

Executive Summary

This Report contains two Performance Audits viz. “Punjab Agricultural University” and “Solid Waste Management by Urban Local Bodies in Punjab”.

Performance Audit-I: Punjab Agricultural University

Punjab Agricultural University (PAU) at Ludhiana was established in the year 1962 through the Punjab Agricultural University Act of the State Legislature. The Performance Audit was conducted with a view to verifying whether; i) the financial management was efficient, effective and the financial resources were mobilised and utilised optimally; ii) academic functions in the field of agriculture, agricultural engineering and allied fields were performed efficiently and effectively; iii) research activities were carried out in agriculture, agricultural engineering and allied fields as per terms of funding agencies; and iv) dissemination of agricultural technologies to farmers through various extension programmes was done efficiently and effectively. PAU played a leading role in the “Green Revolution” in India. In recognition of its outstanding contributions to the nation, PAU was the first Agricultural University to be conferred with the “Best Institution Award” by the Indian Council of Agricultural Research (ICAR) in the year 1995 and again in 2017. However, the National Institutional Ranking Framework (NIRF) ranking of PAU declined from 24 (2017) to 51 (2019) amongst 100 Universities in India; and 40 (2017) to 75 (2019) amongst 100 Institutes and Universities (combined) in India.

The Performance Audit of PAU covering the period 2017-18 to 2021-22 was conducted between June 2022 and February 2023. The records maintained in the offices of the Registrar, Comptroller, Director Research, Director Extension, Deans of Colleges and other controlling offices at the University campus, 12 out of 35 departments of five colleges, six out of 18 Krishi Vigyan Kendras (KVK), three out of nine Research Stations and two out of six Seed Farms (implementing units) were examined.

The audit findings relating to each of the four audit objectives have been arranged under the headings ‘Planning and Financial Management’, ‘Academic Activities’, ‘Research Activities’ and ‘Extension of Agricultural Technologies’.

Apart from financial plans for obtaining requisite budget, no strategic plan describing measurable targets, strategies and requirements was prepared. The University spent 71 to 86 *per cent* of the total available funds during 2017-22. The increasing trend of the closing balances during 2017-20 showed unchecked deficiencies in budgeting and expenditure projection on the part of the University.

Temporary advances were drawn on a routine basis without ensuring the urgency of disbursement of payments, in contravention of the extant rules/instructions. As on 31 March 2022, temporary advances of ₹ 64.61 crore remained unadjusted, of which ₹ 13.42 crore pertained to the period of more than five years old i.e. 1971-72 to 2016-17. Various inconsistencies were noticed in the preparation/maintenance of financial statements of the University, which were not in line with the codal provisions.

The University remained without the requisite accreditation of Indian Council of Agricultural Research (ICAR) for more than five months due to delay in applying for reaccreditation with National Agricultural Education Accreditation Board (NAEAB). There was a shortfall in enrolment of students from 14 to 31 *per cent* of the intake capacity during the period 2017-22. Besides, admission of students in Persons with Disabilities (PwD) category remained less than 20 *per cent*.

There was overall shortage of teaching staff ranging between 39 and 44 *per cent* and non-teaching staff ranging between 51 and 58 *per cent* during the period 2017-22. The shortfall in various cadres of teaching staff ranged between 22 and 44 *per cent* as on 31 March 2022. PAU neither established any distance education centre nor introduced any online course (except for French language). As against 345 to 682 students seeking placements, 29 to 71 *per cent* students got placement during the period 2017-22.

Out of total 616 new research projects proposed by the University, only 193 research projects (31.33 *per cent*) were sanctioned by the project funding agencies during 2017-22. The University did not evolve any mechanism to ascertain/review the reasons for non-approval of research project proposals by the funding agencies so as to bring improvement in their future project proposals. Despite availability of funds from the funding agencies, cases of termination/non-completion of the projects were also noticed due to inadequate monitoring by PAU.

The Technology Marketing and Intellectual Property Rights (TMIPR) Cell of PAU did not have any dedicated full-time staff. No Standard Operating Procedure (SOP) prescribing timelines for registration, transfer of technologies/plant varieties and mechanism for their valuation for determination of license fee was framed by the University. There was no system of periodic reporting of the technologies/plant varieties developed, patented, registered (yet to be commercialised) to the Vice Chancellor and Board of Management (BoM) so as to ensure timely dissemination of the benefits of these technologies/plant varieties to the end users.

As against 48 developed technologies applied under the Patents Act, 1970, 18 technologies were granted patent rights as of November 2022. Of these, in four cases having collaborative research of PAU and ICAR, the patent certificates were granted in the name of ICAR instead of joint registration.

