

THE AGRI-BUSINESS INCUBATION ECOSYSTEM IN KARNATAKA, INDIA: INSTITUTIONAL DIVERSITY, SUPPORT SERVICES AND CONSTRAINTS TO ENTERPRISE DEVELOPMENT

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ABSTRACT

Agri-business incubators (ABIs) provide infrastructure, knowledge, mentoring, networking and financial linkages that can accelerate agricultural innovation and enterprise development. This study characterized the agri-business incubation ecosystem in Karnataka, India, and examined the services received and constraints experienced by incubated agri-venture founders. Data were compiled for 61 functional incubators operating in Karnataka as of January 2025 and complemented by a beneficiary survey of 52 agri-startup founders. The incubators were profiled using 13 criteria covering establishment history, experience, governance and ownership, organizational capacity, capital access, physical facilities, market access, programme offerings, networking, incubated ventures, inclusivity and recognition. Public institutions accounted for 28 incubators (45.9%), followed by non-profit/NGO organizations (24.6%), private institutions (19.7%) and PPP/Section 8 entities (9.8%). Most incubators (52.5%) had 5–10 years of experience. Agriculture and food processing were each reported as major areas of specialization (47%), followed by horticulture (30%) and fisheries (20%). Government grants were the most frequently reported funding source (91.8%), followed by seed funds/grants (67.2%) and corporate social responsibility support (57.4%). Among beneficiaries, training (100%) and mentoring (94.23%) were the most frequently received services, whereas funding support was received by 67.31%. The overall Constraint Severity Index was 67.20%, with financial (74.80%) and market-linkage (71.20%) constraints showing the highest severity. The findings indicate that Karnataka has a broad and institutionally diverse incubation base, but stronger post-incubation finance and market integration are needed to translate incubation support into sustained agricultural enterprise development.

KEYWORDS: agri-business incubation; agricultural innovation; startup ecosystem; Karnataka; incubator services; market linkage; constraint severity index

INTRODUCTION

Agricultural innovation increasingly depends on the ability to connect scientific knowledge, technologies and entrepreneurial capabilities with viable markets. Agri-business incubators (ABIs) provide an institutional interface for this process by combining physical infrastructure, technical support, mentoring, networking and access to finance for early-stage ventures (1). Their role is particularly relevant to agriculture because innovations must often move across research institutions, producers, processors, input and service providers, and markets before they can generate sustained enterprise value.

Karnataka has a comparatively diverse innovation environment comprising agricultural universities, national research institutions, technology institutions, private organizations, non-profit organizations and public-private initiatives. This institutional diversity has supported the emergence of incubation programmes addressing agriculture, biotechnology, horticulture, food processing and digital agriculture. However, evidence that simultaneously maps incubator characteristics and captures beneficiary experiences remains limited. Assessments based only on the number of incubated ventures can overlook differences in institutional capacity, capital access, programme breadth and networking.

A systematic ecosystem assessment is therefore useful for identifying how incubation infrastructure is distributed, which support mechanisms are commonly available, and where beneficiaries continue to experience bottlenecks. The present study addressed this need by documenting functional ABIs in Karnataka and linking incubator-level characteristics with beneficiary-level evidence on services availed and constraints experienced.

The specific objectives were to: (i) characterize the institutional and operational profile of functional ABIs in Karnataka; (ii) describe their sectoral focus, funding environment and networking dimensions; and (iii) assess the major services received and constraints experienced by ABI beneficiaries.

RESULTS AND DISCUSSIONS

Institutional structure of the incubation ecosystem

The 61 incubators represented four broad ownership groups in the source dataset. Public institutions constituted the largest group with 28 incubators (45.9%), followed by non-profit/NGO organizations with 15 (24.6%), private institutions with 12 (19.7%) and PPP/Section 8 entities with 6 (9.8%) (Fig. 1). This distribution indicates that public and publicly supported institutions constitute a substantial part of the incubation infrastructure in Karnataka, while non-profit and private organizations add institutional diversity.

