

Supplementary Table S8. Edge Attributes Representing Multisectoral Interactions in the Network Analysis (2013–2018). Note: This table presents the complete list of network edges and their attributes for the 20 analytical cases (2013–2018). Directed edges represent explicitly documented interactions between actors. Attributes include Source and Target (direction of interaction), Relationship (e.g., funding, training, data provision, workflow validation), and Weight, standardized on a three-point scale (1 = limited interaction; 2 = moderate collaboration; 3 = strong or sustained collaboration). Edge direction follows the documented flow of influence, knowledge exchange, funding, mentorship, or policy coordination, with reciprocal interactions included only when explicitly reported. Corresponding network visualizations are provided in the figures for each analytical case.

Case	Source	Target	Relationship	Weight
1 (SID-a90)	DOST-PCAARRD	WMSU	Funding; strategic oversight; STI policy alignment	3
	DOST-PCAARRD	JRMSU_T	Funding; strategic oversight; capacity-building support	3
	DOST-PCAARRD	JRMSU_K	Funding; strategic oversight; capacity-building support	3
	DOST-PCAARRD	JHCSC	Funding; strategic oversight; enterprise support	3
	DOST-PCAARRD	ZSCMST	Funding; strategic oversight; technical infrastructure support	3
	WMSU	Students	Training; enterprise-based learning; mentorship	2
	JRMSU_T	Students	Training; practicum supervision	2
	JRMSU_K	Students	Training; practicum supervision	2
	JHCSC	Students	Enterprise-based learning; mentorship	2
	ZSCMST	Students	Technical and entrepreneurial training	2
	AgriBiz	Students	Mentorship; market feedback; enterprise incubation support	2
	Farmers	Students	Practice hosting; real-world application of skills	2
	UPLB	WMSU	Benchmarking; exposure visits	1
	CLSU	WMSU	Benchmarking; exposure visits	1
	BicolU	WMSU	Benchmarking; exposure visits	1
	Students	Alumni	Employment outcome linkage; tracer study feedback	1
2 (SID-a133)	DTI	FarmerClusters	Market linkage facilitation	2
	DTI	InstBuy	Institutional buyer coordination	2
	DAR	Farmers	Agrarian beneficiary support	2
	DAR	FarmerClusters	Facilitation of farmer participation in clusters	2
	PAO	Farmers	Agricultural extension and technical guidance	2

	PAO	UPMin	Coordination on extension and technical activities	1
	MAO	FarmerClusters	Local coordination of farmer clusters	2
	MAO	Farmers	Extension services and training facilitation	2
	CAO	FarmerClusters	Technical and protected cropping support	2
	UPMin	Farmers	Farmer training and capacity building	2
	UPMin	FarmerClusters	Technical advising on production planning and marketing	2
	UPMin	Leaders	Monitoring of crop performance and quality compliance	2
	UPMin-UPSTREAM	UPMin	Applied research and technical support	2
	UPMin-UPSTREAM	Farmers	Monitoring and advisory support for production systems	2
	InstBuy	FarmerClusters	Quality, volume, and delivery specification setting	1
	LocalMarket	FarmerClusters	Absorption of vegetable production output	1
	MFI	Farmers	Financial support and revolving fund access	2
	CRS	Farmers	Funding and technical guidance support	3
	CRS	FarmerClusters	Monitoring framework support	2
	LFPI	Farmers	Capacity-building and sustainable agriculture support	2
	Leaders	FarmerClusters	Coordination and compliance monitoring	2
3 (SID-a177)	CHED	LPU	Regulation and accreditation of practicum programs	3
	CHED	Students	Oversight of practicum standards and requirements	3
	DOT	Hotels	Accreditation and standards guidance	2
	DOT	Restos	Accreditation and standards guidance	2
	DOT	TravelAg	Accreditation and standards guidance	2
	ADB	LPU	Support for skills training initiatives	2
	CIDA	LPU	Support for skills development initiatives	2
	LPU	Students	Delivery of pre-practicum training and orientation	2
	LPU	Faculty	Coordination of practicum supervision and monitoring	2
	Faculty	Students	Supervision and evaluation of practicum performance	2
	Hotels	Students	Hosting and mentorship for practicum training	2
	Restos	Students	Hosting and operational training	2
	TravelAg	Students	Practicum hosting and industry exposure	1
	ServEst	Students	Operational training environment provision	1

