**Sub-scheme 23(2)(iii)**

**ICAR-DIRECTORATE OF COLDWATER FISHERIES RESEARCH (DCFR)**

**Bhimtal, Uttarakhand**

**Annexure**

**FORMAT FOR APPRAISAL OF CONTINUATION OF SCHEMES**

**Note: For the schemes which are part of an umbrella scheme the details for both Part A and Part B of the format should be provided. In such cases, Part B should be filled for each scheme separately under the Umbrella.**

**For Standalone schemes details for Part B is only required.**

**Part A**

1. **Name of the Umbrella scheme under which scheme is to be continued**

**Sponsoring Agency (Ministry/ Department/Autonomous Body or Undertaking):**

Ministry of Agriculture and Farmers Welfare, Dept. of Agricultural Research and Education (DARE), Indian Council of Agricultural Research (ICAR), Govt. of India.

**Scheme No. 23(2):** Management of Freshwater Fisheries and Aquaculture

**Sub-scheme- 23(2) (iii):** ICAR-Directorate of Coldwater Fisheries Research

1. **Total outlay of the umbrella scheme; Scheme-wise and year-wise (In case of Umbrella CSS specify the overall Central Govt. and State Govt. Shares)**

**Not Applicable**

1. **In case of centrally sponsored umbrella scheme specify central components (100% funded for central government) and state components (shared between centre/state/UTs)**

Nature of the Scheme - Central Sector Scheme

Fully funded by Govt. of India, Ministry of Agriculture and Farmers Welfare, Dept. of Agricultural Research and Education (DARE) through Indian Council of Agricultural Research (ICAR)

**Part B**

1. **Name of the scheme : Scheme 23(2)** Management of Freshwater Fisheries and Aquaculture

**Sub-scheme- 23(2) (iii):** ICAR-Directorate of Coldwater Fisheries Research

1. **Objectives of the scheme:**

The Directorate has reframed its target for enhancing the production through expansion and intensification of aquaculture by developing package of practices and models for judicious management of coldwater bodies. The assessment and management of hill fisheries resources and its fuller utilization are the prime goal of this Directorate. The other important target is skill development of farmers to enhance their pivotal role in production. To address the issues of coldwater fisheries the Directorate has been assigned following mandate and objectives:

**Vision**

Coldwater fisheries and aquaculture to be an important economic activity in upland region for livelihood security and ecotourism

**Mission**

To become a Centre of excellence for assessing and managing coldwater fishery resources, development technologies and models of hill aquaculture and formulating strategies for holistic growth of the sector

**Mandate**

* Basic, strategic and applied research in coldwater fisheries and aquaculture
* Act as repository of hill fisheries resources
* Human Resource Development through training, education and extension

**Objectives**

* Technological advancement and innovations for enhancement of production and productivity of coldwater aquaculture
* Scientific approaches for sustainable management of fishery resources of hill regions
* Human Resource Development and skill advancement through training, education and consultancy

1. **Background of the scheme**

ICAR**-**Directorate of Coldwater Fisheries Research (DCFR) started as a coldwater fisheries unit of Central Inland Fisheries Research Institute (CIFRI) in 1963 keeping in view the necessity to assess and utilize the fisheries resources available in the Himalayan region. Due to the recognized importance of the hill resources, the unit was given the status of National Research Centre on Coldwater Fisheries (NRCCWF) in 1987 and further elevated as the ICAR-Directorate of Coldwater Fisheries Research (DCFR) in 2008. The emergence of the ICAR-Directorate was mainly to develop location, situation and system specific technologies and to facilitate the expansion of research and developmental activities in Himalayan states in a collaborative mode with state government and other agencies. Carp based aquaculture has been brought under the culture system through number of demonstrations in mid hills. Further, low volume high value trout farming was taken up and commendable progress has been made in expanding the trout farming in potential areas. The Directorate is working in a mission mode for the overall development of coldwater fisheries and aquaculture, in order to make the sector a sustainable livelihood option that provides nutritional security to the people inhabiting the hilly terrain. With a humble beginning, the Directorate has made significant contribution in documenting fish fauna and understanding the biology, nutrition, culture, breeding and management practices of selected species. Moreover, it has also contributed in the assessment of existent coldwater resources.

As the only national facility for coldwater fisheries in India, the Directorate needs to be renamed as **Central Coldwater Fisheries Research Institute (CCFRI)** to make the organization more meaningful and efficient in producing quality knowledge outputs towards promotion of sustainable coldwater fisheries and aquaculture in the country.

1. **Whether Central Sector (CS) scheme/Centrally sponsored scheme**

**Central Sector Scheme**

Fully funded by Govt. of India, Ministry of Agriculture and Farmers Welfare, Dept. of Agricultural Research and Education (DARE) through Indian Council of Agricultural Research (ICAR)

1. **Total Proposed outlay (Component-wise and Year-wise)**

**Rs. 5680 lakhs or Rs. 56.80 Crores**

Component-wise and Year-wise - Attached as Annexure - II

Year wise budget outlay for Sub-scheme- 23(2) (iii): ICAR-Directorate of Coldwater Fisheries Research

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | 2021-2022 | 2022-2023 | 2023-2024 | 2024-2025 | 2025-2026 | **Total**  **(Rs. in Crore)** |
| **Amount** | 8.42 | 9.69 | 11.14 | 12.82 | 14.73 | **56.80** |

1. **Actual Expenditure of the ongoing scheme in last 3 years**

Attached as Annexure -III

1. **Approved output/outcome of ongoing scheme year wise and achievements (in a tabular form)**

**Table -1: Approved output/outcome of ongoing scheme year wise and achievements**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Component** | **Activities** | **Achievements** | | | | | | |
| **2017-18** | | | **2018-19** | | | **2019-20** |
| **Allocated by Niti Aayog** | | | | | | | | |
| Resource assessment and Monitoring | Carrying out Exploration/survey for fisheries resource Assessment | | Fish diversity of different Himalayan rivers; Alaknanda, and Western Ramganga in Uttarakhand, Sutlej, Beas, Ravi and Chenab in Himachal Pradesh, Kameng, Siang, Tenga, Kille, Sangti, and Choskorong Kho in Arunachal Pradesh were investigated. | | | Habitat ecology and diversity of important lakes in Central and Northeastern Himalayan region was studied. Surveyed and explored high altitudinal lakes of the northeastern Himalayan region for the utilization of available resources. | | Quantitative assessment of fish biodiversity and species assemblages of Himalayan rivers for the habitat/health assessment of the river based on environmental indices was studied. |
| Human resource Development | Conducting training and skill development programme for (Min. 100 persons) | | Conducted 10 training programme for 264 farmers/extension functionaries. | | | Conducted 22training programme for 925 farmers/extension functionaries | | Conducted 11 training programme for 692 farmers/ extension functionaries. |
| **Other Mandated Activities** | | | | | | | | |
| Species Diversification | Number of species bred and introduced in culture system | Breeding protocols was developed for *Labeo pangusia* and *Osteobrama belangeri* and introduced in culture system. | | Breeding protocols was developed for *Bangana devdevi* and introduced in culture system. | | | Breeding protocols was developed for *Schizothorax plagiostomus* and introduced in culture system. | |
| System Diversification | Number of Improved/new model for hill aquaculture | Developed low cost trout raceways for the expansion of rainbow trout farming in Leh & Laddakh (J&K) and Uttarkashi district of Uttarakhand. | | Multi-tier model for integrated fish farming using polytanks in cluster approach was popularized in mid hill regions of hill states. | | | Developed low cost re-circulatory aquaculture system (RAS) for rainbow trout seed rearing. | |
| Feed formulation for candidate coldwater fish species | Number of feed formulated for coldwater fish species | Formulated a standard vitamin-mineral premix for rainbow trout (*Oncorhynchus mykiss*) based on the known nutritional requirements. | | Formulated a brooder feed for golden mahseer with maturation enhancing nutrients such as tryptophan, phospholipids, folate, ascorbate and tocopherol. | | | Two efficient and cost-effective single and multiple protein based starter feeds were formulated for initial feeding of rainbow trout (*Oncorhynchus mykiss*) fry providing higher survival and better FCR values. | |
| Disease diagnostics and control measures | Identified pathogens in coldwater fish species and diseases of concern | Active disease surveillance conducted for trout and carp farms in eight districts of two states: Kullu, Mandi, Bilaspur, and Sirmaor district of Himachal Pradesh, and Champawat, Almora, Nainital and U.S. Nagar Districts of Uttarakhand | | Five PNA (Peptide-Nucleic Acid) probes have been designed for detection and identification of *Saprolegnia* species.  Developed rapid assays for detection and identification of *Saprolegnia* species. | | | Investigation on presence/absence of viral agents in rainbow trout (IPNV, IHNV and VHSV) was carried out.  Developed sensitive, specific and rapid LAMP based detection assay for fish pathogen *Lactococcus garvieae.* | |
| Resource mapping | GIS based resource maps Developed | Prepared GIS maps for habitat/distribution of ichthyofaunal resources from major drainages: Alaknanda, Mandakini, Pinder, Bhagirathi and Western Ramganga in Uttarakhand. | | Prepared GIS maps for habitat/distribution of ichthyofaunal resources from major drainages: Indus, Shyok, Zanskar and Jhelum of Jammu & Kashmir, Sutlej, Beas, Ravi and Chenab in Himachal Pradesh, | | | Digitized maps of aquatic resources and potential fisheries development suitability maps of three districts of Arunachal Pradesh and Leh-Laddakh region of Jammu & Kashmir using GIS tools. | |
| Species/stock characterization for usable traits | Developed species wise genetic markers & molecular characterization | A total of 37 novel microsatellite markers in important coldwater fish species; *Neolissochilus hexagonolepis* (Chocolate mahseer) and *Salmo trutta fario* (brown trout) were developed and population structure was determined. | | Mitochondrial makers for three important coldwater fish species were developed and genetic diversity of different populations was estimated. Genetic stock assessment of farmed brown trout (*Salmo trutta fario*) was done to assess the genetic diversity of the available stocks | | | The complete mitochondrial genome for three major coldwater fishes: *Neolissochilus hexagonolepis* (Chocolate mahseer), *Salmo trutta fario* (brown trout) and *Cyprinion semiplotus* (Assamese kingfish) was determined for the first time | |
| Network project on ornamental fishes | Number of ornamental fishes breed | Multiple breeding of *Neolissochilus hexagonolepis*, *Naziritor chelynoides*, *Barilius bendelisis* in aquarium within a span of one year without using any synthetic or pituitary hormone or striping method have been achieved. | | Breeding protocols were developed for *Schizothorax plagiostomus*, *Garra gotyla*, *Raimas bola*, *Naziritor chelynoides*, *Nemacheilus denisoni*. | | | Breeding of popular and indigenous ornamental fish species *Garra gotyla, Garra annandalei,* and *Schistura obliquofascia*was done for developing small scale enterprise for youth and women in hills. | |
| Network project on antimicrobial resistance in fisheries (AMR) in coldwater aquaculture | Investigating sporadic incidences of fish diseases in coldwater aquaculture | Survey was conducted for prevalence and antimicrobial resistance of *Escherichia coli*, *Staphylococcus* sp. from four districts of two states. | | Survey was conducted for prevalence and antimicrobial resistance of *Aeromonas* sp. covering 29 farms from four districts of two states. | | | The efficacy of antibiotics at different dosage on fingerlings of golden mahseer, *Tor putitora* against bacterial infection was tested and dose was standardized for control of infection. | |
| **Other Research Activities** | | | | | | | | |
| Conservation of endangered fish species and fish based ecotourism | rehabilitation of the endangered mahseer (*Tor putitora*) | Re-established golden mahseer in Baiznath lake, which was completely affected by heavy frost and cloud burst. | | Establishment of mahseer population in Mehao Lake, Arunachal Pradesh. | | | Established one mahseer hatchery unit at Tamdil, Mizoram in collaboration with the Department of Fisheries, Govt. of Mizoram | |
| Development of New Products/Process | related to aquaculture | A low cost fish seed carrier was designed and developed for transportation of fish seed in hills. | | Developed a safe, low cost and highly efficacious anaesthesia for fishes to be used during regular sampling, surgical procedure, injection and challenge study. | | | Protocol for in-house synthesis of neuropeptide (GnRH) hormone has been standardized. | |
| New Initiatives | New facility/collaboration | The Directorate has opened the “HIMANI Aquarium Unit” and maintained 30 beautiful and fascinating indigenous cold water ornamental fishes. | | Collaborative work in PPP (Public-Private Partnership) mode with ICICI FOUNDATION for the upliftment of rural livelihood security of hill fish farmers in five villages of Nainital and Almora districts. | | | Establishment and demonstration of Recirculatory Aquaculture System (RAS) as a climate resilient technology. | |

