

Table 9. Dominant thematic concentrations and innovation ecosystem orientations across pre-policy (2013–2018) and post-policy (2020–2025) analytical cases in the Philippines. Note: Thematic concentrations and representative focus areas were synthesized from the analytical cases included in the pre-policy and post-policy evidence bases. Themes represent recurring sectoral and functional emphases identified across the cases and are not mutually exclusive or intended as quantitative measures of theme frequency. The higher-level interpretations summarize the dominant structural, functional, and relational characteristics observed within each period. The classifications reflect the synthesized evidence base and should not be interpreted as direct measures of national innovation-system performance or as evidence of policy effectiveness.

Policy Periods	Dominant Themes / Sectors	Representative Focus Areas	Higher-Level Interpretation
Pre-Policy (2013–2018)	Agriculture, rural development, and extension systems	Cacao development, aquaculture, farmer clustering, fisheries management, agricultural extension	The pre-policy evidence concentrated heavily on sectoral development programs addressing agriculture, livelihoods, and local capacity building. Innovation activities were largely program-driven, extension-oriented, and implemented through localized government–university partnerships.
	Environmental governance and resource management	REDD+, marine conservation, mangrove rehabilitation, ecological engineering, biodiversity management	Environmental innovation was primarily governance- and sustainability-oriented, emphasizing community participation, conservation management, and resource monitoring rather than commercialization or technological scaling.
	Education, training, and workforce development	OJT systems, internships, practicum programs, tracer studies, curriculum evaluation	Universities functioned primarily as educators, trainers, and evaluators, reflecting an emphasis on human-capital formation and workforce alignment rather than entrepreneurial ecosystem development.
	Geospatial, mapping, and disaster governance systems	LiDAR mapping, GIS systems, flood hazard mapping, resource mapping	Innovation activity frequently centered on technical problem-solving and government-supported research implementation, particularly through geospatial technologies and decision-support systems.
	ICT-enabled monitoring and analytical systems	Blockchain medicine verification, poverty	Digital and analytical systems were represented in the pre-policy evidence but were less consistently connected to broader ecosystem integration, commercialization, and sustained cross-sector collaboration.

		analytics, biofouling monitoring	
	Overall Ecosystem Orientation: Program-driven, semi-operational Quadruple Helix configuration with uneven multisectoral integration		The pre-policy evidence reflected strong government–university coordination, with industry and community participation varying across sectors and cases. Innovation activities were largely structured through formal programs, project-based collaborations, and institution-specific arrangements, while more integrated four-helix configurations were documented in selected cases.
Post-Policy (2020–2025)	Digital governance and ICT-enabled implementation systems	eHealth systems, e-government platforms, biodiversity information systems, attendance monitoring, GIS-enabled agricultural surveillance	The post-policy evidence showed a stronger concentration of digitally mediated governance systems, integrated platforms, monitoring infrastructures, and ICT-enabled implementation mechanisms within institutionally coordinated programs.
	Innovation infrastructure and technopreneurship ecosystems	Business incubators, makerspaces, fabrication laboratories, technopreneurship hubs, innovation centers	Universities increasingly functioned as innovation intermediaries and institutional platforms, while government agencies supported funding, incubation, technical infrastructure, and ecosystem-building activities associated with entrepreneurship and commercialization.
	Social enterprise and inclusive innovation systems	MSMEs, livelihood enterprises, community-based enterprises, technology-transfer systems	Innovation activities were more visibly connected to enterprise development, commercialization, technology transfer, and socioeconomic objectives, including initiatives involving community-based and social enterprises.
	Regulatory, certification, and compliance infrastructures	Halal certification systems, blockchain verification systems	Governance-oriented innovation became more systematized through regulatory, accreditation, certification, traceability, and compliance mechanisms, with technology supporting institutional and administrative processes.
	Integrated agricultural and aquaculture innovation systems	Aquaculture commercialization, agricultural monitoring	Agricultural and aquaculture innovation increasingly combined technology deployment, monitoring, extension, enterprise development,

		and pest surveillance, cacao technology transfer and extension	and commercialization, although several interactions remained institutionally coordinated and government-mediated.
	Overall Ecosystem Orientation: Formally coordinated, government-led, university-supported semi-operational Quadruple Helix configuration		The post-policy evidence reflected stronger institutional coordination and more visible multisectoral participation, including industry involvement in commercialization, enterprise development, technology deployment, and operational functions. Community participation remained evident but varied from implementation, adoption, and feedback to service utilization and data provision. Thus, the evidence showed greater structural and functional integration and more visible Quadruple Helix configurations, while relational integration, reciprocal collaboration, shared governance, and sustained co-creation remained uneven across cases.