	Hosp	Students	Alternative practicum experiential learning	1
	CallCtr	Students	Customer service and communication skills training	1
	EventsOrg	Students	Events management practicum exposure	1
	ExClubs	Students	Hospitality service practicum training	1
	ProfAssoc	LPU	Industry-academe linkage facilitation	1
	ProfAssoc	Students	Monitoring of practicum quality	1
	ClusterCoord	Students	Coordination of practicum placements	1
	ClusterCoord	LPU	Support for matching students with host institutions	1
4 (SID-a180)	DOST	UPD	Funding and program oversight	3
	DOST	SUCs_HEIs	Program support and coordination	3
	DOST-PCIEERD	UPD	Program administration and coordination	3
	DOST-PCIEERD	SUCs_HEIs	Coordination of participating universities	3
	DA	UPD	Data provision and sectoral collaboration	2
	DOE	UPD	Renewable energy data use and validation	2
	DENR	UPD	Environmental and forest data validation	2
	NIA	UPD	Hydrologic data user and validation	2
	NWRB	UPD	Water resource data use and planning	2
	Municipal	UPD	Field validation and local map utilization	2
	City	UPD	Planning and monitoring support	2
	SUCs_HEIs	UPD	Regional planning collaboration	2
	UPD	SUCs_HEIs	Technical training and LiDAR protocol implementation	2
	UPD	ResearchTeam	Training and workflow implementation	2
	SUCs_HEIs	ResearchTeam	Field validation and data processing	2
	GIZ	UPD	Technical support and monitoring framework	2
	WWF	UPD	Environmental validation and stakeholder support	1
	PEF	UPD	Biodiversity monitoring and data contribution	1
	ResearchTeam	UPD	Data provision and feedback	1
	WWF	ResearchTeam	Field monitoring support	1
	PEF	ResearchTeam	Data validation support	1
	DOST-PCIEERD	CSU	Policy enabling and oversight	2

5 (SID-a12)	DOST-PCIEERD	CSU_PhilLiDAR	Access to national LiDAR datasets and program facilitation	2
	DOST	CSU	Regional coordination and partnership facilitation	2
	DOST	CSU_PhilLiDAR	Support for capacity-building and dataset access	2
	PhilLiDAR1	CSU_PhilLiDAR	Provision of LiDAR data	3
	LGUs	CSU_PhilLiDAR	Local context provision and end-user input	2
	MDRRMO	CSU_PhilLiDAR	Data provision and system operation training participation	2
	CSU	MDRRMO	Training of LGU personnel; system implementation	2
	CSU_PhilLiDAR	MDRRMO	Delivery of flood hazard maps and Flood EViDEns application	2
	Households	MDRRMO	Provision of household-level socio-economic data	1
	Households	CSU_PhilLiDAR	Indirect beneficiary of LiDAR-based disaster management outputs	1
6 (SID-a23)	ASEAN	PortAuth	Regional coordination and oversight	3
	ASEAN	NUS	Funding support for project activities	2
	SCMSAT	PortAuth	Project coordination and facilitation	2
	SCMSAT	NUS	Funding facilitation and coordination	2
	PortAuth	NUS	Access provision and logistical support	2
	PortAuth	CSIR	Access provision and logistical support	2
	PortAuth	UP	Access provision and logistical support	2
	PortSafety	PortAuth	Safety oversight and authorization	1
	NUS	PortStaff	Training and technical supervision	2
	CSIR	PortStaff	Training and field guidance	2
	UP	PortStaff	Training and monitoring support	2
7 (SID-a24)	REDD	PNRPS	International policy framework guiding national strategy	3
	REDD	NatGovs_Various	International policy guidance for national program design	3
	PNRPS	NIPAS	Regulation and enforcement support	3
	PNRPS	CBFM	Policy enablement and coordination	3
	CADT	Indig	Legal recognition supporting customary forest governance	2
	NatGovs_Various	ProtForest	Conservation enforcement and regulation	3
	NatGovs_Various	LocalComm	Program implementation coordination	2
	NatGovs_Various	Indig	Policy implementation support	2
	ProtForest	CustInd	Enforcement and guidance support	2