1. **Existing and proposed funding pattern (in a tabular form) along with rationale**

Attached as Annexure – **II**

The costing have been estimated based on prevailing market rates with approximate 15% escalation every year.

1. **Major findings of evaluation/outcome review and comments of the Ministry Department on each observation of the scheme (Attach evaluation report)**

Report of third party evaluation

1. **Major changes/departure proposed from earlier scheme along with justification**

Nil

1. **Major changes in costing norms if any**

Not Applicable

1. **Convergence architecture with other central government schemes**

Not Applicable

1. **Rationale for continuation**

**The Directorate has setup following thrusts area of research for the periods 2021-2026, which are necessary for coldwater fisheries development:**

**Species diversification and climate resilient aquaculture**

Coldwater fisheries have typical three pronged fish farming system suitable for high, mid and low altitudes. Presently exotic carp based fish culture practices gaining popularity in the hill regions. The culture technology being simple and easily adoptable, requiring low input and possibilities of integration of available resources have been transferred to farmers in the mid hill regions. Multi-tier model for integrated fish farming using polytanks in cluster approach was also popularized in the upland areas of hill states. The new model has significant improvement in fish productivity per unit area in mid hills. The introduction of other minor carp along with exotic and improved strains of common carp at different species composition has shown higher production potential. Different programmes were undertaken by ICAR-DCFR for species diversification to bring other endemic species under cultivation. Breeding and seed production were carried out for important indigenous species such as *Schizothorax sp.*, *Garra gotyla*, *Naziritor chelynoides*, *Schistura obliquofacia*. Further, captive rearing, breeding biology and seed production performance of *Bangana devdevi, Labeo pangusia* and *Osteobrama belangeri*, three endemic fishes of North Eastern Himalaya were evaluated. Success in captive breeding of golden mahseer, *Tor putitora* and chocolate mahseer, *Neolissochilus hexagonolepis* for seed production has been achieved through temperature and photoperiod manipulation. However, there is ample scope to bring more candidate species under cultivation and to standardise its mass scale seed production. Continuous efforts are required for domestication of candidate species as well as to develop their breeding and seed production techniques to be utilized by the farmers in hills.

Trout is one of the most suitable high value low volume fish species for coldwater region and now trout farming has been taken up in the Indian uplands on commercial scale. The species has good potential for domestic consumptions as well as foreign export. Feasible farming as well as seed production technology using flow through system has been made available to the farmers and different hill states. The production of the rainbow trout has increased from 147 tonnes to almost 1100 tonnes in last 15 years with concerted efforts and it may further be increased to a tune of 3000 tonnes in next five years. However, constraints like availability of improved stock, seed availability, cost effective feed supply, health management and marketing channels need adequate attention for enhancement of production and further expansion of trout farming in the potential areas of the country. Brown trout is another species, which is important in terms of ecotourism, therefore efforts are required to enhance the natural stock through artificial stocking.

Climate change is affecting coldwater resources and their fisheries negatively impacting on breeding behavior and culture potential of existing coldwater aquaculture species such as exotic carp and trout. In order to mitigate the impact of climate change, efforts have been made by ICAR-DCFR to develop climate resilient fish farming protocols including more resilient indigenous species in culture practices in the hill region. However, it needs further refinement and validation of smart fish farming through adequate strategy involving thermally adopted more resilient fish species and availability of efficient system such as recirculatory aquaculture system (RAS) for reuse of water. In this direction, ICAR-DCFR has developed a small scale RAS for coldwater aquaculture practice along with a RAS for trout production for which experiments are going on to make the trout RAS system a economically viable activity. Therefore, further systematic research and developments efforts are required to develop the hatchery and rearing system, based on minimum use of water and development of climate resilient coldwater aquaculture practices for hill region as an adoptive measure.

**Aquatic resource assessment, management and conservation**

The Himalayan region, extending from north western to north-eastern part of the country, has vast geographic area containing different types of coldwater resources mainly in the form of upland streams, rivers, high and low altitudinal lakes and reservoirs located in different hill states of India. Apart from this, some parts of Western Ghats in peninsular India also have significant coldwater fishery resources. These available resources inhabit large population of indigenous and exotic coldwater fish species being suitable for food, sport and ornamental value. Around 258 fish species are distributed in the Himalayan and peninsular region of the country of which indigenous mahseer, snow trout and exotic trout are commercially important. About 36 species of freshwater fishes are endemic to the Himalayan region. Out of total fish fauna available in India, 17% fishes were documented from the mountain ecosystem establishing the status of the area as a centre of origin and evolution of biotic forms. The mountain areas being landlocked, fishes of lakes, streams, rivers and reservoirs are an important source of animal protein for the hill populations. Therefore, the Directorate has undertaken programmes on survey and exploration of important coldwater fishery resources from Western and North-eastern Himalayan region to document habitat ecology, qualitative and quantitative diversity and distributional pattern of coldwater fish species. The Himalayan ecosystem being unique and fragile needs special attention for sustainable utilization and conservation of fish species. There are multiple stakeholders of Himalayan streams and rivers and the major threats to the coldwater fisheries of the region are from rapid environmental degradation, loss of habitats, river impoundments and indiscriminate fishing. Therefore, efforts are required to develop and implement suitable management measures through assessment, documentation and development of suitable ecological models.

Fisheries resource assessment and management in the hill region is a challenge due to its kaleidoscopic topography. Thus, uses of geoinformatics play a very important role in developing resource inventory and mapping. The coldwater fishes such as trout and exotic carp are cultured in a particular thermal regime. ICAR-DCFR has prepared GIS and Remote Sensing Technology based aquaculture suitability and fisheries resource maps for sustainable utilization of available fishery resources in different hill states for effective planning. Therefore, the work needs to be continued in the next plan also and that needs enough strength in terms of specific manpower and resources.

**System diversification and water budgeting**

The land holding in the hill area is smaller (700-900m2) as compared to the national average (1370 m2). Keeping in view the squeezing land and burgeoning human ratio, mountain fish resource base is of great relevance and development of such areas. The farmers in the hill region have integrated type of farming pattern. Fish can serve as an additional source of income if integrated with the water conservation and harvesting programme. Water is one of the most important factors in subsistence fisheries. In absence of reliable source of water supply, it would not be possible to plan and implement any fish based culture system in hills. In order to utilize the available water resources in hills the Directorate has developed and popularized multi-tier model for integrated fish farming using polytanks in cluster approach in mid hill regions of hill states. The new model has significant improvement in fish productivity per unit area in the mid hill region. Low cost input models for farming in poor quality soil suitable for mountain areas has been developed using geomembrane lining with inter-institutional efforts in order to combat with cold stress to the fishes as well as water conservation. The technique can play a vital role in nutritional and livelihood security in disadvantaged region. The Directorate has also developed a prototype of zero water exchange system for egg incubation and fry rearing of coldwater fishes that is useful for optimal use of water and minimizing mortality during fish seed production and rearing.There is a scope of further improvement of such models.