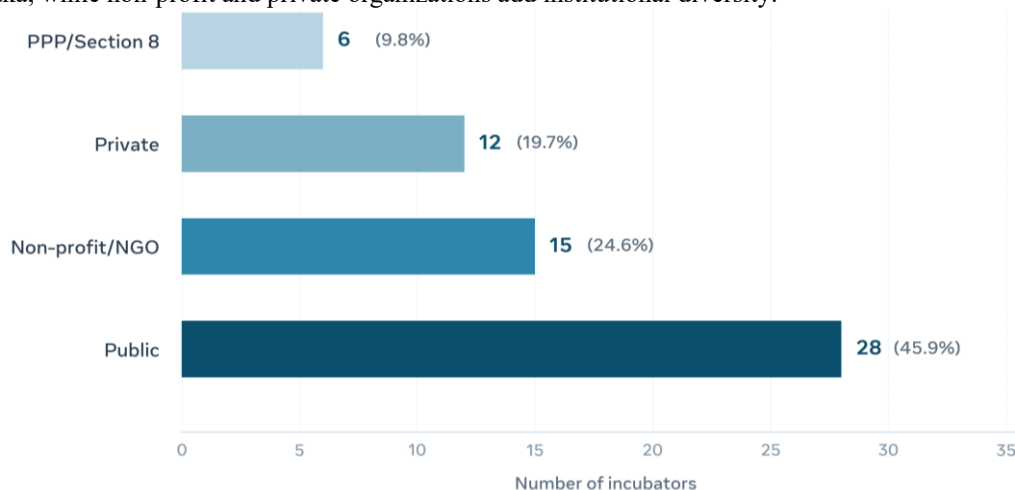


Fig. 1. Ownership structure of 61 agri-business incubators in Karnataka.

Source: Individual incubator websites and verification through calls (January 2025)

The predominance of public institutions highlights the continuing role of universities, research organizations and publicly supported institutions in creating infrastructure for agricultural innovation. At the same time, the presence of non-profit, private and Section 8/PPP entities indicates that incubation is no longer confined to a single institutional model. Such diversity can support specialization, but it also creates a need for stronger inter-incubator coordination and clearer pathways through which startups can move between technical, financial and market-support providers.

Experience profile and sectoral orientation

The largest experience group comprised incubators operating for 5–10 years (32; 52.5%), followed by emerging incubators with less than five years of experience (12; 19.7%), those with 10–20 years (9; 14.8%) and those with more than 20 years (8; 13.1%) (Fig. 2). The concentration in the 5–10-year group is consistent with the expansion of formal incubation activity during the period in which entrepreneurship and startup-support programmes expanded in India.

