2018 **(on-going)**	14.22 13.00 25.50 12.58 17.09 14.86 10.84	SE/UC Submitted
5	INSPIRE-Award-MANAK	DST-GOI	28/06/2018 01/01/2020 **(on-going)**	10.95 5.83	Submitted Submitted
6	SCI-Connect	DST	17/01/2018	1.32	Submitted
7	Capacity Building and Awareness Programme on Climate Change	Vigyan Prasar DST-GOI	03/04/2018 11/01/2019 11/01/2019 14/01/2019	9.84 4.40 2.28 1.19	Submitted Submitted Submitted Submitted
8	NANO-Hydel Power Project	DST-GOI	31/03/2016	86.65	Completed
9	Diffusion of Grass Roots Innovation & Documentation.	NIF	28/03/2018	3.25	Completed
10	Demonstration Rain Water Harvesting & Storage	UNDP	03/05/2017	15.00	Submitted.
11	MICRO-SMALL & MEDIUM ENTERPRISE (MSME)	DST-GOI	15/06/2018 16/03/2019 02/04/2019	25.00 31.00 12.00	Completed & Submitted.
12	India-Skill-Pedia	DST,GOI	15/10/2018	27.68	Completed
13	State Biotech hub of DBT under its special programme for NE states of	Department of Biotechnology Government of	22.12.2010	265.34	Submitted 2019

	India File No: BT/04/NE/2009	India			
14	Molecular and digital documentation of ethno-traditional knowledge with special reference to folk healing practices.	Department of Science and Technology, Government of India	2016	33.99	Submitted 2018
15	Development of agro-techniques in Ginseng in Sikkim File No. DBT-NER/Agri/20/2013	DBT, GOI	26.11.2015 Supposed to complete on 2018.	68.00	To be submitted
16	Bioinformatics Sub-DISC File No. BT/BI/04/054/2000	DBT, GOI	9/7/2001	Yearly release	Submitted 31/8/2020
17	Establishment of Sikkim State Climate Change Cell Under NHSHE	DST- CCP-Division	March 2014 March 2020 but extended up to December 2020 Completed	384.00	Submitted
18	Long Term Monitoring on Glacier Dynamics of East Rathong Glacier Phase II	DST-SERB	March 2020 but extended up to December 2020 Completed	78.24	Submitted
19	Coordinated Horticulture Assessment and Management using Geo-informatics (CHAMAN) Phase I &II	NESAC, IRSO DOS	July 2020 Completed	3.00	Submitted
20	Characterizing Patterns and Processes of Alpine Ecosystem in Indian Himalaya Studies on Harnessing Remote Sensing for Environment and Climate (**SHRESTI**)	SAC, IRSO DOS	April 2019 - April 2022 ongoing	27.06	On Going
21	National Wetland Inventory and Assessment (NWIA) Phase-II (under **SARITA** programme)	SAC, IRSO DOS	April 2019 - April 2021 extended up to September 2021 **(ongoing)**	16.02	On Going
22	Development of INSAR based techniques for high resolution surface topography and ice velocity *under* Microwave and hyper spectral techniques for earth resources **(MAHTRAM** / □□□□□□	SAC, IRSO DOS	September 2019 - March 2022 (Need to extension till july2023)	21.13	On Going
23	Monitoring of Integrated Watershed Management Programme(IWMP**)**	NESAC- NRSC-IRSO DOS	March 2016-March 2021 Extended till March 2022	0.64	On Going
24	Space based Information	NESAC-NRSC-	March 2021 to	7.03	On Going

	Support for Decentralized Planning (SISDP) Phase II	IRSO DOS	March 2023		
25	Development of Forest Fire Spread Model using Satellite Remote Sensing Computational Fluid Dynamics (CFD), and Non-CFD models in Sikkim Himalayas using High Performance Computing (HPC) System	CDAC-MeITY	April 2020 to March 2023	17.97	On Going
26	Revision of State Action Plan on Climate Change (SAPCC)-II	MOF&CC	Till March 2022	20.00	On Going
27	Himalayan Aerosol Experiment @ SIKKIM	NESAC- NRSC-IRSO DOS	August 2019 to March 2022 (extension annually)	5.60	On Going
28	North Eastern Spatial Data Repository (NeSDR)	NESAC - IRSO DOS	September 2017 to September 2020	5.00	On Going

