CHAPTER – IV

Department of Bio-Technology

4.1 Activities of Institute of Bio-resources and Sustainable Development, Imphal

Institute of Bio-resources and Sustainable Development, Imphal could not achieve substantial progress towards achievement of its objective of bio-resource development and their sustainable utilization through bio-technological intervention for economic growth of the region even after a lapse of more than 15 years since its inception.

4.1.1 Introduction

Department of Biotechnology (DBT), Ministry of Science and Technology (MST), established the Institute of Bio-resources and Sustainable Development, Imphal (IBSD), in 2001 under the Manipur Society Registration Act, 1989, for conservation and sustainable utilisation of bio-resources for the socio-economic development of North Eastern Region. The primary objectives of establishment of IBSD were to study and document the unique biodiversity of the region, develop bio-technological interventions for sustainable development and utilization of bio-resources of the region and generate technological packages for employment generation and economic progress.

The affairs of IBSD are managed by its Governing Council (GC) whereas the Society is the apex body of IBSD for deciding policy, framework and general guidelines of its activities. The Scientific Advisory Committee (SAC) advises the institute on planning, policy formulation and identification of priority areas of research.

DBT released grant of ₹ 82.40 crore for revenue and capital against which an expenditure of ₹ 71.63 crore was incurred by IBSD during the period 2012-17.

4.1.2 Audit findings

Audit reviewed the activities of IBSD since its inception to March 2017. The audit findings are discussed in the subsequent paragraphs.

4.1.2.1 Setting up of state-of-art biotechnology research facilities

One of the primary objectives of IBSD was to create state-of-art biotechnology research facilities at Imphal. For this purpose, IBSD acquired (November 2007) 37.97 acres of land at Haraorou from the Government of Manipur for ₹ 10.18 lakh to establish the research facility. The Governing Council (GC) authorised (November 2012) IBSD to constitute an Expert Committee for the development of a

bio-resources Park. Subsequently, the SAC advised (September 2013) IBSD to constitute a committee to prepare a detailed plan of work.

Audit observed that that no committee was constituted by IBSD as advised by GC and SAC as of March 2017 due to which no time bound action plan for completing the work of development of the bio-resources Park could be prepared.

It was further observed that IBSD did not take action on most of the suggestions offered by SAC/GC for the development of the park from time to time as detailed in ***Appendix VIII***. Thus, even after lapse of more than nine years after procurement of land, IBSD could not establish the bio-resource park.

IBSD stated (May 2017) that due to change of the Director of the Institute, the committee was not constituted. The reply does not justify the delay of over nine years to prepare the project.

4.1.2.2 Non-formation of Institutional Bio-safety Committee

As per instruction[22] of Ministry of Environment, Forest and Climate Change (MoEFCC), an Institutional Bio-safety Committee (IBSC) was to be constituted by research institutions handling micro-organisms. The committee would comprise the Head of the Institution, Scientists engaged in DNA work, a medical expert and a nominee of DBT. The research institutions having micro-organisms should prepare, with the assistance of IBSC, an up-to-date on-site emergency plan. Further, experiments in the field of gene technology or micro-organisms may be carried out outside the laboratories but under the supervision of IBSC.

Audit observed that though IBSD conducted in-house research activity on animal/human pathogens and plant pests under micro-organisms which are categorised under different risk groups, it did not constitute IBSC as of March 2017. Consequently, emergency action plan was not prepared by the Institute. IBSD also carried out multi-location field trial experiment on Trichoderma and Pseudomonas without supervision of IBSC.

IBSD stated (August 2017) that though it had not constituted any IBSC, individuals working with infectious agents or biological agents were aware of the potential hazards, bio-hazard protocols and procedures and proficient enough in the practices and techniques required for handling such agents safely. The reply is not tenable as the rules on use and storage of hazardous micro-organisms were mandatorily required to be implemented by all institutions.

[22] Rule 4(3) of The Manufacture, Use, Import, Export and Storage of Hazardous Micro-Organisms Genetically Engineered Organisms or Cells Rules 1989, Ministry of Environment, Forest and Climate Change Notification, New Delhi, dated 5 December 1989.