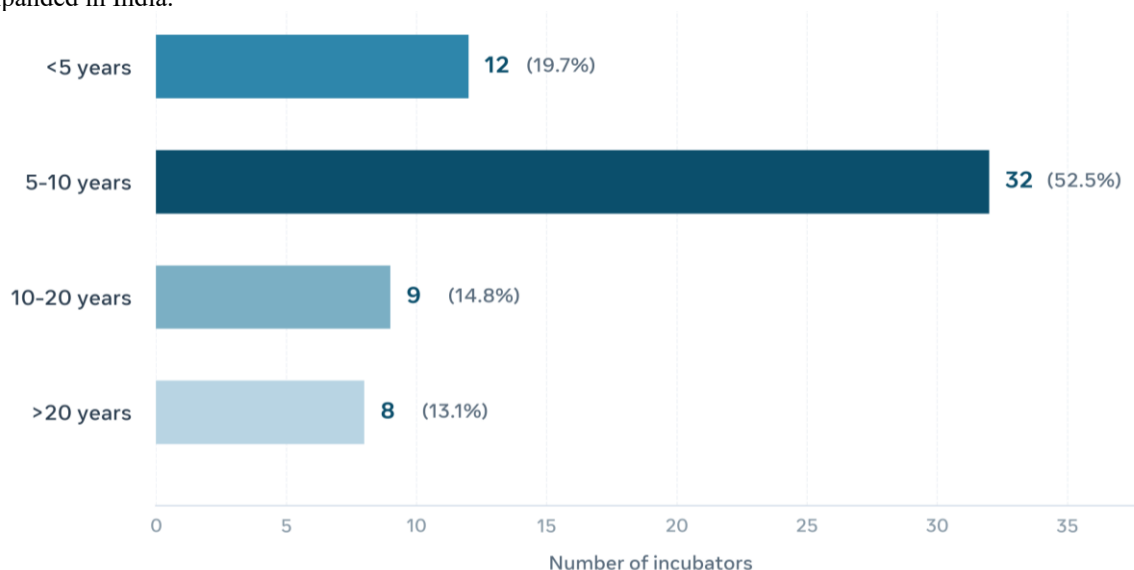


Fig. 2. Experience profile of Karnataka Agri Business Incubators

Source: Compiled from establishment year mentioned on incubator websites, verified via calls.

Agriculture and food processing were each reported at 47% as major areas of specialization, followed by horticulture (30%), fisheries (20%), biotechnology (10%), digital agriculture (8%), climate-smart agriculture (6%)

and dairy (1%) (Fig. 3). These percentages describe reported sectoral specialization and should not be interpreted as mutually exclusive categories.

The sectoral profile suggests broad engagement with agriculture and food processing, while horticulture and fisheries have more specialized representation. The relatively low representation reported for dairy and climate-smart agriculture indicates potential areas for further ecosystem development, although these percentages should not be interpreted as measures of sectoral demand.

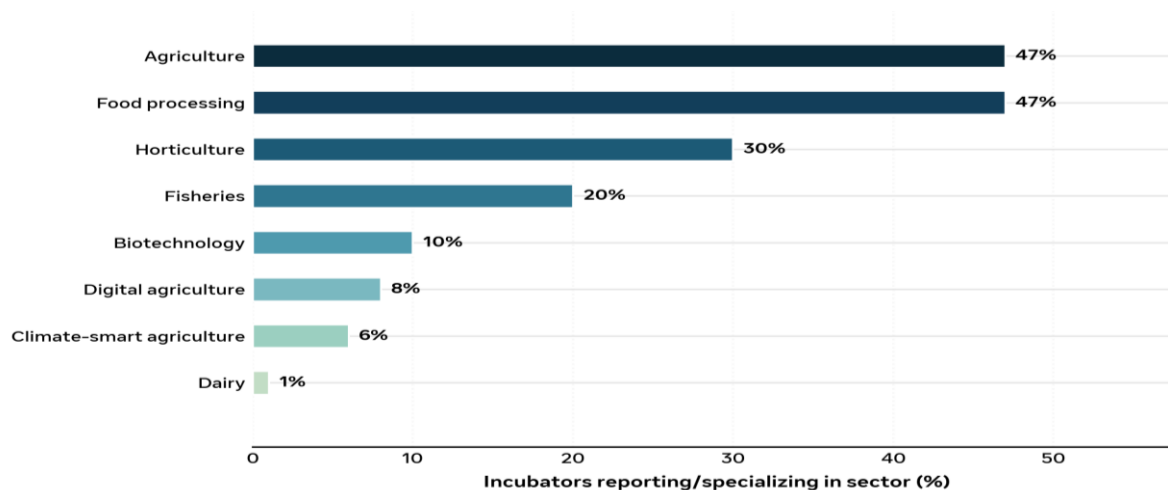


Fig. 3. Reported sectoral focus of the agri-business incubation ecosystem. Categories may overlap.

Source: Compiled from establishment year mentioned on incubator websites, verified via calls.

Funding environment

Government grants were reported by 56 of the 61 incubators (91.8%), making them the most frequently identified funding source. Seed funds or grants were reported by 41 incubators (67.2%), CSR support by 35 (57.4%), angel investment by 31 (50.8%), venture capital by 26 (42.6%), NABARD/RKVY/other schemes by 22 (36.1%) and BIRAC/DST/research grants by 18 (29.5%) (Fig. 4). The pattern suggests a funding environment in which public support is widespread, while private investment mechanisms are available to a smaller proportion of incubators. The pattern suggests a funding environment in which public support is widespread, while private investment mechanisms are available to a smaller proportion of incubators. The results show a clear distinction between incubator-level access to public grants and beneficiary-level access to direct funding. Government grants were reported by 91.8% of incubators, whereas only 67.31% of beneficiaries reported receiving funding support. This difference does not establish a causal funding gap because incubator grants may finance infrastructure and programmes rather than direct startup capital. Nevertheless, it indicates that ecosystem-level financing and founder-level financing should be considered separately when assessing incubation performance.