Annexure- A

REQUEST FOR ANNUAL INSTALMENT WITH
UP—TO—DATE STATEMENT OF EXPENDITURE

(Year Means **Financial Year i.e. 1st April 2021 to 31st March 2022**

1. Sanction Letter No. :	**DST/SSTP/CORE Grant-G/2021-22 (G)** Dated:	
2. Total Project Cost:	Rs	82.76 lakhs.
3. Sanctioned/Revised Project cost: (if applicable)	Rs	82.76 lakhs
2. Date of Commencement of Project:		1st April 2021-22
3. Duration:		01 Year.
4. Grant Received in each year:		2021-22
a. I Year		Rs 82.76 lakhs.
b. Bank Interest received on grant: (mandatory)		Rs. NIL
c. Total		Rs. 82.76 lakhs
5. Total expenditure:		Rs. 82.76 lakhs

6. **Funds required for next year: Rs 149.81 lakhs.**

(***Rupees one crore forty nine lakhs eighty one thousand) only.***

Contd./-

Annexure – A*(Contd.)*

STATEMENT OF EXPENDITURE
(Period 2021 to 2022)

(Rs in lakhs)

Sl No	Sanctioned Heads	Funds Allocated (*)	Expenditure Incurred I Yr	II Yr	III Yr Total	Balance as on date	Requirement of funds upto 31 March 2023	Remarks (if any)
1	**II**	**III**	**IV**		**V**	**III – V**		
1	Manpower	**82.76**			**82.76**	**0.00**	**123.10**	
2	Permanent Equipments						**5.00**	
3	Other Costs						**4.71**	
4	Consumables						**5.00**	
5	Travel						**5.00**	
6	Contingencies						**5.00**	
7	Overhead Charges						**2.00**	
9	**Total**						**149.81**	

(Rupees one crore forty four lakhs forty two thousand) only.

Name & Signature
Principal Investigator: .....

D.T. Bhutia
DIRECTOR
Deptt. of Science, Technology
Government of Sikkim

Signature of Competent Financial Authority (Head of the Finance)
Date: G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

*** Indicate sanctioned /revised allocation as applicable.**

a. Expenditure under the sanctioned heads, at –any point of time, should not exceed funds allocated under that head , without prior approval of DST i.e. Figures in Column (V) should not exceed corresponding figure in Column (III).
b. Utilization Certificate for each financial year ending 31st March has to be enclosed, along with request for carry-forward permission to next year.

FORM GFR 12A

GENERAL FINANCIAL RULES 2017
Ministry of Finance
Department of Expenditure

GFR 12 – A

[(See Rule 238(1)]

FORM OF UTILIZATION CERTIFICATE
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION
UTILIZATION CERTIFICATE FOR THE YEAR 21-22 in respect
Of recurring/non-recurring
GRANT-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

1. Name of the Scheme **State Science & Technology Programme**
2. Whether recurring/non-recurring grants : **RECURRING GRANT**
3. Grant position of the beginning of the financial year:
   (i) Cash in Hand/Bank:
   (ii) Unadjusted advances:
   (iii) Total:
4. Details of grants received, expenditure incurred and closing balances: (Actuals) (Rs in lakhs)

Unspent Balances of Grants received years [figure as of Sl.No.3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2+3+4)	Expenditure incurred	Closing Balance (5-6)
1	2	3	4			5	6	7
			Sanction No.(i)	Date (ii)	Amount (iii)			
NIL	**NIL**	**NIL**	**DST/SSTP /Core-Grant /SIKKIM/ 2021-22**	**31/12/2021**	**82.76**	**82.76**	**82.76**	**0.00**

Component wise utilization of grants:

Grant-in-aid-General	Grant-in-aid-salary	Grant-in-aid-creation of capital assets	Total
NIL	**82.76**	**NIL**	**NIL**

Details of grants position of the end of the year: 2021-22

(i) Cash in Hand/Bank : NIL
(ii) Unadjusted advances: NIL
(iii) Total: NIL.