4.1.2.3 Non-availability of sophisticated system in bio-resource database and bio-informatics

Bio-resource database and bio-informatics division of IBSD is mandated to provide documentation of bio-resources of NER by using advanced computational tools and techniques and use of bio-informatics networks for maximum utilisation of the resources. SAC suggested (June 2011) an integrated biological activity study module for further *in-silico* analysis. The module was needed for *in-silico* data annotations for core research activities of the division. The bio-informatics division placed requisitions for procurement of sophisticated system for *in silico* analysis during 2010, 2011, 2012, 2014, 2015 and 2016 but the same was not procured as of March 2017.

Thus, the *in silico* analysis as advised by the SAC of the institute was not carried out due to which the research activities remained unachieved.

4.1.2.4 Study and documentation of biodiversity

Research activities of IBSD have been framed around four thrust areas viz., (a) Medicinal Plants and Horticultural Resources; (b) Microbial Resources; (c) Animal Resources, and (d) Bio-resources database and Bio-informatics. In order to fulfil the mission of development of unique bio-resources of the region and their sustainable usage for the socio-economic growth of the region, IBSD undertook various programmes on the study and documentation of the mega bio-diversity of the north eastern region. IBSD is also mandated to conserve the rich biodiversity of the region.

(i) Inadequate survey, collection and documentation of bio-resources

The status of survey, collection and documentation of the bio-resources to be undertaken by IBSD are summarised in Table 4.1 below.

Table 4.1: Survey, collection and documentation of bio-resources

Bio-resources	Programme/ Survey	Status
Plant Bio-resource	IBSD undertook a programme titled "Survey, Collection and Evaluation of the plant wealth in the Indo-Burma Biodiversity Hotspot" in 2003 under Plant Bio-resource research area. The objectives were (i) cataloguing and monitoring of bio-diversity and involving conservation strategies for rare/endangered species; (ii) collection, identification, documentation and diversity studies in the important cultivated crops of the region; and (iii) maintenance of herbarium of important horticultural and medicinal plant species.	a. Out of 249 species of orchids in NE India, only 18 species, constituting 7.23 *per cent*, have been collected and maintained in the Institute. b. No study had been started though SAC recommended (April 2002) for documentation of entire bamboo germplasm of NE India. c. Citrus species of only Manipur were collected, but no survey was conducted for the entire NE India. d. SAC (September 2007) recommended documenting the land races of cotton in entire NE India, but no document showing that the study had been initiated was on record.

Bio-resources	Programme/ Survey	Status
		e. Survey and collection and taxonomic identification of plants of only one family i.e. Zingiberacea (Ginger family) was almost completed. Among 88 species of the family, 76 species, constituting 87.5 *per cent*, have been collected and maintained in the Institute
Animal Bio-resources	During 2004-05, IBSD undertook the programme of collection of fish from Indo-Burma region for aquaculture and having ornamental value	a. 77 species of fish from only Manipur were collected and maintained in IBSD, but the collection of species was not made from entire NE India. b. Among 136 endemic fishes available in NE India, only 21 endemic species, constituting 15.44 *per cent*, were collected till date.
	In the tenth Society meeting (November 2010), IBSD was recommended to conduct diversity study and documentation of various snake populations prevalent in Jiribum area of Manipur and also to undertake study on nutritive analysis of different kinds of edible snails of NE region.	No such study was initiated as of March 2017. IBSD stated (May 2017) that it conducted snake venom study on two species of snakes. The reply is not tenable since this study is not in compliance with the recommendation of Society.
Ethno pharmacological[23] Survey and Documentation	IBSD undertook (2004-05) a programme with the objective, among others, to carry out survey and documentation of important medicinal and aromatic plants used in traditional/folklore medicines of NE India. IBSD took up (2009-10) another programme with the objective of ethno pharmacological survey and documentation of Manipur Traditional/Folklore Heath Care Practices. SAC suggested (June 2011) to confirm the validity and safety of traditional medicine practice in the entire NER. SAC further suggested (August 2013) to publish summary of ethno pharmacological survey in widely circulated journal of India and to bring out a database in the form of booklet/brochure/CD.	IBSD could only complete the ethno pharmacological survey which included medicinal and aromatic plants on Manipur traditional medicine of its nine constituent districts as a part of the programme undertaken in 2009-10. IBSD did not conduct ethno pharmacological survey and documentation of others states of NE India except Manipur.