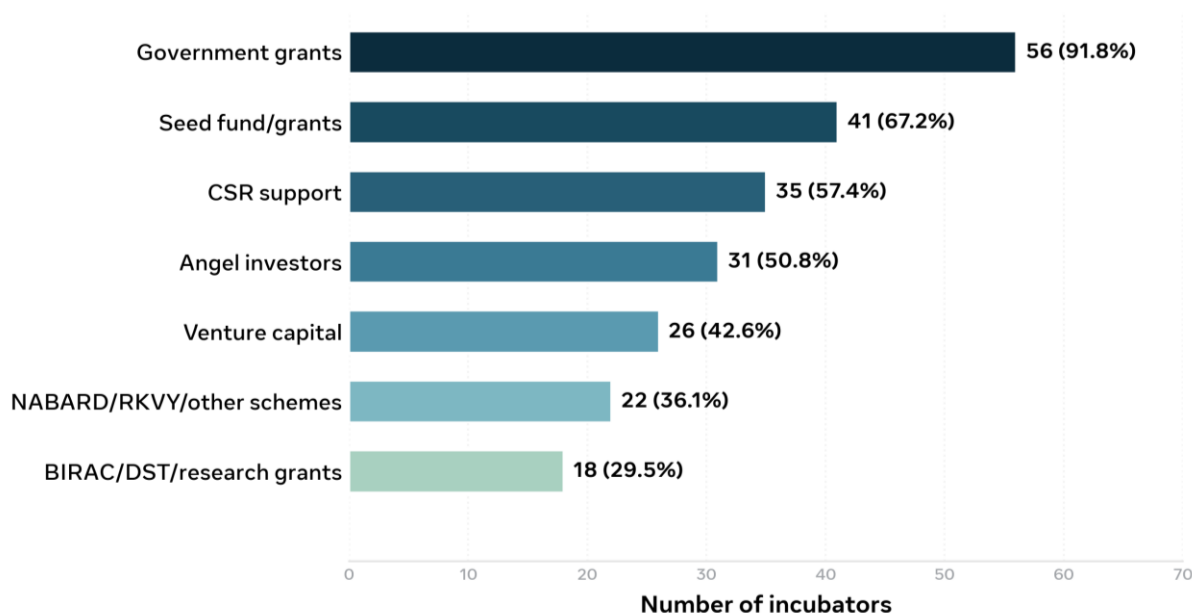


Fig. 4. Funding sources reported across 61 agri-business incubators.

Source: Funding information from individual incubator websites, annual reports and verified via calls.

Incubated ventures and networking

The source dataset reported approximate ranges of agri-based ventures for selected incubators, with Krishika–UAS Dharwad reported at 130–150 ventures, IKP EDEN at 100–120, WASSAN and NSRCEL-IIM Bangalore at 80–100 each, CCAMP at 70–90, Bangalore Bioinnovation Centre, BioNEST-CFTRI and Deshpande Startups at 60–80 each, and MGoKB Manipal and TBI-UHS Bagalkot at 40–60 each. These figures are approximate and were not treated as directly comparable counts because the underlying definitions and reporting periods were not specified.

Table 1. Approximate agri-based venture ranges reported for selected incubators.

Incubator	Approximate number of agri-based ventures
Krishika–UAS Dharwad	130–150
IKP EDEN	100–120
WASSAN	80–100
NSRCEL, IIM Bangalore	80–100
CCAMP	70–90
Bangalore Bioinnovation Centre	60–80
BioNEST-CFTRI	60–80
Deshpande Startups	60–80
MGoKB Manipal	40–60
TBI-UHS Bagalkot	40–60

Source: Figures are approximate ranges as displayed on respective websites in 2025 and verified via calls.