FORM GFR 12B

GENERAL FINANCIAL RULES 2017
Ministry of Finance
Department of Expenditure

GFR 12 – B

[(See Rule 256(2)]

FORM OF UTILIZATION CERTIFICATE

(1) Certified that out of the grant of Rs. 82.76 lakhs (Rupees eighty two lakhs seventy six thousand) only SANCTIONED under Secretariat Assistance under Recurring Grand to State Councils SIKKIM, dated: 31st December 2021 in favour of Member Secretary, Sikkim State Council of Science & Technology during the year 2021-22 an amount of Rs 82.76 lakhs (Rupees eighty two lakhs seventy six thousand) only has been utilized for the purpose for which it was sanctioned, and that the balance of Rs. NIL remaining unutilized at the end of the year 2021-22.

(2) Certified that I have satisfied myself that the conditions on which the grant was sanctioned have been duly fulfilled/are being fulfilled and that I have exercised the following checks to see that the money was actually spent for the purpose for which the loan was mode.

Kinds of checks exercised

1. CASH Register.
2. Bank Details.
3. Audited Statement.

Signature:
Designation: Sr. Account Officer

Date:

G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

FORM GFR 12A

GENERAL FINANCIAL RULES 2017
Ministry of Finance
Department of Expenditure

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

(xi) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.

(xii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.

(xiii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.

(xiv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.

(xv) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.

(xvi) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.

(xvii) It has been ensured that the physical and financial performance under the State Science & Technology Programme has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the funds resulted in outcomes given at Annexure-I duly enclosed.

(xviii) The utilization of the funds resulted in outcomes given at Annexure-II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)

(xix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure-III (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

(xx) The UC has been uploaded on PFMS portal with ID NO. ..... dt....

Date:
Place: **Gangtok-Sikkim.**

Signature
Name: **(G. P. Adhikari) SFAS**
Sr. Account Officer
(Head of the Finance)

G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

Secretary
Science & Technology Department
Government of Sikkim
Gangtok

Signature
Name: **Shri. B. Pradhan, IFS**
Head of the Organisation

FORM GFR 12A

GENERAL FINANCIAL RULES 2017
Ministry of Finance
Department of Expenditure

GFR 12 – A

[(See Rule 238(1)]

FORM OF UTILIZATION CERTIFICATE FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION

UTILIZATION CERTIFICATE FOR THE YEAR 21-22 in respect Of recurring/non-recurring GRANT-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

5. Name of the Scheme **State Science & Technology Programme**
6. Whether recurring/non-recurring grants : **NON-RECURRING GRANT**
7. Grant position of the beginning of the financial year:
   (iv) Cash in Hand/Bank: NIL
   (v) Unadjusted advances: NIL
   (vi) Total: NIL
8. Details of grants received, expenditure incurred and closing balances: (Actual)

Unspent Balances of Grants received years [figure as of Sl.No.3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2+3+4)	Expenditure incurred	Closing Balance (5-6)
1	2	3	4			5	6	7
			Sanction No.(i)	Date (ii)	Amount (iii)			
NIL	NIL	NIL	--	-	-	NIL	NIL	NIL

Component wise utilization of grants:

Grant-in-aid-General	Grant-in-id-salary	Grant-in-aid-creation of capital assets	Total

Details of grants position of the end of the year: 2021-22

(iv) Cash in Hand/Bank : NIL
(v) Unadjusted advances: NIL
(vi) Total: NIL

FORM GFR 12B

GENERAL FINANCIAL RULES 2017
Ministry of Finance
Department of Expenditure

GFR 12 – B

[(See Rule 256(2)]

FORM OF UTILIZATION CERTIFICATE

(3) Certified that out of the grant of Rs. NIL SANCTIONED under Secretariat Assistance under Recurring Grand to State Councils of Sikkim Dated NIL in favour of Member Secretary, Sikkim State Council of Science & Technology during the year 2021-22 an amount of **Rs NIL** has been utilized for the purpose for which it was sanctioned, and that the balance of **Rs. NIL** remaining unutilized at the end of the year 2021-22 has been surrendered to the Government (vide No.....dated.....)/ will be adjusted towards the loan payable during the next financial year.