Open water bodies in hills provides opportunities for in situ seed rearing in floating cages which may be used for the stock enhancement programmes. Protocol for in situ rearing with optimal density of golden mahseer and snow trout upto advanced fingerling stage have been developed with appropriate stocking density and feeding practices. More efforts are needed to rear other new candidate indigenous species for stocking/productivity enhancement in open waters. Water conservation is the major concern since mid hill area suffers from the paradoxical situation of being classed as both high potential of water in monsoon and a scarcity during lean season. There is a need to economize use of water for culturing high value low volume fish such as trout through reciculatory aquaculture system. Programme on water budgeting and management through re-circulatory system for coldwater aquaculture need to be strengthened.

**Disease surveillance for fish health management and AMR in coldwater aquaculture**

The coldwater aquaculture is mainly based on exotic carp and trout faming system which has both socio-economic and commercial aspects. Therefore, the Directorate has done considerable work in active disease surveillance for trout and carp farms from Central and North-western Himalayan regions for viral diseases (IHNV, VHSV), bacterial and parasitic infection and base line data were collected for health management. A database on the occurrence of different pathogenic microorganisms that may pose threat to coldwater fishery has been prepared. Gene reporter assays were studied using Mx promoter of rainbow trout and IRF3 promoter of snow trout, to enable the development of an engineered cell line for the detection of any viral signal. Fungal diseases mainly due to *Saprolegnia* species are prevalent at different developmental stages in trout which is of great concern. ICAR-DCFR has taken up programme for detection and identification of *Saprolegnia* species through molecular techniques such as PNA (Peptide-Nucleic Acid) probes. Fungicidal effect of various anti-fungal drugs has been screened on and field trials were made to evaluate the efficacy and dosages to cure the fungalinfection in different life stages of rainbow trout. The farmers are trained with Good Management Practices (GMP) for trout farming. In order to have a healthy fish produce and containment of fish diseases strict disease surveillance and reporting programme has to be strengthened. Moreover, changing climate may also aggravate the disease outbreaks in coldwater fishes for which we have to be prepared in advance in developing molecular diagnostic kits and vaccines.

Antimicrobial resistance (AMR) is a major global threat of increasing concern to human and animal health. It also has implications for both food safety and food security and the economic wellbeing of millions of farming households. AMR is also a concern in the aquaculture sector, therefore, and for this reason, network programme on antimicrobial resistance (NP-AMR) in fisheries is initiated by ICAR in collaboration with Food and Agriculture Organization (FAO). ICAR-DCFR is part of this network programme to develop National Action Plans that aim at curbing instances of AMR in coldwater aquaculture. Therefore, further strengthening is required for applicable outcomes.

**Fish nutrition and feed development**

Dietary protein requirement of coldwater fish is comparatively high having exclusive requirement of n-3 or w-3 PUFA in their diet. In trout farming, feed alone comprised 76% of total variable cost and 40% of the total production cost. A major issue for trout feeding is the high cost of manufactured pelleted feed due to the use of largely imported fish meal. The increasingly scarce supply of fish meal and its high market price had made it necessary to seek a cost effective replacement of fish meal to supply dietary protein in trout feed. Therefore, it is required to focus on finding alternate source of protein supplement in trout feed which are locally available at relatively cheaper cost without affecting the growth, survival and quality of trout. To address this big issue, ICAR-DCFR has developed low cost efficient starter trout feed. An MoU has been signed with State Fisheries Department, Himachal Pradesh for providing formulation of developed feed and for field validation of the formulated feed. Further, experimentation is going on to reduce the fish meal in grow out feed of rainbow trout by replacing with other alternative ingredients. An MoU has been signed with SPY Agro Pvt. Ltd. (RDDG) and String Bio Pvt. Ltd. (String Pro meal) for availability of ingredients. ICAR-DCFR has also formulated efficient mahseer feed for the broodstock. Hence, formulation of efficient feed for the different coldwater fish such as mahseer, snow trout, rainbow trout and indigenous ornamental fish is the basic need for the promotion of hill aquaculture which require continuous efforts and popularization of formulated feed including field validation.

**Fish genetics and biotechnology for coldwater fishery**

Coldwater fishery is endowed with vast array of fish genetic resources distributed to different altitudes of the Himalayan regions and have potential values for capture fisheries and aquaculture. Management of the available fish genetic resources is necessary for more than just increased production. Molecular characterization and measurement of genetic diversity is essentially required for the identification of best population for aquaculture breeding programmes and management of available fish resources. ICAR-DCFR has taken up programmes for the species and population genetic characterization and development of molecular markers for important fish species like *Neolissochilus* *hexagonolepis, Salmo trutta fario and Cyprinion semiplotum.* However, continuous efforts are required to document genetic diversity pattern and development of molecular markers in other coldwater indigenous species. Incorporation of genetic marker information can also be a useful asset to optimize genetic diversity and establishing base population for aquaculture breeding programme.

Advanced molecular tools like transcriptomics, is quite useful in understanding the physiological response to environmental stress as well as species adaptive potential and plasticity in response to biotic and abiotic stress particularly posed by global warming. Moreover identification of genes and metabolic pathways in response to different natural and anthropogenic drivers of habitat change is essentially required for the conservation and management of coldwater fishery resources. Identification of sex in early developmental stages as well as controlling sex ratio is essential in coldwater fish farming. Programmes have been taken up to develop sex specific molecular markers and identifying genetic factors for biased sex ratio in golden mahseer *Tor putitora*. However consistent efforts are required to address wide array of problems using advanced molecular tools for the development of coldwater fishery resources.

**Strengthening linkages with stakeholders**

To address the several location and situation specific issues, ICAR-DCFR is working in partnership with State Fisheries Departments, State Agricultural and other state universities, stakeholders, NGOs, farmers’ associations and other organizations. The collaborative work has generated valuable database on lotic and lentic waters of upland regions, development of culture techniques of various important upland endemic and exotic fish species and transfer of technologies through training and demonstration. Apart from this, knowledge sharing and exchange of research inputs and outputs are important aspects of linkage development.

The states like Jammu & Kashmir and Himachal Pradesh during the last two decades have made significant progress in aquaculture especially for trout farming. In spite of these efforts the production is still very low as compared to the national average. On the other hand, in Uttarakhand the infrastructure facilities are still in developing stage and need adequate attention for further enhancement of aquaculture potential areas and availability of basic inputs like seed and feed. In NEH region, the potential for coldwater fishery exists but need developmental support for enhancement of production. Continuous efforts have been made by the Directorate for transferring the developed technologies to the intended recipients on priority basis through on-farm demonstrations and trainings. As a follow up activity, providing continuous technical back-stopping to the farmers through user-friendly android applications, telephonic help lines and online technical consultancy platforms has been provided. Upgrading the scientific and technical workforce of the institute periodically through rigorous, need based and tailored capacity building and knowledge exchange programmes has been a continuous effort of this Directorate. Specific focus is to be laid on enhancing the capabilities for resource management. Further, for popularization and commercialization of formulated fish feed, linkages are needed with State Fisheries Departments, Stakeholders and NGOs. Promotion of trout farming, a prioritized approach in hills needs involvement of State Fisheries departments and stakeholders. Hence, a national program on sustainable coldwater development is required involving the state fisheries department in a mission mode.

**Expansion of farm facilities-Proposed Regional Centre**

National Research Centre on Coldwater Fisheries (NRRCF) came into existence during the VII Five Year Plan and was given a status of Directorate of Coldwater Fisheries Research (DCFR) during XI Plan. The idea was to develop location, situation and system specific technologies by utilizing and augmenting resources in all the Himalayan states. Working area of the Directorate is from Jammu & Kashmir to Arunachal Pradesh comprising of 10 states in Himalayan region. Addition to it, parts of states like Kerala, Tamil nadu and Karnataka harbour a sizable number of coldwater fish species. The coldwater fisheries resources are diverse and pertain in different agro-climatic zones such as North-West Himalayan region, Cold dessert in North-West Himalaya, Central Himalayan region, North-Eastern Himalayan region and Deccan Plateau. Conducting location, situation and system specific research and extending extension activities in the vast area may not be possible with only Centre as headquarter building at Bhimtal with limited infrastructure facilities. Therefore, QRT (2008-2013) strongly recommend that the Directorate should be given a status of Central Institute with two regional centres, one of which should be in North-West Himalayan region and other in North-Eastern Himalayan region. Hence, It is proposed to set-up two regional centre one each in North-western and North-eastern Himalayan region for the expansion of the coldwater fisheries research and developmental activities.

1. **Proposed Regional Centre at Srinagar, Jammu & Kashmir**

The northwestern Himalayan region has good prospects for promotion of trout farming due to favourable climatic condition for exotic and indigenous coldwater fish species. geographical location of the state also support the necessity and scope of rainbow trout farming which would be a viable farming practice for employment generation, livelihood support and income generation for the rural population of the state. Further the regional centre would serve as a demonstration cum information centre for the advance technology of rainbow trout farming. Moreover, the centre would be a hub for the technical service to neighbouring states such as UT of Laddakh and Himachal Pradesh.