The assessment also identified differences in networking strength across incubators, with very strong multi-level networking reported for NSRCEL-IIMB, SID-IISc, Social Alpha, MGoKB Manipal and Wadhwani Foundation, and more limited networking described for several emerging or district-level initiatives. Because the manuscript did not provide the underlying scores for these qualitative classifications, networking strength is presented descriptively rather than as a numerical rank.

Services received by ABI beneficiaries

Training was reported by all 52 beneficiaries (100%), followed by mentoring by 49 (94.23%), marketing assistance by 44 (84.62%), infrastructure support by 38 (73.08%) and funding support by 35 (67.31%) (Fig. 5). The service pattern indicates broad reach of human-capital and mentoring components, while direct financial support was less frequently reported. The 218 total responses reflect multiple responses rather than 218 independent beneficiaries.

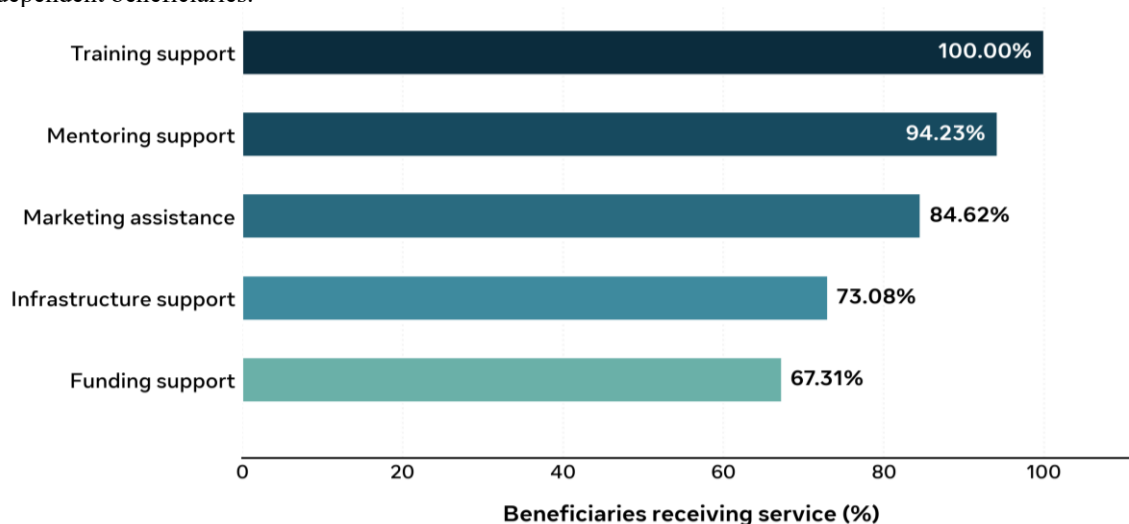


Fig. 5. Services received by ABI beneficiaries (n = 52; multiple responses).

Sources: Primary data collected from 52 beneficiaries

The service pattern indicates broad reach of human-capital and mentoring components, while direct financial support was less frequently reported. This suggests that incubation programmes are comparatively well positioned to deliver knowledge and advisory support but may face greater difficulty in facilitating the transition from supported venture to market-oriented enterprise.

Constraint severity among beneficiaries

The overall CSI was 67.20%. Financial constraints recorded the highest category index (74.80%), followed by market-linkage constraints (71.20%), enterprise-level constraints (69.50%), infrastructure and ecosystem constraints (66.80%), mentorship and institutional constraints (62.40%), and technical and training constraints (58.60%) (Fig. 6). Thus, the most pronounced constraints were located beyond basic training delivery, particularly in financing, market access and enterprise scaling.