Thus even after a lapse of almost 15 years, IBSD could not adequately survey, identify and document the unique bio-diversity of the north east region as mandated by its objective and recommended by its Committees.

[23] The scientific study of substances used medicinally, especially folk remedies, by different ethnic or cultural groups.

(ii) Shortage of Taxonomist for identification of bio-resources

In the third SAC meeting held in September 2004, the need for taxonomic identification of endemic and unexplored plant species of the region before initiating research activities of those species was emphasised. Further, in the SAC meeting of September 2007, it was observed that declining number of taxonomists had been the main problem in bio-diversity research and right persons needed to be picked up.

Examination of records revealed that IBSD had only one plant taxonomist. During the period from 2004-05 to 2016-17, a total number of 946 plant species were collected out of which 669 species were taxonomically identified leaving almost 30 *per cent* species unidentified. Audit further observed that the Animal Bio-resource Division under which research on insect and fish resources of NE India were carried out also did not have any animal taxonomist. The Insect Division carried out taxonomic identification with the use of taxonomic books and sent its specimens to other institutes for proper identification. As of 2016-17, 33 out of 41 species collected had been identified by this Division. Similarly, the Fish Resources Division had identified 68 of 77 species that it had collected.

Thus, the identification of species collected could not be completed due to shortage of taxonomists. Consequently, the objective of IBSD for study and documentation of unique bio-resources of NE region was not completely achieved.

(iii) Inadequate conservation efforts

SAC suggested (January 2007) developing a strategy for mapping bio-resources of entire the North East region and species that needed to be conserved. Audit observed that IBSD had no information to establish that mapping of bio-resources was carried out. The SAC/GC/Society offered suggestions on conservation of bio-resources from time to time (November 2004 to November 2005). Action taken by IBSD on these suggestions are detailed below.

a. For the long term conservation of unique germ plasm of the region, the Society advised (November 2004) IBSD to deposit one set of germ plasm samples collected by it with National Bureau of Plant Genetic Resources[24] (NBPGR), New Delhi, as core collection. The need for this was further reiterated by the GC which further advised (November 2005) IBSD to deposit elite genotypes of turmeric and ginger with the Regional Station of NBPGR at Shillong. IBSD stated (May 2017) that they had no information on this which indicates that no action has been taken by IBSD on the directives of Society.

b. IBSD hybridised 10 orchids during 2005-06. For conservation of these hybrid orchids, SAC advised (January 2007) IBSD to register the same with Protection of

[24] National Bureau of Plant Genetic Resources (NBPGR) under Indian Council of Agriculture Research is the nodal agency at national level for management of plant genetic resources (PGR).

Plant Varieties and Farmers' Rights Authority[25]. IBSD stated (May 2017) that efforts were underway for registration of two hybrid orchids.

c. IBSD collected 77 species of fishes and maintained them in its aquarium. Among these 77 fishes, 21 species are categorised as Near Threatened/ Vulnerable/ Endangered. Of these 21 species, it was observed that conservation efforts were taken up only in seven species.

d. The Society suggested (November 2005) that only endangered and threatened medicinal plants which were near extinction in the region should be selected and sustainable effort made for their conservation. IBSD stated (May 2017) that no information was available on the work carried out in this regard.

The above indicate that IBSD did not develop a strategy for mapping and conservation of bio-resources. IBSD also did not take action on the recommendations made by the various authorities in this regard.

4.1.2.5 Development of biotechnological interventions

Being one of the most important biologically sensitive hotspots in the world, the North East region is an active center of evolution of many new and novel gene pools. These gene pools contain valuable components and genes that can impart tolerance to drought, cold, frost, pathogens and pests. IBSD is mandated to play a role in ensuring that the rich bio-resources are converted into product and process i.e. technology.

IBSD undertook 30 programmes aimed at development of product and technology. Of these, nine were from Plant Bio-resource Division, 19 from Microbial Resources Division and two programmes were undertaken by Animal Resources Division.

Audit examination revealed that eight technologies **(*Appendix IX*)** were developed since inception by IBSD but none of these had been transferred to industries. Further, only three patents were filed since inception **(*Appendix X*)** but none of these was finally granted. In addition to above, SAC gave suggestions from time to time for undertaking specific research activity for product/technology development as detailed in ***Appendix XI***. It was, however, observed that no product/technology had been developed by IBSD on the recommendations of SAC.