1. **Proposed Regional Centre at West Kameng district, Arunachal Pradesh**

The proposed area of Arunachal Pradesh has rich biodiversity of indigenous coldwater fish species and considered as one of the hotspot region for fish biodiversity of Northeast region of India. Under the proposed major thrust area, diversification of coldwater aquaculture is an important activity and need of the sector which requires location specific breeding and culture protocol of indigenous species of commercial importance. Apart from this the northeastern region also has potential for the rainbow and brown trout farming which requires adequate attention through research and developmental activities. Therefore, a new Regional Centre of the Directorate would be established in North-Eastern Himalayan region based on the availability of suitable site and necessity on priority. This centre would be a regional facility to address the problems and priorities in coldwater fishery of entire NEH region and to harness the potential of coldwater fisheries covering Arunachal Pradesh, Sikkim, Meghalaya, Mizoram, Nagaland and Manipur state.

**Network programmes on Antimicrobial resistance (AMR) and ornamental fish breeding and culture**

The ICAR-DCFR is working in partnership in two network projects with regards to antimicrobial resistance in aquaculture and ornamental fish breeding and culture as subcomponents as main centre at ICAR-NBFGR, Lucknow and ICAR-CMFRI, Kochi respectively. So, DCFR, continuous participation for achieving the objectives of these two network program is required.

1. **Proposed output/outcomes year-wise**

**Table 2: year-wise outputs/deliverables in a tabular form**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Component** |  | **2021-22** | | **2022-23** | | **2023-24** | | **2024-25** | | **2025-26** | | **Total** | |
| **Activities** | **Physical** | **Financial (lakh)** | **Physical** | **Financial**  **(lakh)** | **Physical** | **Financial**  **(lakh)** | **Physical** | **Financial**  **(lakh)** | **Physical** | **Financial**  **(lakh)** | **Physical** | **Financial**  **(lakh)** |
| **Allocated by Niti Aayog** | | | | | | | | | | | | | |
| Resource assessment and Monitoring | Carrying out Exploration/survey for fisheries resource Assessment | 8 | 60 | 10 | 80 | 10 | 85 | 12 | 95 | 12 | 110 | 52 | 430 |
| Human resource Development | Conducting training and skill development programme (Min. 100 persons) | 500 | 40 | 550 | 40 | 600 | 50 | 650 | 60 | 700 | 70 | 3000 | 260 |
| **Other Mandated Activities** | | | | | | | | | | | | | |
| Species diversification and climate resilient aquaculture | Number of species bred and introduced in culture system | 1 | 40 | 1 | 45 | 1 | 50 | 1 | 55 | 1 | 60 | 5 | 250 |
| System diversification and water budgeting | Number of Improved/new model for hill aquaculture | 1 | 40 | 1 | 45 | 1 | 50 | 2 | 80 | 3 | 90 | 8 | 305 |
| Feed formulation for candidate coldwater fish species | Number of feed formulated for coldwater fish species | 1 | 40 | 1 | 50 | 2 | 80 | 2 | 90 | 2 | 95 | 8 | 355 |
| Disease diagnostics and control measures | Identification of pathogens in coldwater fish species and diseases of concern | 4 | 50 | 5 | 60 | 5 | 65 | 6 | 75 | 6 | 80 | 26 | 330 |
| Resource mapping | GIS based resource maps Developed | 10 | 80 | 10 | 90 | 12 | 110 | 12 | 115 | 14 | 120 | 58 | 515 |
| Species/stock characterization for usable traits | Species -wise genetic markers & molecular characterization | 1 | 60 | 1 | 70 | 1 | 80 | 2 | 150 | 2 | 150 | 7 | 510 |
| Gene and allele mining for climate resilience | Species wise transcriptome data generation for abiotic/biotic stress | 1 | 60 | 2 | 70 | 2 | 110 | 2 | 110 | 2 | 127 | 9 | 477 |

**Table 3: Indicate Outcomes of the Scheme in the form of measurable indicators which can be used to evaluate the proposal periodically. Baseline data or survey against which such outcomes should be benchmarked should also be mentioned.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Programs** | **Activities** | **Output** | **Outcome** | **Measurable indicators** |
| **1.** | Diversification of species in culture system and development of climate resilient aquaculture | Breeding and culture of protocol for new candidate species | Developed breeding and culture of protocol for new candidate species | Increased productivity of coldwater aquaculture and sustainability | Developed number of breeding and culture protocol |
| Performance evaluation of new candidate species | Evaluated performance of new candidate species |
| Expansion of improved strains in aquaculture system | Horizontal expansion of improved strains in aquaculture |
| Development of thermally adapted candidate species | Protocols of climate resilient smart fish farming for sustainable development |
| 2. | Aquatic resource assessment, management and conservation | Survey and exploration of coldwater bodies | Ichthyofaunal diversity studied | Resource planning and management | Number of survey / exploration carried out |
| Mapping of aquatic resources using Geoinformatics | Resource map developed | Number of resource map developed |
| Assessment of life history traits of important coldwater fishes | Developed life history traits of coldwater fishes in respect to climate change | Number of life history traits of coldwater fishes developed |
| Development of ecological models for coldwater resources | Ecological models developed for aquatic health evaluation and management | Numbers of ecological models developed |
| 3 | System diversification and water budgeting | Development of new culture system | Developed new culture system | Efficient culture system for enhancement of productivity | Number of new culture system developed |
| Water budgeting for different hill aquaculture system | Optimization of water use for fish farming | Number of fish farming system evaluated for water budgeting |
| 4 | Fish nutrition and feed development | Evaluation of nutritional requirement of candidate fish species | Evaluated nutritional requirement of candidate fish species | Availability of cost effective fish feed and increasing yield | Number of fish species evaluated |
| Formulation of cost effective feed for different life stages of candidate species | Formulated feed for different life stages of fishes | Number of feed formulated |
| Field validation and popularization | Evaluated performance of developed feed | Number of cost effective feed developed |
| 5 | Species/stock characterization for  usable traits and gene/  allele mining for climate resilience | Species-wise genetic markers & molecular characterization | Developed molecular markers and genetically characterized populations | Future breeding progamme for hybrid vigor | Number of species/population characterized |
| Species wise transcriptome data generation for abiotic/biotic stress | Developed transcriptome data base for different fish species | Identified stress related genes for climate resilience | Number of species studied for transcriptome data |
| 6 | Network project on ornamental fishes | Exploration of ornamental fishes in coldwater region | Identified ornamental fishes in coldwater region | Package of practice of ornamental fishes developed as small scale enterprise | Number of coldwater fishes having ornamental traits |
| Development of breeding and larval rearing protocol of indigenous ornamental fishes | Developed breeding and larval rearing protocol of indigenous ornamental fishes | Number of ornamental fishes bred and protocol developed |
| 7 | Network project Antimicrobial Resistance (AMR) in fisheries and aquaculture | Study of antimicrobial resistance in bacteria from coldwater aquaculture | Identified antimicrobial resistance in bacteria from coldwater aquaculture | Antibiotic resistance pattern in aquatic microbes | Number of antimicrobial resistance bacteria indentified |

1. **Sunset date**

Not Applicable

1. **Details of posts created for the Scheme (Regular/Contractual separately) and the number of persons engaged against them with annual financial implications**

Not Applicable

1. **Any additional posts proposed to be created with annual financial implication**

Nil

1. **Comments of other stakeholders including Ministries/Departments/NITI Aayog and response thereon (in a tabular form)**

**Approval Sought:**

* Sanction of Budget outlay of Rs. 5680.00 lakhs for the Sub-scheme 23(2)(iii) ICAR-DCFR for the period 2021-22 to 2025-26
* Approval of works costing Rs. 290.00 lakhs for the Sub-scheme 23(2)(iii) ICAR-DCFR- for the period 2021-22 to 2025-26
* Approval of equipment costing Rs. 570.50 lakhs for the Sub-scheme 23(2)(iii) ICAR-DCFR for the period 2021-22 to 2025-26
* Sanction of outlay for Research, Operational, Library, IT, HRD, NEH, TSP and others as indicated in financial proposal.
* Sanction of Budget outlay of Rs. 600.00 lakhs for the proposed New Sub-centres at Srinagar, J&K under Sub-scheme 23(2) (iii) ICAR-DCFR for the period 2021-22 to 2025-26
* Sanction of Budget outlay of Rs. 500.00 lakhs for the proposed New Sub-centres at WEst Kameng, Arunachal Pradesh under Sub-scheme 23(2) (iii) ICAR-DCFR for the period 2021-22 to 2025-26

|  |  |
| --- | --- |
|  |  |
| **Date:**  **Place: Bhimtal** | **Director**  ICAR- Directorate of Coldwater Fisheries Research  Anusandhan Bhawan,  Industrial Area, Bhimtal -263136,  Nainital, Uttarakhand, India  Phone)- +91-5942-247279/80, (fax)-247693  Mobile:8077606910  Email:[dcfrin@gmail.com](mailto:dcfrin@gmail.com) |
|  |  |
| **Date:**  **Place: New Delhi** | **Deputy Director General (Fisheries)**  Indian Council of Agricultural Research  Krishi Anusandhan Bhawan-II  Pusa, New Delhi-12 |