(4) Certified that I have satisfied my-self that the conditions on which the loan was sanctioned have been duly fulfilled/are being fulfilled and that I have exercised the following checks to see that the money was actually spent for the purpose for which the loan was mode.

Kinds of checks exercised:

4. CASH Register.
5. Bank Details.
6. Audited Statement.

Signature:
Designation: Sr. Account Office
Date:

G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

FORM GFR 12A

GENERAL FINANCIAL RULES 2017
Ministry of Finance
Department of Expenditure

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

(i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.

(ii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.

(iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.

(iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.

(v) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.

(vi) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.

(vii) It has been ensured that the physical and financial performance under the State Science & Technology Programme has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the funds resulted in outcomes given at Annexure-I duly enclosed.

(viii) The utilization of the funds resulted in outcomes given at Annexure-II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)

(ix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure-III (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

(x) The UC has been uploaded on PFMS portal with ID NO. ---dt ---

Date:
Place: **Gangtok-Sikkim.**

Signature:
Name: **(G. P. Adhikari) SFAS**
(Sr. Account Officer)

(Head of the Finance)

G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

Signature:
Secretary
Science & Technology Department
Government of Sikkim
Gangtok

Name: **(B. Pradhan), IFS**
Head of the Organisation

Annexure – A*(Contd.)*

STATEMENT OF EXPENDITURE
(Period 2021 to 2022)

(Rs in lakhs)

Sl No	Sanctioned Heads	Funds Allocated (*)	Expenditure Incurred I Yr	II Yr	III Yr Total	Balance as on date	Requirement of funds upto 31 March 2023	Remarks (if any)
1	**II**	**III**	**IV**	**V**		**III – V**		
1	Manpower	**82.76**		**82.76**		**0.00**	**123.10**	
2	Permanent Equipments						**5.00**	
3	Other Costs						**4.71**	
4	Consumables						**5.00**	
5	Travel						**5.00**	
6	Contingencies						**5.00**	
7	Overhead Charges						**2.00**	
9	**Total**						**149.81**	

(Rupees one crore forty nine lakhs eighty one thousand) only.

Name & Signature
Principal Investigator: .....

D.T. Bhutia
DIRECTOR
Deptt. of Science, Technology
Government of Sikkim

Signature of Competent Financial Authority (Head of the Finance)
Date:

G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

*** Indicate sanctioned /revised allocation as applicable.**

a. Expenditure under the sanctioned heads, at –any point of time, should not exceed funds allocated under that head , without prior approval of DST i.e. Figures in Column (V) should not exceed corresponding figure in Column (III).
b. Utilization Certificate for each financial year ending 31st March has to be enclosed, along with request for carry-forward permission to next year.

STATEMENT OF PROJECTED SALARY OF THE OFFICER & STAFF OF SIKKIM STATE COUNCIL OF SCIENCE & TECHNOLOGY , VIGYAN BHAWAN, DEORALI, GANGTOK.

for Block Year 2022-23

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023												Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Shri Suman Thapa	Additional Director	PPB	83,700	83,700	83,700	86,200	86,200	86,200	86,200	86,200	86,200	86,200	86,200	86,200	Gross total salary
			DA (31%)	25,947	25,947	25,947	29,308	29,308	29,308	29,308	29,308	29,308	29,308	29,308	29,308	
			HRA (12%)	10,044	10,044	10,044	10,344	10,344	10,344	10,344	10,344	10,344	10,344	10,344	10,344	
			SBCA (8%)	6,696	6,696	6,696	6,896	6,896	6,896	6,896	6,896	6,896	6,896	6,896	6,896	
			TA													
			Total	1,26,387	1,26,387	1,26,387	1,32,748	1,32,748	1,32,748	1,32,748	1,32,748	1,32,748	1,32,748	1,32,748	1,32,748	
															Total	15,73,893