	SUCs_HEIs	LocalComm	Evaluation and analytical support	1
	SUCs_HEIs	Indig	Evaluation and analytical support	1
	SUCs_HEIs	Betagi	Evaluation and analytical support	1
	SUCs_HEIs	CustInd	Evaluation and analytical support	1
	Indust	LocalComm	Pressure / extractive influence	1
	Indust	Indig	Pressure / extractive influence	1
	Indust	Betagi	Pressure / extractive influence	1
	Indust	CustInd	Pressure / extractive influence	1
8 (SID-a29)	PhilGov	PNU	Policy enabling and oversight of teacher education program	3
	PNU	PNM	Deployment of OJT students; coordination and training	2
	PNU	PNRI	Deployment of OJT students; laboratory supervision	2
	PNU	BFAR	Deployment of OJT students; applied science training	2
	PNU	RTU	Coordination and hosting of laboratory-based OJT	2
	PNU	Faculty	Program monitoring and student supervision	2
	PNU	Students	Training, practicum, and evaluation	2
	PNM	Students	Supervision and provision of laboratory/field experience	2
	PNRI	Students	Technical supervision and lab-based training	2
	BFAR	Students	Field- and lab-based applied science training	2
	RTU	Students	Laboratory supervision and OJT facilitation	2
	Faculty	Students	Academic supervision and monitoring	2
	UNESCO	PhilGov	Normative policy reference for teacher quality mandates	1
	UNESCO	PNU	Reference framework for program design	1
9 (SID-a33)	CHED	SUCs_HEIs	Provision of standardized tracer study instrument; policy guidance	1
	SUCs_HEIs	Faculty	Administration of survey; data collection and evaluation	2
	SUCs_HEIs	Alumni	Survey deployment; collection of feedback and outcome data	2
	Faculty	Alumni	Survey administration; interpretation of alumni responses	2
10 (SID-a34)	BFAR	BFARMC	Technical and paralegal training; fingerling provision; operational support	2
	LLDA	BFARMC	Institutional support and lake management oversight	3
	LGUs	BFARMC	Funding through fish pen fees; policy support and coordination	3

	LGUs	BFARMC	Local governance oversight and coordination	2
	Barangay	BFARMC	Local governance oversight and coordination	2
	KeyInf	BFARMC	Qualitative monitoring and reporting	2
11 (SID-a47)	FDA	DrugManu	Regulatory oversight; verification and credential issuance	3
	FDA	Distributors	Regulatory oversight; verification of supply chain transactions	3
	FDA	PHARM	Regulatory oversight; verification and system supervision	3
	NIH	FDA	Research input and standards expertise for system design	2
	UP	FDA	Software development support; standards and system integration	2
	DrugManu	FDA	Product data submission and compliance verification	2
	Distributors	FDA	Transaction record submission for verification	2
	PHARM	FDA	Transaction and inventory data submission; consumer verification support	2
	CONS	FDA	Anomaly reporting and authenticity verification feedback	1
12 (SID-a55)	Households	PSA	Provision of household-level socio-economic survey data	1
	PSA	ResearchTeam	Provision of standardized APIS and FIES datasets and statistical standards	1
	Households	ResearchTeam	Participation as data subjects in socio-economic analysis	1
13 (SID-a58)	BFAR	CBOs	Technical assistance; legal support; monitoring	2
	DENR	CBOs	Environmental guidance; mangrove and marine protected area support	2
	DOLE	CBOs	Support for alternative livelihood projects	2
	CENRO	CBOs	Local technical assistance; monitoring; compliance support	2
	LGUs	CBOs	Local policy endorsement; resource allocation; program facilitation	3
	DolePhilUSAID	CBOs	Financial support and technical assistance	3
	CommVol	CBOs	Participation in conservation, clean-up, and livelihood activities	2
	CBOs	MSU-GenSan	Provision of information through interviews and documentation of activities	1
	MSU-GenSan	CBOs	Documentation and analysis of community-based initiatives	1
14 (SID-a59)	BFAR	Growers	Regulatory oversight; issuance of permits and access rights for aquaculture activities	3
	LGUs	POs	Coordination with people's organizations; facilitation of access to culture areas and local services	2

	LGUs	NGOs	Coordination for project support and local facilitation	2
	SEAFDEC	Growers	Technical training on mudcrab nursery operations and pond management	2
	SEAFDEC	POs	Technical guidance and coordination for nursery demonstration and implementation	2
	SEAFDEC	NGOs	Coordination for training delivery and project implementation support	2
	AcadPartners	SEAFDEC	Provision of technical expertise and socioeconomic analysis support	1
	POs	Growers	Organization of participants; coordination of pond access; loan mediation	2
	NGOs	Growers	Facilitation of training logistics; resource and financial access support	2
15 (SID-a69)	DOST	UPD	Funding provision; strategic direction; institutional oversight	3
	DOST-PCIEERD	UPD	Program funding administration; supervision of system development; capacity building support	3
	HokkaidoU	UPD	Technical collaboration and knowledge support for system design	2
	UPD	GenPub	Distribution of satellite data products via open access subsystem	1
	UPD	GISPractitioners	Provision of processed Earth observation data for use	1
	UPD	DisasterAgencies	Provision of satellite-derived data for disaster risk reduction use	1
	UPD	EnvGISAgencies	Provision of satellite data for environmental monitoring and GIS applications	1
16 (SID-a71)	CTICFF	MMAF	Regional policy coordination and integration of MPA networks	3
	CTICFF	DEC	Regional coordination and policy guidance for MPA networks	3
	MMAF	LGUs	Regulatory approval and integration of MPAs into national strategies	3
	DEC	LGUs	Environmental oversight and approval of MPA implementation	3
	LGUs	Barangay	Delegation of local enforcement and participatory zoning responsibilities	2
	UP	LGUs	Provision of ecological connectivity and larval dispersal modeling	2
	UQ	LGUs	Technical support for systematic conservation planning	2
	AcadPartners	LGUs	Biodiversity assessment and zoning validation support	2
	LGUs	LocalComm	Participatory governance and coordination of MPA management	2
	LocalComm	Indig	Integration of customary tenure and traditional ecological knowledge	2
	NGOs	LocalComm	Capacity building, facilitation, and technical support	2
	LGUs	FisheriesOps	Enforcement of zoning and conservation rules	1