**Annexure-I**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SCHEME-23(2): MANAGEMENT OF FRESHWATER FISHERIES AND AQUACULTURE**  **SUB SCHEME: 23(2)(iii) DIRECTORATE OF COLDWATER FISHERIES RESEARCH**  **BROAD HEAD-WISE/YEAR-WISE PHASING OF BUDGET OUTLAY**  **SUMMARY** | | | | | | | |
| **(Rs. in lakhs)** | | | | | | | |
| **S.No.** | **Head** | **Proposed EFC 2021-2026** | | | | | |
| **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| **A** | **Other than NEH, TSP & SCSP** | | | | | | |
|  | Capital | 153.00 | 182.50 | 216.00 | 257.00 | 293.00 | **1101.50** |
|  | Revenue | 499.00 | 568.50 | 647.00 | 736.00 | 847.00 | **3297.50** |
|  | **Total** | **652.00** | **751.00** | **863.00** | **993.00** | **1140.00** | **4399.00** |
| **B** | **NEH** | | | | | | |
|  | Capital | 42.00 | 48.50 | 55.50 | 64.00 | 74.00 | **284.00** |
|  | Revenue | 42.00 | 48.50 | 55.50 | 64.00 | 74.00 | **284.00** |
|  | **Total** | **84.00** | **97.00** | **111.00** | **128.00** | **148.00** | **568.00** |
| **C** | **TSP** | | | | | | |
|  | Capital | 7.00 | 8.00 | 10.00 | 11.00 | 13.00 | **49.00** |
|  | Revenue | 29.00 | 33.00 | 38.00 | 44.00 | 50.00 | **194.00** |
|  | **Total** | **36.00** | **41.00** | **48.00** | **55.00** | **63.00** | **243.00** |
| **D** | **SCSP** | | | | | | |
|  | Capital | 18.00 | 20.00 | 23.00 | 26.00 | 31.00 | **118.00** |
|  | Revenue | 52.00 | 60.00 | 69.00 | 80.00 | 91.00 | **352.00** |
|  | **Total** | **70.00** | **80.00** | **92.00** | **106.00** | **122.00** | **470.00** |
|  | **Sub-Total Capital** | **220.00** | **259.00** | **304.50** | **358.00** | **411.00** | **1552.50** |
|  | **Sub-Total Revenue** | **622.00** | **710.00** | **809.50** | **924.00** | **1062.00** | **4127.50** |
| **Grand Total** | | **842.00** | **969.00** | **1114.00** | **1282.00** | **1473.00** | **5680.00** |

**Annexure-II**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SCHEME-23(2): MANAGEMENT OF FRESHWATER FISHERIES AND AQUACULTURE**  **SUB SCHEME: 23(2)(iii) ICAR-DIRECTORATE OF COLDWATER FISHERIES RESEARCH**  **BROAD HEAD-WISE/YEAR-WISE PHASING OF BUDGET OUTLAY (2021-22 to 2025-26)**  **(Rs. in Lakh)** | | | | | | | |
| **I** | **Other than NEH, TSP & SCSP** |  |  |  |  |  |  |
| **S.No.** | **Major Heads of Accounts** | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| **(A)** | **CAPITAL** |  |  |  |  |  |  |
| **1** | **Land** |  |  |  |  |  |  |
|  | i. Freehold |  |  |  |  |  |  |
|  | ii. Leasehold |  |  |  |  |  |  |
| **2** | **Building** |  |  |  |  |  |  |
|  | i. Office Building | 20.00 | 35.00 | 52.00 | 70.00 | 88.00 | **265.00** |
|  | ii. Residential Building | 0.00 | 0.00 | 0.00 | 0.00 | 15.00 | **15.00** |
|  | iii. Minor Works | 0.00 | 0.00 | 5.00 | 5.00 | 0.00 | **10.00** |
| **3** | **Equipment** |  |  |  |  |  |  |
|  | i. Laboratory & Farm Equipment including Plant & Machinery | 100.00 | 103.50 | 109.00 | 123.00 | 135.00 | **570.50** |
|  | ii. Office Equipment |  |  |  |  |  |  |
| **4** | **Furniture & Fixtures** | 10.00 | 11.00 | 11.00 | 12.00 | 15.00 | **59.00** |
| **5** | **Vehicles & Vessels** |  |  |  |  |  |  |
|  | i. Vehicles | 0.00 | 10.00 | 7.00 | 13.00 | 0.00 | **30.00** |
|  | ii. Vessels |  |  |  |  |  |  |
| **6** | **Information Technology & ICT** | 20.00 | 20.00 | 30.00 | 30.00 | 35.00 | **135.00** |
| **7** | **Livestock** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| **8** | **Library** | 3.00 | 3.00 | 2.00 | 4.00 | 5.00 | **17.00** |
|  | **SUB-TOTAL (A)** | **153.00** | **182.50** | **216.00** | **257.00** | **293.00** | **1101.50** |
| **(B)** | **REVENUE** |  |  |  |  |  |  |
| **1** | **Research & Operational Expenses** |  |  |  |  |  |  |
|  | i. Research Expenses | 105.00 | 118.00 | 132.00 | 145.00 | 175.00 | **675.00** |
|  | ii. Operational Expenses | 94.00 | 102.00 | 115.00 | 128.00 | 151.00 | **590.00** |
| **2** | **Administrative Expenses** |  |  |  |  |  |  |
|  | i. Travelling Expenses |  |  |  |  |  |  |
|  | a. Domestic (TA/TTA) | 20.00 | 30.00 | 30.00 | 35.00 | 37.00 | **152.00** |
|  | b. Abroad | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | **10.00** |
|  | ii. Repair & Maintenance of Building and other Assets | 32.00 | 33.50 | 39.00 | 43.00 | 53.00 | **200.50** |
|  | iii. Office/Farm/Laboratory Upkeep & other Maintenance Expenses | 223.00 | 256.40 | 298.00 | 349.00 | 392.00 | **1518.40** |
| **3** | **Miscellaneous Expenses** | 23.00 | 26.60 | 31.00 | 34.00 | 37.00 | **151.60** |
|  | **SUB-TOTAL (B)** | **499.00** | **568.50** | **647.00** | **736.00** | **847.00** | **3297.50** |
|  | **Grand Total (A+B)** | **652.00** | **751.00** | **863.00** | **993.00** | **1140.00** | **4399.00** |
|  |  |  |  |  |  |  |  |
| **II** | **NEH** |  |  |  |  |  |  |
|  | a) Capital | 42.00 | 48.50 | 55.50 | 64.00 | 74.00 | **284.00** |
|  | b) Revenue | 42.00 | 48.50 | 55.50 | 64.00 | 74.00 | **284.00** |
|  | **Sub Total** | **84.00** | **97.00** | **111.00** | **128.00** | **148.00** | **568.00** |
| **III** | **TSP** |  |  |  |  |  |  |
|  | a) Capital | 7.00 | 8.00 | 10.00 | 11.00 | 13.00 | **49.00** |
|  | b) Revenue | 29.00 | 33.00 | 38.00 | 44.00 | 50.00 | **194.00** |
|  | **Sub Total** | **36.00** | **41.00** | **48.00** | **55.00** | **63.00** | **243.00** |
| **IV** | **SCSP** |  |  |  |  |  |  |
|  | a) Capital | 18.00 | 20.00 | 23.00 | 26.00 | 31.00 | **118.00** |
|  | b) Revenue | 52.00 | 60.00 | 69.00 | 80.00 | 91.00 | **352.00** |
|  | **Sub Total** | **70.00** | **80.00** | **92.00** | **106.00** | **122.00** | **470.00** |
|  | **Total Capital (NEH+TSP+SCSP)** | 67.00 | 76.50 | 88.50 | 101.00 | 118.00 | **451.00** |
|  | **Total Revenue (NEH+TSP+SCSP)** | 123.00 | 141.50 | 162.50 | 188.00 | 215.00 | **830.00** |
|  | **Total (NEH+TSP+SCSP)** | **190.00** | **218.00** | **251.00** | **289.00** | **333.00** | **1281.00** |
|  |  |  |  |  |  |  |  |
|  | **Grand Total (I+II+III+IV)** | **842.00** | **969.00** | **1114.00** | **1282.00** | **1473.00** | **5680.00** |