Similarly, out of 97 developed plant varieties applied for registration under the Protection of Plant Varieties and Farmers' Right (PPV&FR) Act, 2001, 36 varieties were registered as of June 2022. Additionally, 34 varieties were registered in the name of ICAR instead of joint registration as these varieties were developed under collaborative research of PAU and ICAR. As many as 17 plant varieties were got commercialised during 2017-22 but without getting them registered under PPV&FR Act. Besides, various plant varieties having geographical indication, were not registered under the Geographical Indication of Goods Act, 1999 by the University.

The cases of short transfer of land to the University were also noticed thereby impacting cultivable area of the University for research work and seed production. Against the yield of 1,274.77 quintal of graded seed of Bt cotton, only 25.31 quintal, i.e., two *per cent* (Bt1 cotton in the year 2017) was sold as seed and the remaining was sold as produce during the period 2017-21. The University suffered a loss of ₹ 7.26 crore due to sale of graded seeds as produce in respect of Kharif and Rabi crops during the period 2017-21.

Manufacturing and sale of two insecticides during 2017-22 without obtaining mandatory licenses were noticed. Nine fruit nurseries were being operated without obtaining mandatory licenses. Only *five to 52 per cent* of the total research publications in respect of seven colleges could find a place in journals with Thompson Reuters Impact Factor with score of 6.00+ during the period 2017-22.

The shortage of staff deployed for extension activities ranged between 44 *per cent* and 48 *per cent* during 2017-22. In 17 out of 18 KVKs, shortage of cultivable land ranged from one to 47.8 acre as per requirement in the respective Memorandum of Understandings (MoU) with ICAR thereby impacting dissemination of practical training/work experience to the beneficiaries.

Except for two KVKs at Ferozepur (achieving targets in respect of number of courses and participants) and Ropar (achieving targets in terms of participants), none of the other four selected KVKs could achieve the targets for imparting trainings to the beneficiaries during the period 2017-22. Besides, the frontline demonstrations (FLD) on major crops and the newly developed technologies were lacking in the selected KVKs.

The Agricultural Technology Information Centre (ATIC) set up in PAU did not serve fully as a single window delivery system for technology products, diagnostic services and information for farmers and other end users.

Recommendations:

The University may:

- *expedite the process for preparation of Strategic Plan to utilise the available funds optimally;*

- *ensure adjustment of temporary advances in accordance with the codal provisions;*
- *ensure preparation of financial statements properly to reflect true and correct financial position of the University;*
- *ensure accreditation of ICAR in a time bound manner;*
- *take effective measures to fill up the vacant posts of teaching and non-teaching staff;*
- *develop a robust process for evaluating research proposals before submission to the funding agencies and for reviewing the unapproved or unsuccessful projects;*
- *strengthen the Technology Marketing and Intellectual Property Rights (TMIPR) Cell to ensure timely registration and commercialisation of its own developed technologies and plant varieties;*
- *take effective measures to increase the cultivable area so as to increase production of Kharif and Rabi seeds and ensure distribution/sale of yield as graded seeds instead of produce;*
- *ensure requisite landholdings with KVKs as per MoUs with ICAR for adequate dissemination of practical training/work experience to the beneficiaries; and*
- *strengthen the Agricultural Technology Information Centre (ATIC) to operate as single window supporting delivery system providing technology products, diagnostic services and information to farmers and other end users.*

Performance Audit-II: Solid Waste Management by Urban Local Bodies in Punjab

Municipal Solid Waste (MSW) management in urban areas is a growing challenge. It not only poses environmental concerns but also threatens public health due to improper handling and disposal of waste. The issue has been worsened by rapid urbanisation. MSW includes various types of waste such as domestic, sanitary, commercial, institutional, catering, market and non-residential waste. It also encompasses street sweepings, silt from drains, horticultural, agricultural and dairy waste. The composition of waste varies depending on factors like food habits, lifestyle, income and climate.

Solid Waste Generation in India and Punjab:

According to the Central Pollution Control Board (CPCB) Report (2021-22):

- India generates 1,70,339 Metric Tonnes (MT) of solid waste per day. Out of this, 92 *per cent* (1,56,449 MT) is collected, of which only 58 *per cent* (91,511 MT) is treated.
- In Punjab, the daily solid waste generation in 2021-22 was 4,222 MT. Of this, 4,207 MT was collected, but only 35 *per cent* (1,471 MT) was treated. This means that about 65 *per cent* of waste remains untreated, which highlights a significant gap in Solid Waste Management (SWM) that needs urgent attention from the 166 Urban Local Bodies (ULBs).

Solid waste is generally categorised into Biodegradable Waste and non-Biodegradable Waste (including Saleable Waste, Refused Derived Fuel, and inerts).