Thus, the objective of bio-technological intervention for sustainable utilization of bio-resources remained largely unachieved. Failure to take action on the recommendations of the SAC defeated the purpose of monitoring and review by the committee.

[25] Protection of Plant Varieties and Farmers' Rights Authority has been established under Protection of Plant Varieties and Farmers' Rights Act, 2001 (PPVFR). PPVFR is an Act of the Parliament of India that was enacted to provide for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders, and to encourage the development and cultivation of new varieties of plants.

4.1.2.6 Generation of technological packages

Society in its seventh meeting (October 2007) recommended that the Institute should involve industry at early stages of research planning and bring local entrepreneurs to work jointly with the Institute in utilization of bio-resources so as to develop products which had proven market demand. As per Action Taken Report on the seventh meeting of the Society, IBSD undertook two separate joint projects each with two private laboratories. However, the outcome of these two projects was not on record. Further, in the ninth Society meeting (November 2009), it was suggested that IBSD should develop programmes on Public-Private-Partnership (PPP) mode to deliver useful products and processes to the society. GC in its 14th meeting (November 2014) approved the creation of PPP by the Institute. However, no documents were on record to suggest that PPP mode programmes were undertaken by IBSD.

The matter was referred to the Department (October 2017); its reply was awaited as of December 2017.

4.2 Irregular grant of promotion and entitlement

National Centre for Cell Science, Pune, did not follow Government rules and orders in the matter of promotions to scientific staff under Flexible Complementing Scheme and foreign tours. This resulted in irregular payment of salary, transport allowance and for foreign tours totaling ₹ 93.26 lakh in violation of extant instructions.

4.2.1 Introduction

The National Centre for Cell Science, Pune (NCCS), an autonomous organisation of Department of Bio-Technology (DBT), serves as the national repository of animal cell cultures undertaking research in cell biology and human resource development. As of 31 March 2017, there were 146 personnel working in NCCS against the sanctioned strength of 197[26].

An audit review of management of the personnel and regulation of entitlement benefits brought out deviations from extant rules as discussed in the succeeding paragraphs.

4.2.2 Promotions

Based on recommendations of the Fifth Central Pay Commission, the Department of Personnel and Training (DoPT) issued Office Memorandum (November 1998) for

[26] As of March 2017, NCCS had 146 personnel working (Scientific-32, technical-72 and Administrative-42) against sanctioned strength of 197 (Scientific-55, Technical-94 and Administrative-48).

modifying the extant Flexible Complementing Scheme (FCS)[27] in Scientific & Technological Departments for in-situ promotion of Scientists/Technical personnel.

Audit observed the following:

(i) Promotion before completion of residency period

DoPT's Office Memorandum (OM) stipulated a minimum residency period in different scientific designations with relaxation in residency period for exceptionally meritorious candidates of not more than one year on any single occasion and limited to a maximum of two occasions in the entire career. As per the OM, the minimum residency period prescribed for promotion from Scientist 'E' to Scientist 'F' and subsequently to Scientist 'G' was five years. However, two Scientists[28] were promoted from Scientist 'E' to Scientist 'F' with relaxation of one and a half to two years in their residency period in violation of DoPT OM. This also caused subsequent promotions to Scientist 'G' before the due dates. Consequently, irregular payment of pay and allowances of ₹ 1.56 lakh were made to the two scientists.

NCCS stated (November 2017) that as per its prevailing Recruitment and Promotion Rules, the Assessment Committee of the NCCS was the competent authority to recommend relaxation in the residency period and its recommendations promoting the scientists were approved by its Director.

The reply is not tenable as provisions in Recruitment and Promotion Rules of NCCS could not violate DoPT's OM provisions on minimum residency period.

(ii) Grant of promotions with retrospective effect

DoPT clarified (July 2002) that promotions may not be granted with retrospective effect in FCS and reiterated this in September 2012 stating that giving the benefit of promotions from a retrospective date without timely assessment as prescribed in the guidelines of FCS would dilute the spirit of FCS instructions on rigorous assessment. Audit observed that 19 officials under scientific category were granted promotion/financial up gradation under FCS retrospectively in the Grade Pay (GP) ranging from ₹ 5,400 to ₹ 10,000 resulting in ineligible payment of ₹ 16.96 lakh to the beneficiaries of the scheme.