**Annexure –III**

**ICAR-Directorate of Coldwater Fisheries Research (ICAR-DCFR)**

**Actual Expenditure of the ongoing scheme in last 3 years (2017-18 to 2019-20)**

**(Rs. In Lakh)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Head** | **R.E**  **2017-18** | **Expend.** | **R.E**  **2018-19** | **Expend.** | **R.E**  **2019-20** | **Expend.** |
| **CAPITAL** | | | |  |  |  |  |
| **1.** | Works |  |  |  |  |  |  |
| A. | Land | - | - | - | - | - | - |
| B. | Office Building | 35.00 | 18.94 | 1.83 | 0.00 | 32.25 | 32.25 |
| C. | Residential Building |  |  |  |  |  |  |
| **2.** | Equipments | 58.00 | 48.81 | 53.00 | 52.96 | 96.0 | 94.61 |
| **3.** | Information Technology | 15.00 | 13.45 | 22.70 | 22.64 | 14.0 | 13.64 |
| **4.** | Library Books & Journals | 25.00 | 24.97 | 1.05 | 0.43 | 14.3 | 14.23 |
| **5.** | Vehicle & Vessels | - | - | - | - | 6.32 | 6.14 |
| **6.** | Furniture & Fixtures | 7.00 | 7.00 | 22.84 | 22.83 | 1.0 | 1.00 |
|  | **Total Capital** | **140.00** | **113.17** | **101.42** | **98.86** | **163.87** | **161.87** |
| **Grants in Aid- Salaries (Revenue)** | | | |  |  |  |  |
|  | **Establishment Expenses** | | |  |  |  |  |
|  | Salaries | 640.00 | 597.88 | 699.68 | 695.59 | 675.68 | 675.67 |
| **Grants in Aid- General (Revenue)** | | | |  |  |  |  |
| **1.** | Pension & other Retirement Benefit | 54.00 | 39.57 | 71.68 | 71.58 | 2.00 | 2.00 |
| **2.** | **Travelling Allowance** | | |  |  |  |  |
|  | Domestic TA/Transfer TA | 25.00 | 25.00 | 35.00 | 34.95 | 35.00 | 34.79 |
| **3.** | **Research & Operation Expenses** | | |  |  |  |  |
|  | A. Research Expenses | 124.84 | 124.83 | 115.58 | 115.52 | 92.17 | 92.16 |
|  | B. Operational Expenses | 55.16 | 55.16 | 81.0 | 80.96 | 90.58 | 90.57 |
|  | **Total- Research &**  **Operation Expenses** | **180.00** | **179.99** | **196.58** | **196.48** | **182.75** | **182.73** |
| **4.** | **Administrative Expenses** |  |  |  |  |  |  |
| **A.** | Infrastructure | 76.26 | 76.26 | 105.21 | 103.03 | 95.71 | 95.71 |
| **B.** | Communication | 0.54 | 0.53 | 1.00 | 0.89 | 0.88 | 0.87 |
| **C.** | Repair & Maintenance |  |  |  |  |  |  |
| **i)** | Equipments, Vehicle & Others | 2.26 | 2.26 | 4.80 | 4.78 | 6.21 | 6.21 |
| **ii)** | Office Building | 24.05 | 24.04 | 20.00 | 19.50 | 16.735 | 16.73 |
| **iii)** | Residential Building | **-** | **-** |  |  |  |  |
| **iv)** | Minor Works | 0.16 | 0.16 | 9.40 | 9.01 | 3.04 | 3.03 |
| **D.** | Other (excluding TA) (instt.) | 76.73 | 76.73 | 89.71 | 89.49 | 107.4 | 107.40 |
|  | **Total Administrative**  **Expenses** | **180.00** | **179.98** | **230.12** | **226.70** | **229.975** | **229.95** |
| **5.** | **Miscellaneous Expenses** | | |  |  |  |  |
| **A.** | HRD within India | 2.40 | 2.40 | 3.00 | 2.66 | **3.14** | **3.14** |
|  | HRD (Abroad) | - | - | **-** | **-** | **-** | **-** |
| **B.** | Other Items  (Fellowship) | - | - | **-** | **-** | **-** | **-** |
| **C.** | Publicity & Exhibition | 4.54 | 4.54 | 1.50 | 1.00 | 3.07 | 3.06 |
| **D.** | Guest House Maint. | 0.21 | 0.21 | 2.00 | 1.93 | 2.00 | 2.00 |
| **E.** | Other Miscellaneous | 7.85 | 7.85 | 7.03 | 7.02 | 6.785 | 6.78 |
|  | **Total Misc. Expenses** | **15.0** | **15.0** | **13.53** | **12.61** | **14.995** | **14.98** |
|  | NEH (Capital) | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 |
|  | NEH (Revenue) | 7.00 | 6.98 | 6.00 | 6.00 | 8.00 | 8.00 |
|  | **Total NEH** | **15.00** | **14.98** | **14.00** | **14.00** | **16.00** | **16.00** |
|  | TSP (Capital) | 5.00 | 5.00 | 8.00 | 0.00 | 10.00 | 10.00 |
|  | TSP (Revenue) | 5.00 | 4.97 | 17.00 | 16.85 | 19.00 | 17.26 |
|  | **Total TSP** | **10.00** | **9.97** | **25.00** | **16.85** | **29.00** | **27.26** |
|  | SCSP (Capital) | **-** | **-** | 8.58 | 8.00 | 10.15 | 9.27 |
|  | SCSP (Revenue) | **-** | **-** | 44.77 | 44.24 | 50.78 | 50.78 |
|  | **Total SCSP** |  |  | **53.35** | **52.24** | **60.93** | **60.05** |
|  | **Total Revenue (Grants in Aid-Salaries + Grants in Aid- General)** | **1119.00** | **1062.37** | **1314.36** | **1305.00** | **1218.18** | **1216.16** |
|  | **Total Revenue + Capital** | **1259.00** | **1175.54** | **1440.36** | **1419.86** | **1410.20** | **1405.30** |

**Annexure-IV**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SCHEME-23(2): MANAGEMENT OF FRESHWATER FISHERIES AND AQUACULTURE SUB SCHEME: 23(2)(iii): DIRECTORATE OF COLDWATER FISHERIES RESEARCH**  **BROAD HEAD-WISE/YEAR-WISE PHASING OF BUDGET OUTLAY FOR**  **PROPOSED NEW SUB-CENTRE AT SRINAGAR, J&K (2021-22 to 2025-26)**  (Rs. in lakh) | | | | | | | |
| **S.No.** | **Major Heads of Accounts** | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| **(A)** | **CAPITAL** |  |  |  |  |  |  |
| **1** | **Land** |  |  |  |  |  |  |
|  | i. Freehold | 25.00 |  |  | 25.00 |  | **50.00** |
|  | ii. Leasehold |  |  |  |  |  |  |
| **2** | **Building** |  |  |  |  |  |  |
|  | i. Office Building | 25.00 | 30.00 | 35.00 | 40.00 | 45.00 | **175.00** |
|  | ii. Residential Building |  |  |  |  |  |  |
|  | iii. Minor Works |  |  |  |  |  |  |
| **3** | **Equipment** |  |  |  |  |  |  |
|  | i. Laboratory & Farm Equipment including Plant & Machinery |  |  |  |  |  |  |
|  | ii. Office Equipment | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | **30.00** |
| **4** | **Furniture & Fixtures** | 14.00 | 18.00 | 22.00 | 26.00 | 30.00 | **110.00** |
| **5** | **Vehicles & Vessels** |  |  |  |  |  |  |
|  | i. Vehicles | 10.00 |  |  | 10.00 |  | **20.00** |
|  | ii. Vessels |  |  |  |  |  |  |
| **6** | **Information Technology & ICT** | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | **15.00** |
| **7** | **Livestock** |  |  |  |  |  | **0.00** |
| **8** | **Library** |  |  |  |  |  | **0.00** |
|  | **SUB-TOTAL (A)** | **81.00** | **56.00** | **66.00** | **111.00** | **86.00** | **400.00** |
| **(B)** | **REVENUE** |  |  |  |  |  |  |
| **1** | **Research & Operational Expenses** |  |  |  |  |  |  |
|  | i. Research Expenses | 20.00 | 22.00 | 26.00 | 30.00 | 32.00 | **130.00** |
|  | ii. Operational Expenses | 10.00 | 12.00 | 14.00 | 16.00 | 18.00 | **70.00** |
| **2** | **Administrative Expenses** |  |  |  |  |  |  |
|  | i. Travelling Expenses |  |  |  |  |  |  |
|  | a. Domestic (TA/TTA) |  |  |  |  |  | **0.00** |
|  | b. Abroad |  |  |  |  |  |  |
|  | ii. Repair & Maintenance of Building and other Assets |  |  |  |  |  | **0.00** |
|  | iii. Office/Farm/Laboratory Upkeep & other Maintenance Expenses |  |  |  |  |  | **0.00** |
| **3** | **Miscellaneous Expenses** |  |  |  |  |  | **0.00** |
|  | **SUB-TOTAL (B)** | **30.00** | **34.00** | **40.00** | **46.00** | **50.00** | **200.00** |
|  | **Grand Total (A+B)** | **111.00** | **90.00** | **106.00** | **157.00** | **136.00** | **600.00** |

**Annexure-V**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SCHEME-23(2): MANAGEMENT OF FRESHWATER FISHERIES AND AQUACULTURE SUB SCHEME: 23(2)(iii): DIRECTORATE OF COLDWATER FISHERIES RESEARCH**  **BROAD HEAD-WISE/YEAR-WISE PHASING OF BUDGET OUTLAY FOR**  **PROPOSED NEW SUB-CENTRE AT WEST KAMENG, ARUNACHAL PRADESH (2021-22 to 2025-26)**  (Rs. in lakh) | | | | | | | |
| **S.No.** | **Major Heads of Accounts** | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| **(A)** | **CAPITAL** |  |  |  |  |  |  |
| **1** | **Land** |  |  |  |  |  |  |
|  | i. Freehold | 25.00 |  |  | 25.00 |  | **50.00** |
|  | ii. Leasehold |  |  |  |  |  |  |
| **2** | **Building** |  |  |  |  |  |  |
|  | i. Office Building | 20.00 | 25.00 | 30.00 | 35.00 | 40.00 | **150.00** |
|  | ii. Residential Building |  |  |  |  |  |  |
|  | iii. Minor Works |  |  |  |  |  |  |
| **3** | **Equipment** |  |  |  |  |  |  |
|  | i. Laboratory & Farm Equipment including Plant & Machinery |  |  |  |  |  |  |
|  | ii. Office Equipment | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | **30.00** |
| **4** | **Furniture & Fixtures** | 15.00 | 17.00 | 19.00 | 21.00 | 23.00 | **95.00** |
| **5** | **Vehicles & Vessels** |  |  |  |  |  |  |
|  | i. Vehicles | 10.00 |  |  |  |  | **10.00** |
|  | ii. Vessels |  |  |  |  |  |  |
| **6** | **Information Technology & ICT** | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | **15.00** |
| **7** | **Livestock** |  |  |  |  |  |  |
| **8** | **Library** |  |  |  |  |  |  |
|  | **SUB-TOTAL (A)** | **52.00** | **50.00** | **58.00** | **66.00** | **74.00** | **300.00** |
| **(B)** | **REVENUE** |  |  |  |  |  |  |
| **1** | **Research & Operational Expenses** |  |  |  |  |  |  |
|  | i. Research Expenses | 20.00 | 22.00 | 26.00 | 30.00 | 32.00 | **130.00** |
|  | ii. Operational Expenses | 10.00 | 12.00 | 14.00 | 16.00 | 18.00 | **70.00** |
| **2** | **Administrative Expenses** |  |  |  |  |  |  |
|  | i. Travelling Expenses |  |  |  |  |  |  |
|  | a. Domestic (TA/TTA) |  |  |  |  |  | **0.00** |
|  | b. Abroad |  |  |  |  |  |  |
|  | ii. Repair & Maintenance of Building and other Assets |  |  |  |  |  | **0.00** |
|  | iii. Office/Farm/Laboratory Upkeep & other Maintenance Expenses |  |  |  |  |  | **0.00** |
| **3** | **Miscellaneous Expenses** |  |  |  |  |  | **0.00** |
|  | **SUB-TOTAL (B)** | **30.00** | **34.00** | **40.00** | **46.00** | **50.00** | **200.00** |
|  | **Grand Total (A+B)** | **82.00** | **84.00** | **98.00** | **112.00** | **124.00** | **500.00** |