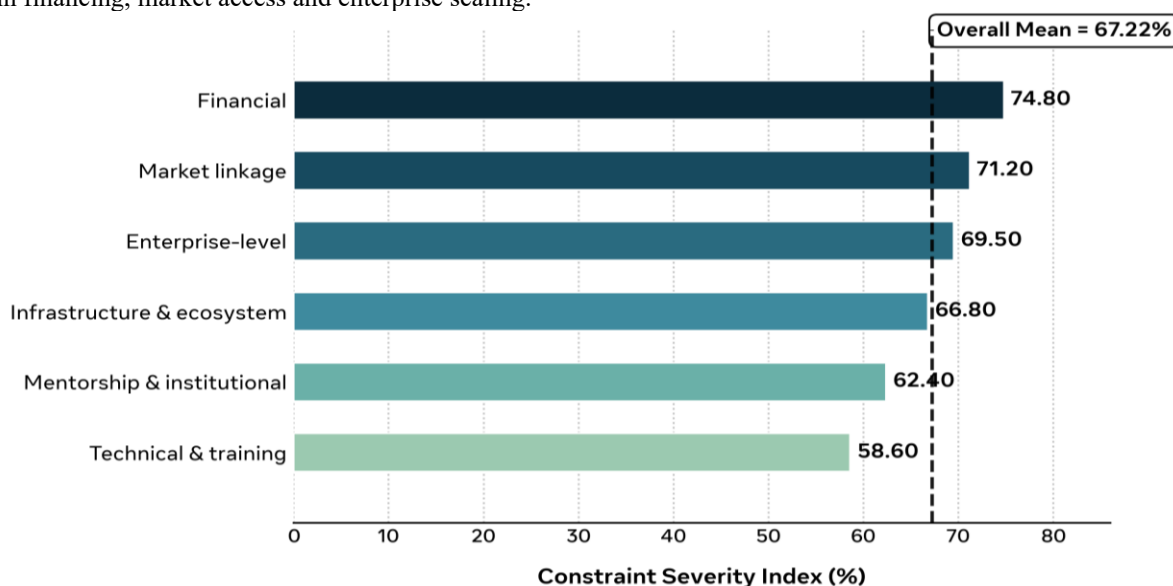


Fig. 6. Constraint Severity Index among ABI beneficiaries (n = 52). Dashed line denotes the mean of the six category indices.

Source: Primary data collected from 52 beneficiaries – Constraint severity calculated

Training and mentoring were the most widely received services, whereas financial and market-linkage constraints were the most severe beneficiary-reported constraints. Market access involves branding, customer discovery, distribution, procurement and repeat sales, which may require long-term engagement beyond the formal incubation period. The study also illustrates the importance of methodological transparency in ecosystem comparisons. Approximate venture counts, qualitative networking categories and composite star ratings were present in the original manuscript, but the underlying scoring and weighting information was not fully documented. For a peer-reviewed research article, reporting the raw criteria, scoring rules, weights and uncertainty is preferable to presenting an overall rank when the calculation cannot be reproduced. Accordingly, the revised manuscript emphasizes reproducible descriptive evidence and avoids an unsupported overall ranking of incubators.

LIMITATIONS

The ecosystem analysis is cross-sectional and reflects the status of incubators identified as functional in January 2025. Beneficiary data were based on 52 respondents and therefore provide an important but limited view of incubator experience. The study does not establish causal effects of incubation on startup survival, revenue, employment or innovation outcomes. Sectoral percentages may overlap because incubators can operate across multiple sectors. Approximate venture counts and qualitative networking classifications should be interpreted cautiously because their underlying reporting definitions were not provided in the source dataset. Future studies should use longitudinal venture-level indicators, standardized definitions of incubation outputs and documented weighting procedures for composite indices.

CONCLUSION

Karnataka has a diverse agri-business incubation ecosystem comprising public, non-profit, private and PPP/Section 8 institutions. The 61-incubator assessment shows broad engagement with agriculture, food processing and horticulture and a funding environment strongly supported by government grants. Among 52 beneficiaries, training and mentoring were the most frequently received services, whereas financial and market-linkage constraints showed the highest severity. Strengthening market integration, investment linkages and post-incubation support could complement the existing emphasis on training and mentoring. A future state-level

incubation framework would benefit from standardized reporting of incubated ventures, funding mobilized, enterprise survival, revenue, employment and market outcomes.

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Competing interests

The author declares that there are no competing interests.

DECLARATION

During the preparation of this manuscript, generative AI and AI-assisted tools were used for language editing, grammatical improvement, restructuring of text, and enhancement of clarity. AI-assisted tools were also used to support the preparation and visual presentation of certain figures based on the research data and tables generated.

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