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023												Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2		Account Officer cum Finance Officer	Allowences for Account Officer	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	Rs 3,00,000

G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
3	Shri T Pradhan	Sr.RA	PPB	37,100	37,100	37,100	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	Gross total salary
			DA (31%)	11,501	11,501	11,501	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	
			HRA (12%)	4452	4452	4452	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	
			SBCA 8%	2,968	2,968	2,968	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	56,521	56,521	56,521	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	
															Total	6,93,201

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
4	Shri L Lepcha	Sr.RA	PPB	37,100	37,100	37,100	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	Gross total salary
			DA (31%)	11,501	11,501	11,501	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	
			HRA (12%)	4452	4452	4452	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	
			SBCA (8%)	2,968	2,968	2,968	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	56,521	56,521	56,521	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	
															Total	6,93,201

G.P. ADHIKARI
Sr. Accounts Officer
Science & Technology Deptt.
Govt. of Sikkim, Deorali
DDO Code- 360001

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
5	Shri R Gurung	Sr.RA	PPB	37,100	37,100	37,100	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	Gross total salary
			DA(31%)	11,501	11,501	11,501	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	
			HRA (12%)	4452	4452	4452	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	
			SBCA (8%)	2,968	2,968	2,968	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	56,521	56,521	56,521	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	
															Total	6,93,201

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
6	Shri R K Sharma	Sr.RA	PPB	37,100	37,100	37,100	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	Gross total salary
			DA (31%)	11,501	11,501	11,501	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	
			HRA (12%)	4452	4452	4452	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	
			SBCA (8%)	2,968	2,968	2,968	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	56,521	56,521	56,521	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	
															Total	6,93,201

G.P. ADHIKARI
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SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
7	Sri P Pradhan	Sr.RA	PPB	37,100	37,100	37,100	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	Gross total salary
			DA (31%)	11,501	11,501	11,501	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	
			HRA (12%)	4452	4452	4452	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	
			SBCA(8%)	2,968	2,968	2,968	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	56,521	56,521	56,521	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	
															Total	6,93,201

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-incremen	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
8	Shri S Pradhan	Sr.RA	PPB	37,100	37,100	37,100	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	Gross total salary
			DA (31%)	11,501	11,501	11,501	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	
			HRA (12%)	4452	4452	4452	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	
			SBCA 8%	2,968	2,968	2,968	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	56,521	56,521	56,521	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	
															Total	6,93,201

G.P. ADHIKARI
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SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
9	Shri RN Lepcha	Sr.RA	PPB	37,100	37,100	37,100	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	
			DA (31%)	11,501	11,501	11,501	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	11,842	
			HRA (12%)	4452	4452	4452	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	4,584	
			SBCA (8%)	2,968	2,968	2,968	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	3,056	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	56,521	56,521	56,521	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	58,182	
															Total	6,93,201

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
10	Shri Nabeen Sharma	R.A	PPB	37,900	37,900	37,900	39,000	39,000	39,000	39,000	39,000	39,000	39,000	39,000	39,000	Gross total salary
			DA (31%)	11,370	11,370	11,370	12,090	12,090	12,090	12,090	12,090	12,090	12,090	12,090	12,090	
			HRA (12%)	4,548	4,548	4,548	4,680	4,680	4,680	4,680	4,680	4,680	4,680	4,680	4,680	
			SBCA (8%)	3,032	3,032	3,032	3,120	3,120	3,120	3,120	3,120	3,120	3,120	3,120	3,120	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	57,350	57,350	57,350	59,390	59,390	59,390	59,390	59,390	59,390	59,390	59,390	59,390	
															Total	7,06,560

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SL. No.	Name	Desgination	Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Total Salary of 12 Months
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
11	Shri P Gurung	RA	PPB	33,700	33,700	33,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	Gross total salary
			DA (31%)	10447	10447	10447	11798	11798	11798	11798	11798	11798	11798	11798	11798	
			HRA (12%)	4044	4044	4044	4164	4164	4164	4164	4164	4164	4164	4164	4164	
			SBCA (8%)	2696	2696	2696	2776	2776	2776	2776	2776	2776	2776	2776	2776	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	51,387	51,387	51,387	53,938	53,938	53,938	53,938	53,938	53,938	53,938	53,938	53,938	
															Total	6,39,603