**Year wise (2021-22 to 2025-26) details of Proposed Works of the Sub-scheme 23(2)(iii) DCFR**

***(Rs. in Lakh)***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Description of Work** | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total amount** |
| **A.** | **Spill-over Works** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | **0.00** |
|  | Sub Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| **B.** | **New Works** |  |  |  |  |  |  |
| 1 | Expansion of wet lab with modern facility |  |  | 25.00 |  |  | **25.00** |
| 2 | Staff Quarters at Bhimtal (First phase) |  |  |  |  | 15.00 | **15.00** |
| 3 | Construction of experimental hatchery with electrification, drainage, water supply etc. | 10.00 |  |  |  |  | **10.00** |
| 4 | Sugam Bharat: For Differently abled person: Lift, Ramp, Parking Area, Toilet |  | 23.00 |  |  |  | **23.00** |
| 5 | Electrification of Exp. Field Centre, Champawat |  | 12.00 |  |  |  | **12.00** |
| 6 | Expansion of training facility at Bhimtal |  |  |  |  | 75.00 | **75.00** |
| 7 | Up gradation and modernization of mahseer hatchery at Bhimtal |  |  |  | 15.00 |  | **15.00** |
| 8 | Renovation and repairing of staff quarter at champawat |  |  | 12.00 |  |  | **12.00** |
| 9 | Expansion of trout ova house and re-circulatory system at Champawat |  |  | 15.00 |  |  | **15.00** |
| 10 | Renovation and repairing of trout raceways at Champawat |  |  |  | 18.00 |  | **18.00** |
| 11 | Trout RAS platform, shed and boundary wall |  |  |  | 37.00 |  | **37.00** |
| 12 | Renovation of Check dam at Field Centre Champawat | 10.00 |  |  |  | 13.00 | **23.00** |
|  | **Sub Total** | **20.00** | **35.00** | **52.00** | **70.00** | **103.00** | **280.00** |
| **C.** | **Misc. Works** |  |  |  |  |  |  |
|  | Minor and Petty works |  |  | 5.00 | 5.00 |  | **10.00** |
|  | **Total** | **20.00** | **35.00** | **57.00** | **75.00** | **103.00** | **290.00** |

**Year wise (2021-22 to 2025-26) details of proposed equipments of the Sub-scheme 23(2)(iii) ICAR-DCFR**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Name of item** | **Quantity** | **Approx. Cost/unit** | **2021-22** | **2022- 23** | **2023-24** | **2024-25** | **2025-26** | **Total cost** | **Justification** |
| **A** | **DCFR Headquarter, Bhimtal** | | | | | | | | | |
| 1 | Automated Cell Counter | 1 | 20.0 |  | 20.00 |  |  |  | **20.00** | For qualitative and quantitative analysis at cellular/tissue level |
| 2 | Micromanipulator | 1 | 20.0 |  |  |  | 20.00 |  | **20.00** | For gene manipulation study in fish |
| 3 | Centrifuge | 1 | 7.0 |  |  |  |  | 7.00 | **7.00** | For gene manipulation study in fish |
| 4 | Workstation computer | 1 | 13.0 |  | 13.00 |  |  |  | **13.00** | For various bioinformatics analysis of Next generation sequence data |
| 5 | Refrigerated Centrifuge | 1 | 7.0 | 7.00 |  |  |  |  | **7.00** | For isolation of DNA/RNA |
| 6 | Real time PCR | 1 | 15.0 |  |  | 15.00 |  |  | **15.00** | For quantitative assessment of gene expression study |
| 7 | Gel documentation system | 1 | 9.0 |  |  | 9.00 |  |  | **9.00** | For the imaging and documentation of nucleic acid and protein in agarose gels. |
| 8 | Fastprep-24 Beat beater (central facility) | 1 | 6.0 |  |  | 6.00 |  |  | **6.00** | To homogenize various samples in nucleic acid extraction |
| 9 | Chemistry diaphragm pump MD 4C NT/MZ 2C NT | 1 | 6.0 |  |  | 6.00 |  |  | **6.00** | For large scale synthesis of GnRH and other neuropeptide hormones in the laboratory for field application |
| 10 | Multimode Reader | 1 | 19.0 |  |  |  | 19.00 |  | **19.00** | For determination of concentration of peptide hormones |
| 11 | Cooling Incubator | 1 | 8.0 | 8.00 |  |  |  |  | **8.00** | For culturing of oomycetes for development of diagnostics and therapeutics |
| 12 | Refrigerated Water bath | 1 | 6.0 |  |  | 6.00 |  |  | **6.00** | For isolation of DNA, media preparation etc. |
| 13 | Multi Water analysis kit | 2 | 2.0 |  |  | 2.00 | 2.00 |  | **4.00** | For analysis of water quality parameters |
| 14 | Pumps and aerators | 8 | 0.5 |  |  | 1.00 | 1.00 | 2.00 | **4.00** | For experimental fish ponds |
| 15 | FRP tanks/hatchery components/fabricated tanks | 20 | 0.6 |  | 6.0 |  | 6.0 |  | **12.00** | For breeding and seed rearing/ brooders |
| 16 | Live fish carrier/ fish transportation and collection tank | 5 | 0.50 |  |  |  |  | 2.50 | **2.50** | For transportation of live seed/brood fish |
| 17 | Oxygen generator with nano bubbling system | 1 | 13.00 |  |  |  |  | 13.00 | **13.00** | For oxygenation in hatchery/ ponds/ RAS system |
| 18 | Protein Skimmer | 1 | 5.00 |  |  |  | 5.00 |  | **5.00** | For trout RAS system |
| 19 | Heating and cooling system for RAS | 1 | 10.00 | 10.00 |  |  |  |  | **10.00** | For trout RAS system |
| 20 | CO2 stripper | 1 | 5.00 |  |  | 5.00 |  |  | **5.00** | For trout RAS system |
| 21 | Automatic Kjeldhal distillation unit with automatic titration | 1 | 12.00 |  |  |  | 12.00 |  | **12.00** | For proximate composition of fish feed |
| 22 | Plate incubator | 1 | 3.00 | 3.00 |  |  |  |  | **3.00** | For biochemical analysis |
| 23 | Mini cooling centrifuge | 1 | 3.00 | 3.00 |  |  |  |  | **3.00** | For plasma separation on field for biochemical analysis |
| 24 | Digital Documentation system for inverted microscope | 1 | 5.00 | 5.00 |  |  |  |  | **5.00** | For capturing images under microscope |
| 25 | Mini flow cytometer | 1 | 6.00 |  |  | 6.00 |  |  | **6.00** | For qualitative and quantitative analyses of fish blood |
| 26 | Multi Spectro-photometer | 1 | 7.00 | 7.00 |  |  |  |  | **7.00** | For DNA/RNA ration quantifications |
| 27 | Thermal cycler | 1 | 4.00 |  |  | 4.00 |  |  | **4.00** | For DNA amplification/ For carrying out diagnosis of disease samples |
| 28 | Orbital Shaking Incubator | 1 | 3.00 |  |  |  | 3.00 |  | **3.00** | For growing bacteria and fungi |
| 29 | Laboratory Water Distillation Unit | 1 | 2.00 | 2.00 |  |  |  |  | **2.00** | For making Distilled water to prepare microbiological media |
| 30 | Tissue processor | 1 | 12.00 |  |  |  | 12.00 |  | **12.00** | To carry out all the histological and histopathological work |
| 31 | Light Microscope imaging facility | 1 | 12.00 |  | 12.00 |  |  |  | **12.00** | For viewing histological slides for diagnosis and interpretation |
| 32 | CO2 incubator | 1 | 12.00 |  |  |  | 12.00 |  | **12.00** | For in house nucleotide sequencing, whole genome sequencing and transcriptome and microbiome work |
| 33 | Refrigerated centrifuge | 1 | 7.00 |  | 0.00 | 7.00 |  |  | **7.00** | For sample preparation during molecular and physio-biochemical studies |
| 34 | Ultrapure water purification system (central facility) | 1 | 12.00 |  |  |  |  | 12.00 | **12.00** | For preparation of reagents and buffers for the biochemical and molecular studies |
| 35 | Oxygenator | 1 | 4.00 |  |  |  | 4.00 |  | **4.00** | For aeration in hatchery/pond units |
| 36 | fish electric Anesthetizer | 2 | 3.00 | 6.00 |  |  |  |  | **6.00** | For breeding operation of mahseer & trout |
| 37 | PCR | 1 | 4.00 |  |  |  | 4.00 |  | **4.00** | For DNA amplification |
| 38 | Inverted microscope with imaging facilities | 1 | 5.50 |  |  |  |  | 5.50 | **5.50** | for tissue and plankton analysis |
| 39 | Sieve shifter | 1 | 5.00 | 5.00 |  |  |  |  | **5.00** | For trout and mahseer larval feed preparation |
| 40 | Micro extruder | 1 | 25.00 | 0.00 | 25.00 |  |  |  | **25.00** | For lipid coating in the trout feed |
| 41 | Microwave digestion system | 1 | 12.00 |  |  |  | 12.00 |  | **12.00** | Prepare feed, fish and other samples for biochemical analysis, |
| 42 | Muffle furnace | 1 | 4.00 |  |  |  |  | 4.00 | **4.00** | For ash determination in all feed samples |
| 43 | SONDE | 1 | 10.00 |  |  |  |  | 10.00 | **10.00** | For resource assessment study/recording of on site parameters |
| 44 | Rheometer/Water flow meter | 1 | 3.00 |  |  | 3.00 |  |  | **3.00** | For measuring water velocity |
| 45 | Electrofisher | 1 | 2.50 |  |  |  |  | 2.50 | **2.50** | For experimental fish sampling |
| 46 | Fish tagging system | 1 | 4.00 |  |  |  | 4.00 |  | **4.00** | For migration and breeding studies |
| 47 | Generator 250 KVA | 1 | 13.00 | 0.00 | 13.00 | 0.00 | 0.00 | 0.00 | **13.00** | For office/laboratory use/power supply |
| 48 | Stabilizer for office | 2 | 2.50 | 2.50 | 0.00 | 2.50 | 0.00 | 0.00 | **5.00** | For office use |
| 49 | UPS for power supply | 3 | 2.00 | 6.00 | 0.00 | 0.00 | 0.00 | 0.00 | **6.00** | For office/laboratory use |
| 50 | Mini X-ray Machine | 1 | 5.00 | 0.00 | 5.00 | 0.00 | 0.00 | 0.00 | **5.00** | For fish morphometric and antomical studies |
| 51 | RAS components for trout culture | 1 | 30.00 |  | 0.00 | 0.00 | 0.00 | 30.00 | **30.00** | For high density trout farming |
| 52 | Projector with screen | 2 | 4.00 | 4.00 | 0.00 | 0.00 | 0.00 | 4.00 | **8.00** | For auditorium |
| 53 | Sound system for committee room and auditorium | 2 | 2.50 | 2.50 | 0.00 | 0.00 | 0.00 | 2.50 | **5.00** | For auditorium and committee room |
| 54 | Television/display for committee room | 2 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.00 | **8.00** | For presentation of various research projects/scientific meetings |
| 55 | **Minor equipments Lab:** Centrifuge rotors, pH meters, Balance, Vortex mixers, Minispin centrifuges, ultra sonicators, Electrophoresis power supplies, -20°C freezers, Autoclaves, Vacuum pumps, BOD incubators, UPS 3KVA, DSLR Cameras, LED TV, Air conditioners , Thermostatic heaters, Cryocans, Air compressor and accessories, Aquarium power heads, and other essential minor accessories/items etc. |  | 2.00 | 3.00 | 3.00 | 6.00 | 5.00 | 9.00 | **26.00** | As per requirement in different laboratories |
| 56 | **Minor equipment for farm** -Snake stics, grass cutter, wader, life jacket, pumps, aerators, chillers, pond cleaner, bath tubs, feed containers, silpaulin, netting materials Oxygen cylinder and other essential farm implements etc. | 0 | 0.50 | 3.00 | 3.00 | 2.00 | 2.00 | 3.00 | **13.00** | For farm operation as per requirement |
|  | **Sub Total** |  |  | **77.00** | **100.00** | **80.50** | **123.00** | **115.00** | **495.50** |  |
| **B.** | **Experimental Field Centre, Champawat** | | | | | | | | | |
| 57 | Upright flourescent microscope with camera and documentation system | 1 | 10.00 | 10.00 | 0.00 | 0.00 | 0.00 | 0.00 | **10.00** | For study of different developmental stages of fish |
| 58 | UV-VIS spectrometer | 1 | 6.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | **6.00** | For DNA/RNA quantification |
| 59 | Generator 25 KV for farm use | 1 | 3.50 | 0.00 | 3.50 | 0.00 | 0.00 | 0.00 | **3.50** | for farm use |
| 60 | Generator 125 KVA | 1 | 8.00 | 0.00 | 0.00 | 8.00 | 0.00 | 0.00 | **8.00** | For power supply to office and labs |
| 61 | High capacity chillers | 4 | 1.00 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | **4.00** | For trout hatchery |
| 62 | Incubation tray and troughs | 25 | 0.20 | 0.00 | 0.00 | 5.00 | 0.00 | 0.00 | **5.00** | For trout ova house/incubation of trout eggs |
| 62 | Aerators | 2 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | **4.00** | For trout raceways |
| 63 | Multiprobe water quality analyser | 1 | 5.00 | 0.00 | 0.00 | 5.00 | 0.00 | 0.00 | **5.00** | For water analysis of water quality parameters |
| 64 | Electrofisher | 1 | 5.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | **5.00** | Experimental fish sampling from rivers/streams |
| 65 | Fish electric Anesthetizer | 1 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | **3.00** | For breeding operation of trout |
| 66 | Oxygenator | 2 | 4.00 | 4.00 | 0.00 | 0.00 | 0.00 | 4.00 | **8.00** | For trout hatchery/ raceways/ponds |
| 67 | Larval Rearing unit (includes FRP tanks of different dimensions) | 1 | 4.50 | 0.00 | 0.00 | 4.50 | 0.00 | 0.00 | **4.50** | Larval/brood stock rearing of trout |
| 68 | **Minor equipments-**  UPS 3.0 KV, Invertors, DSLR camera, weighing balance, Grass cutter, waders, life jackats, Pump, thermostat, netting materials and other essential farm implements etc. | 0 | 0.50 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | **9.00** | For farm operation |
|  | **Sub total** |  |  |  |  |  |  |  | **75.00** |  |
|  | **Total (A+B)** |  |  | **100.0** | **103.5** | **109.0** | **123.0** | **135.0** | **570.50** |  |