NCCS (November 2017) justified the retrospective payment on the ground of delay in grant of promotion due to lengthy and time consuming scrutiny of cases.

[27] An in-situ promotion scheme for Scientists and Technologists holding Group-A scientific posts in Science and Technology Departments and who are engaged in scientific and technical activities and services.

[28] Shri A.K. Sahu promoted in November 2007 and Shri Debashish Mitra promoted in April 2006.

The justification is not tenable as the rules notified under the scheme contain provision for review of promotion by Selection Committee/Assessment Board twice a year and assessment of cases was to be completed before the due date of promotion as reiterated by DoPT in September 2012.

4.2.3 Entitlements

4.2.3.1 Inadmissible expenditure towards foreign tours

Ministry of Finance (MoF) issued orders (July 2011, May 2012 and September 2013) containing guidelines for expenditure management and economy measures which *inter-alia* stated that no proposal for participation in workshop/ seminar/ conference/ presentation of papers abroad at Government cost shall be entertained except those that are fully funded by sponsoring agencies. MoF clarified (August 2011) that these orders were applicable to autonomous bodies funded by Government of India.

Audit observed that during 2011-14, officials of NCCS went for workshop/ seminar/ conference/ presentation of papers abroad for which NCCS spent ₹ 27.05 lakh from its funds.

NCCS stated (November 2017) that up to 2013, cases of individual scientists for foreign tours were sent to the administrative Ministry i.e. DBT for approval. The DBT delegated (February 2013) this authority to Director, NCCS. Accordingly, cases of foreign tours were sanctioned considering the significance/need of scientists' visit in their research in order to bridge the gaps in knowledge, skills and performance.

The reply is not tenable in the light of Government of India instructions prohibiting such foreign tours.

4.2.3.2 Inadmissible payment of Transport Allowance

The Ministry of Finance (MoF) allowed (August 2008) slab-wise Transport Allowance of ₹ 3,200, ₹ 1,600 and ₹ 600 plus Dearness Allowance (DA) thereon to employees residing at A1/ A category cities and ₹ 1,600, ₹ 800 and ₹ 400 plus DA thereon for employees residing in other cities. Further, it stipulated that officers drawing GP of ₹ 10,000 and ₹ 12,000 and those in HAG+ scale, who were entitled to the use of official car in terms of OM dated January 1994 shall be given the option to avail themselves of the existing facility or to draw the Transport Allowance at the rate of ₹ 7,000 plus DA thereon per month and only Chief Executive of Statutory Bodies/ABs is entitled for use of staff car. MoF clarified (August 2016) that the officers not entitled for staff car in terms of the said OM dated January 1994 are not eligible for the Transport Allowance of ₹ 7,000 plus DA thereon even though they are drawing GP of ₹ 10,000 in PB-4 under dynamic ACP scheme or under the scheme of non-functional up-gradation.

Audit observed that higher rate of Transport Allowance of ₹ 7,000 was granted to 13 officials who were not entitled to staff car in terms of the extant instructions. This had resulted in excess payment of Transport Allowance of ₹ 47.69 lakh to these officials.

NCCS stated (November 2017) that payment of higher Transport Allowance of ₹ 7,000 and DA thereon to the non-entitled officials has been stopped. As regard recovery of excess amount already paid to these officials, NCCS informed that matter has been referred to the DoPT.

The matter was reported to the Department (October 2017); the reply of the Department was awaited (December 2017).

4.3 Non-utilisation of land procured for construction of staff quarters

National Institute of Immunology failed to utilize land acquired at a cost of ₹ 3.93 crore for constructing staff quarters even after lapse of 17 years resulting in avoidable payment of ₹ 35.89 lakh as penalty for delay in construction and pending liability of ₹ 41.14 lakh towards penalty.

In order to cater to the housing needs of its staff, the National Institute of Immunology, New Delhi (NII), an autonomous body under the administrative control of the Department of Bio-Technology (DBT), acquired (July 1998) a plot of land measuring 8,094 sq. meters at Dwarka in New Delhi from the Delhi Development Authority (DDA). NII paid (September 1998 and March/April 1999) ₹ 2.64 crore[29] to DDA as cost of land and took physical possession in May 2000.