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023													Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
12	Mrs. Binita Shrestha	RA	PPB	33,700	33,700	33,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	Gross total salary
			DA (31%)	10447	10447	10447	11798	11798	11798	11798	11798	11798	11798	11798	11798	
			HRA (12%)	4044	4044	4044	4164	4164	4164	4164	4164	4164	4164	4164	4164	
			SBCA (8%)	2696	2696	2696	2776	2776	2776	2776	2776	2776	2776	2776	2776	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	51,387	51,387	51,387	53,938	53,938	53,938	53,938	53,938	53,938	53,938	53,938	53,938	
															Total	6,39,603

G.P. ADHIKARI
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Govt. of Sikkim, Deorali
DDO Code- 360001

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023												Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
13	Miss. P Pradhan	RA	PPB	33,700	33,700	33,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	Gross total salary
			DA	10447	10447	10447	11798	11798	11798	11798	11798	11798	11798	11798	11798	
			HRA (12%)	4044	4044	4044	4164	4164	4164	4164	4164	4164	4164	4164	4164	
			SBCA (8%)	2696	2696	2696	2776	2776	2776	2776	2776	2776	2776	2776	2776	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	**51,387**	**51,387**	**51,387**	**53,938**	**53,938**	**53,938**	**53,938**	**53,938**	**53,938**	**53,938**	**53,938**	**53,938**	
															Total	6,39,603

SL. No.	Name	Desgination	Total Salary Drawn from 1st April 2022 to 31st March 2023												Total Salary of 12 Months
			Sanction Scale of Pay	April	May	June	July-increment	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
14	Miss.O Lepcha	EA	PPB	25,400	25,400	25,400	26,200	26,200	26,200	26,200	26,200	26,200	26,200	26,200	26,200	Gross total salary
			DA (31%)	7874	7874	7874	8908	8908	8908	8908	8908	8908	8908	8908	8908	
			HRA (12%)	5300	5300	5300	3500	3500	3500	3500	3500	3500	3500	3500	3500	
			SBCA (8%)	2032	2032	2032	2096	2096	2096	2096	2096	2096	2096	2096	2096	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	**41,106**	**41,106**	**41,106**	**41,204**	**41,204**	**41,204**	**41,204**	**41,204**	**41,204**	**41,204**	**41,204**	**41,204**	
															Total	4,94,154

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			Salary Drawn from 1st April 2022 to 31st March 2023													
SL. No.	Name	Desgination	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March		
15	Shri Dadul Lepcha	Accountant	PPB	33,700	33,700	33,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	34,700	Gross total salary
			DA (31%)	10,447	10,447	10,447	11,798	11,798	11,798	11,798	11,798	11,798	11,798	11,798	11,798	
			HRA (12%)	4,044	4,044	4,044	4,164	4,164	4,164	4,164	4,164	4,164	4,164	4,164	4,164	
			SBCA (8%)	2,696	2,696	2,696	2,776	2,776	2,776	2,776	2,776	2,776	2,776	2,776	2,776	
			TA	500	500	500	500	500	500	500	500	500	500	500	500	
			Total	51,387	51,387	51,387	53,938	53,938	53,938	53,938	53,938	53,938	53,938	53,938	53,938	
															Total	6,39,603
Sl. No	Name	Designation		April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	
16	Pema Z. Bhutia	ASO	Consolidated	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	
															Total	3,00,000.00

Total salary for the Financial Year 2022-23= Rs 1,07,85426.00

15% Medical Reimbrusement = Rs 15,25000.00
& other allowences

GRAND TOTAL = Rs 1,23,10,000.00 (Rupees one core twenty three lakhs ten thousand thousand)only.

G.P. Adhikari
Accounts Officer-cum-DDO
Sikkim State Council of
Science & Technology
Deorali