**Year wise (2021-22 to 2025-26) details of Proposed furniture & fixture of the Sub-scheme 23(2)(iii) ICAR-DCFR**

**(Rs. in lakh**)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Item/ List of Furniture & Fixture** | **Qty.** | **Price/Unit** | **2021- 22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total amount** |
| 1 | Steel Almirah & shelf | 32 | 0.25 |  | 1.00 | 4.00 | 3.00 |  | **8.00** |
| 2 | Book shelf, Book display, reading table & chair, computer table and chair | 20 | 0.50 | - | 5.00 | 5.00 | **-** | **-** | **10.00** |
| 3 | Office Chair & Tables | 40 | 0.20 | 3.00 | - | 2.00 | 3.00 | - | **8.00** |
| 4 | Furnishing of Laboratory & rooms | - | 1.00 | 7.00 | 5.00 | 0.00 | 0.00 | 5.00 | **17.00** |
| 5 | Wooden flooring of Office building | - | 6.00 | - | - | - | 6.00 |  | **6.00** |
| 6 | Furniture for guest house | - | 1.00 | - | - | - | - | 10.00 | **10.00** |
|  | **Total** |  |  | **10.00** | **11.00** | **11.00** | **12.00** | **15.00** | **59.00** |

**Year wise (2021-22 to 2025-26) details of Proposed items under Information Technology of the Sub-scheme DCFR**

**Rs. in lakh**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Name of Item** | **Qty. (No.)** | **Approx cost** | **2021- 22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total Cost** |
| 1 | Up gradation of ArcGIS 10.6.1 to latest | 1 | 7.00 |  |  |  |  | 7.00 | **7.00** |
| 2 | Up gradation ArcGIS Pro 2.3 to latest | 1 | 4.00 |  |  | 4.00 |  |  | **4.00** |
| 3 | ArcScan | 1 | 2.00 |  |  | 2.00 |  |  | **2.00** |
| 4 | Handheld GPS | 5 | 3.00 |  | 1.00 | 1.00 | 1.00 |  | **3.00** |
| 5 | LISS –IV High Resolution Data | 1 | 8.00 |  | 8.00 |  |  |  | **8.00** |
| 6 | High Speed Workstation | 5 | 20.00 | 0.00 | 3.00 | 3.00 | 8.00 | 6.00 | **20.00** |
| 7 | A0 scanner | 1 | 4.00 | 4.00 |  |  |  |  | **4.00** |
| 8 | Erdas Imagine software (Latest version) | 1 | 4.00 | 4.00 |  |  |  |  | **4.00** |
| 9 | E-Book links with ICAR-DCFR office website | 1 | 1.00 |  |  | 1.00 |  |  | **1.00** |
| 10 | Computer and printer | 17 | 16.00 |  |  | 5.00 | 5.00 | 6.00 | **16.00** |
| 11 | Laptops | 18 | 18.00 | 0.00 | 8.00 | 4.00 | 6.00 |  | **18.00** |
| 12 | Software purchase as per requirement | 0 | 10.00 |  | 0.00 |  | 5.00 | 7.00 | **12.00** |
| 13 | DNA star software (multiuser) | 1 | 5.00 |  |  |  |  | 5.00 | **5.00** |
| 14 | Blast2GO/OMICS Box | 2 | 6.00 | 3.00 |  |  |  | 3.00 | **6.00** |
| 15 | Photocopier | 3 | 3.00 |  |  | 0.00 | 2.00 | 1.00 | **3.00** |
| 16 | Video conferencing software/digital platform | 1 | 6.00 | 6.00 |  | 0.00 |  |  | **6.00** |
| 17 | EPBAX system | 2 | 6.00 | 3.00 |  | 0.00 | 3.00 |  | **6.00** |
| 18 | MS Office (multiuser)/  Microsoft 365 | 1 | 10.00 |  | 0.00 | 10.00 |  |  | **10.00** |
|  | **Total** |  |  | **20.00** | **20.00** | **30.00** | **30.00** | **35.00** | **135.00** |

**Year wise (2021-22 to 2025-26) details of Proposed items Library of the Sub-scheme 30 (iii) DCFR**

**(Rs. in lakh**)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total amount** |
| 1. | 3.00 | 3.00 | 2.00 | 4.00 | 5.00 | **17.00** |