A Performance Audit of SWM by ULBs in Punjab, covering the period from 2017 to 2022, was conducted between August 2022 and March 2023. The audit reviewed records of the Director, Department of Local Government, the Chief Executive Officer of the Punjab Municipal Infrastructure Development Company and 20 selected ULBs (Five Municipal Corporations, 10 Municipal Councils and Five Nagar Panchayats).

A joint physical inspection of 25 dumpsites and waste processing facilities was also conducted.

The audit examined: (i) The planning process for SWM; (ii) Financial management of SWM funds; (iii) Efficiency in waste collection, segregation, transportation and processing; and (iv) Achievement of SDGs and Monitoring and internal control mechanisms.

Audit noticed that the State Government did not formulate SWM and Construction & Demolition (C&D) Waste Management policies on time. This led to a delay in the preparation of bye-laws by ULBs. As a result, key

activities like waste segregation, waterbody waste prevention, legacy waste management and the establishment of SWM infrastructure were not efficiently addressed. ULBs could not prepare adequate action plans for SWM. The assessment for waste generation and composition was not conducted in compliance with the prescribed rules and stakeholder involvement in planning was minimal. ULBs did not optimally utilise the available funds for SWM. Of ₹ 1,011.33 crore allocated for SWM between 2017 and 2022, only ₹ 692.32 crore was spent. Similarly, selected 20 ULBs, utilised ₹ 306.87 crore against the available funds of ₹ 620.18 crore. Additionally, the selected ULBs collected only ₹ 1.06 crore (0.52 *per cent*) as user charges, falling short of the projected ₹ 204.84 crore from April 2019 to March 2022.

Waste collection efficiency was inadequate, with instances of waste being dumped into water bodies and the creation of "Garbage Vulnerable Points" (GVP). Moreover, waste segregation was inefficient as unsegregated waste, including hazardous and sanitary waste was found at dumpsites during physical visits. Necessary infrastructure for waste processing, such as Material Recovery Facilities (MRFs), compost pits and sanitary landfills, was insufficient. As a result, 68 *per cent* of collected waste remained unprocessed, leading to the accumulation of legacy waste. This also led to harmful gas emissions, such as methane a potent greenhouse gas. Furthermore, fire outbreaks at dumpsites were observed, with one incident resulting in the tragic death of seven people, which led to levy of a ₹ 100 crore penalty by the National Green Tribunal (NGT).

The Department identified eight Public Private Partnership (PPP) projects, but only one was operational. Municipal Corporation (Corporation) Amritsar could not close three dumpsites, eliminate secondary collection points, construct sanitary landfills and install weighbridges. The Modern Carcass Utilisation Plant in Corporation Ludhiana, built at a cost of ₹ 8.48 crore, remained idle due to public protests. Additionally, slaughterhouses in selected ULBs did not follow scientific practices. Despite spending ₹ 20.57 crore on a modern slaughterhouse in Ludhiana, it was underutilised. The C&D Waste Management was not carried out in any of the selected ULBs except Corporation SAS Nagar, where C&D waste was used for construction of channels and kerbs.

ULBs featured in this report did not maintain records as required under Municipal Solid Waste Management Rules. The State Level Advisory Body did not meet as per the required frequency and District Administration meetings were not conducted as required. Out of 100 required Annual reports from 20 ULBs, only 74 reports were submitted to higher authorities between 2017 and 2022. Data captured in the Management Information System (MIS)

was inaccurate, with discrepancies between ULB records and the figures reported in the MIS.

Audit observed good practices in solid waste management across six ULBs, as highlighted below:

- *in three ULBs - Mehraj, SBS Nagar and Rupnagar - cloth or jute bags were distributed to encourage the public for refusing/reducing their reliance on the plastic bags.*
- *two ULBs - Ferozepur and Sirhind purchased and distributed steel utensils to the public as substitute of disposable items.*
- *in ULB SAS Nagar, Construction & Demolition waste was used for making channels and kerbs.*

Recommendations:

The State Government/ ULBs may ensure:

- *involvement of stakeholders in the planning process;*
- *optimum and full utilisation of available funds for creating better civic facilities for SWM;*
- *collection of due user charges from waste generators for financial sustainability of ULBs;*
- *compliance with SWM Rules to increase the efficiency in collection, segregation, transportation and disposal of solid waste including legacy waste in scientific manner to protect the public and environment from the hazardous effects of untreated waste;*
- *preparation of an integrated implementation plan for managing other wastes such as carcass waste, C&D waste and slaughterhouse waste as required under rules;*
- *identification of viable Public Private Partnership projects and professional management of these projects for scientific management of solid wastes in the State; and*
- *proper maintenance of records and data so that the performance of SWM system could be assessed.*