As per the terms and conditions of the allotment letter issued by DDA, construction was to be completed within a period of two years from the date of taking over possession of the plot i.e. by May 2002. NII was also required to pay ground rent at the rate of 2.5 *per cent* per annum of the premium of land from the date of handing over possession of the site.

Audit noted that NII did not initiate any action to progress the project till February 2004 when it approached an architect for preparation of drawings/ building plans/ estimates for the staff quarters. The architect informed (April 2004) NII that as the time granted by DDA for construction of staff quarters had expired, extension of time was to be obtained from DDA. Accordingly, NII approached (June 2006) DDA for extension of time for completion of work. DDA granted (June 2007) extension of time upto December 2008 for completion of construction activities. NII failed to construct the quarters even within the extended duration and again approached (December 2008/July 2011) DDA for grant of further extension of time.

[29] Consisting of Premium of ₹ 2.58 crore and Ground rent of ₹ 6.44 lakh.

DDA granted (May 2012) extension of time upto December 2013 subject to payment of ₹ 1.42 crore (₹ 1.23 crore as composition fee for delay in construction and ₹ 19.31 lakh as outstanding ground rent). NII represented (May 2012) to DDA for waiver of ground rent and composition fees. Considering the request (May 2012), DDA waived (January 2013) 75 *per cent* of the composition fee and agreed to allow extension of time for construction work up to December 2013.

NII was yet again unable to undertake construction and approached (September 2013) DDA for further extension of time and full waiver of composition fee. DDA rejected the request of NII and informed (February 2014) that extension of time up to March 2015 could be granted only on payment of 25 *per cent* of composition fee. Accordingly, NII deposited (February 2014) the composition fee amounting to ₹ 30.50 lakh with a request for grant of extension of time up to March 2017.

DDA allowed (June 2014) extension of time up to December 2015 subject to payment of additional composition fee of ₹ 41.14 lakh. NII made (August 2015) another request to DDA for waiver of composition fee and extension of time up to December 2018 for completion of construction. DDA asked (October 2015) NII to furnish a certificate from a registered architect showing that 50 *per cent* of the construction had been completed to enable consideration of the request.

NII intimated (November 2015) DDA that construction of staff quarters had not yet commenced as the drawings of the proposed staff quarters were yet to be approved by DDA. In response, DDA asked (March 2016) for details of budgetary provisions made by NII for carrying out constructions activities in the said piece of land. NII had not made any provision for construction of quarters in its budget for the period 2001-02 to 2017-18.

As of August 2017, NII had made a total payment of ₹ 1.51 crore[30] on account of ground rent, composition fee and interest on delayed payments to DDA. Besides this, it had incurred (2015-16) expenditure of ₹ 20.86 lakh towards construction of boundary wall on the plot.

NII stated (May 2016) that DBT along with Delhi based autonomous institutions were in discussion for better utilization of procured land. It added that it had submitted a definite construction plan and had requested DDA for extension of time for construction activities which was pending with DDA.

Audit observed that NII did not have a definitive plan for construction of the staff quarters at the time when it sought, paid for and took possession of the land. This is clearly evident from the fact that there was no budget provision for this purpose between 2001-02 to 2017-18. NII appointed the architect for the work only in February 2004 which was more than three years after taking possession of the land. It submitted its building plan and drawings to DDA in July 2009. Consequently, land

[30] Ground rent ₹ 1.15 crore, composition fee ₹ 30.50 lakh and interest ₹ 5.39 lakh.

acquired in the year 2000 could not be utilized for its intended purpose for more than 17 years leading to idling of land acquired at ₹ 3.93 crore[31] and avoidable expenditure of ₹ 35.89[32] lakh towards payment of interest and composition fee. Besides, the demand of ₹ 41.14 lakh made by DDA remained unresolved and until the completion of construction, NII may continue to incur liability towards payment of penalty.

The matter was referred (November 2017) to DBT; it's reply was awaited (December 2017).

[31] Ground rent and cost of land/construction of boundary wall.
[32] Interest ₹ 5.39 lakh and composition fee ₹ 30.50 lakh.