	LGUs	TourismOps	Regulation of tourism activities within MPA zones	1
17 (SID-a76)	LEGATO	ResearchTeam	Project coordination and research task assignment	2
	LEGATO	Farmers	Facilitation of participatory research and ecological engineering activities	2
	ResearchTeam	Farmers	Conduct of interviews, field experiments, and participatory studies	2
	MAO	Farmers	Facilitation of field-level implementation and community engagement	2
	LGUs	Farmers	Technical advice, training support, and monitoring	2
	Barangay	LEGATO	Approval and coordination of local project activities	3
	PartyLead_VN	LEGATO	Approval of project activities and alignment with provincial priorities	3
	ProvAgri_VN	Farmers	Implementation support and monitoring of ecological engineering practices	2
	LocalComm	Farmers	Coordination of community participation and field activities	2
	OtherStake	LEGATO	Consultation feedback and mediation support	1
	AgriBiz	Farmers	Indirect interaction as market stakeholders	1
	PrivateStake	LEGATO	Observation with minimal interaction	1
18 (SID-a93)	DOST-PCIEERD	DLSU	Project funding and research oversight	3
	DOST-PCIEERD	ResearchTeam	Research supervision and strategic alignment	3
	DLSU	ResearchTeam	Coordination of research activities and analysis tasks	2
	ResearchTeam	CarUsers	Administration of stated preference surveys	2
	CarUsers	DLSU	Provision of behavioral data for transport modeling	1
	DOTr	DLSU	Policy context provision and reception of analytical outputs	1
	MMDA	DLSU	Urban mobility framework input and policy context	1
	JICA-MUCEP	DLSU	Contextual alignment with broader transport cooperation frameworks	1
19 (SID-a99)	CHED	PSU	Mandate of internship/OJT requirements and regulatory policy context	3
	PSU	Faculty	Coordination of research activities and methodological oversight	2
	Faculty	ITHosts	Administration of skills perception and evaluation surveys	2
	ITHosts	PSU	Provision of skill perception and evaluation data	1
	Faculty	Students	Administration of student skills assessment surveys	2
	Students	PSU	Provision of student skills assessment data	1
	DOST-PCIEERD	UPD	Funded workflow development and provide strategic guidance	3

20 (SID-a276)	DOST-PCIEERD	SUCs_HEIs	Oversight and coordination for workflow implementation	3
	DOST-PCIEERD	ResearchTeam	Oversight and strategic guidance for workflow adoption	3
	DA	UPD	Provide secondary datasets and support training	2
	DA	SUCs_HEIs	Provide datasets; assist in workflow implementation	2
	DENR	UPD	Provide datasets; support workflow adoption	2
	DENR	SUCs_HEIs	Provide data; assist in workflow implementation	2
	DOE	UPD	Provide renewable energy data; support workflow adoption	2
	DOE	SUCs_HEIs	Provide data; assist in workflow implementation	2
	NWRC	UPD	Provide hydrological data; support workflow adoption	2
	NWRC	SUCs_HEIs	Provide data; assist in workflow implementation	2
	LGUs	UPD	Facilitate field data collection and validation	2
	LGUs	SUCs_HEIs	Facilitate site-level implementation and data collection	2
	UPD	ResearchTeam	Train and mentor; lead workflow implementation	2
	SUCs_HEIs	ResearchTeam	Participate in workflow implementation and field data collection	2
	UPD	LocalComm	Indirect facilitation via LGUs and DOST	1
	SUCs_HEIs	LocalComm	Indirect facilitation via LGUs and DOST	1
	LGUs	LocalComm	Facilitate access and data collection; indirectly benefit	2