| SDG 17 | INDICATOR 17.2.4

INTERNATIONAL COLLABORATION, COMPARATIVE APPROACHES & BEST PRACTICE

Koneru Lakshmaiah Education Foundation (KLEF), Deemed to be University

INDICATOR	REPORT FOCUS
17.2.4 — Does the university, through international collaboration and research, review comparative approaches and develop international best practice on tackling the SDGs?	Global benchmarking • comparative research • adaptation of proven methods • joint research • institutional learning • SDG-oriented solutions

1. Executive Summary

KLEF engages in international academic and research partnerships that provide opportunities to compare research methods, institutional practices and solutions developed in different national contexts. The strongest examples identified include joint space–Earth environmental research with Nagoya University's ISEE in Japan; participation in the global gLOWCOST cosmic-ray detector network led by Georgia State University, USA; academic and research staff exchange and student mobility with UCSI University, Malaysia; and a long-standing health research collaboration between KLE University and Thomas Jefferson University, USA.

These partnerships expose KLEF researchers and students to comparative approaches in environmental observation, low-cost scientific instrumentation, international data networks, health research, clinical innovation, academic mobility and quality assurance. KLEF's research governance framework supports interdisciplinary research, external research funding, research infrastructure, faculty exchange, community-oriented research and dissemination of knowledge.

The evidence demonstrates active international collaboration and identifiable mechanisms for comparative learning. It also provides a basis for developing and transferring good practices to the Indian context. To substantiate the strongest possible interpretation of 'develop international best practice', KLEF should maintain documented comparative reviews, jointly agreed protocols, adaptation records, implementation evidence and outcome evaluations. The report therefore distinguishes documented partnership activities from recommended institutional practices that can be formalised further.

DIMENSION	EVIDENCE / OUTCOME
International research collaboration	ISEE–Nagoya University; Georgia State University / gLOWCOST; UCSI University; Thomas Jefferson University health research collaboration
Comparative approaches	Environmental observation and modelling; distributed low-cost sensors; health research and clinical innovation; international academic mobility and quality assurance
Institutional mechanisms	Research Board; research promotion policy; interdisciplinary projects; faculty and student exchange; international workshops and joint research
SDG relevance	SDG 3, 4, 9, 10, 13 and 17, with additional relevance depending on each project's research outcomes

2. Institutional Framework for International Benchmarking and Research

KLEF's Research Promotion Policy establishes a university-level Research Board headed by the Vice-Chancellor to facilitate and monitor research activities, take strategic decisions and initiate corrective actions. Research is organised across academic research, sponsored research, extension and extramural research, centres of excellence, consultancy and intellectual property/innovation. This structure provides a governance platform for identifying research priorities, reviewing progress and translating research into institutional and societal outcomes.

The policy encourages interdisciplinary research, external and internal project funding, research infrastructure, recognition by national and international agencies, collaboration with industry and corporate bodies, and research groups in priority areas. It also supports community-specific problem solving, outreach programmes, faculty exchange and knowledge dissemination through workshops and conferences. These provisions are relevant to comparative learning because they create channels for examining external approaches and adapting suitable methods to local needs.

KLEF's strategic plan identifies national and international collaborations, international faculty collaborative work, faculty sharing, faculty exchange, foreign-university collaborations and collaborative academic programmes as institutional priorities. The university's international partnership framework includes faculty and student exchange, joint research and academic cooperation.

INSTITUTIONAL MECHANISM	ROLE IN COMPARATIVE LEARNING
Research Board and R&D governance	Review research priorities, monitor progress, identify corrective actions and support cross-disciplinary projects.
Research Promotion Policy	Encourage external funding, international agency recognition, interdisciplinary work and research infrastructure.
Faculty / student exchange	Enable direct exposure to different teaching, research, laboratory and institutional practices.
International joint research	Compare datasets, methods, technologies and results across countries and research environments.
Community and extension research	Adapt relevant global solutions to local social, environmental and economic needs.

3. Comparative Case Study I — Nagoya University, Japan: Integrated Space–Earth Environmental Research

3.1 International research model

The Institute for Space–Earth Environmental Research (ISEE), Nagoya University, integrates space science and Earth science to study the relationships among the Earth, Sun and cosmic space. It conducts joint research using ground, ocean, aircraft and satellite observations, laboratory experiments, data analysis and numerical simulations. The institute also supports international workshops, joint research with invited foreign researchers, graduate-student research and travel support, international technical exchange and database management. ISEE was certified as an International Joint Usage/Research Center from FY2025.

3.2 KLEF engagement and comparative learning

KLEF faculty participation in ISEE joint research provides a practical route for comparing scientific approaches, observation systems and analytical methods used by international research teams. The collaboration on long-term GNSS Total Electron Content observations and extreme ionospheric events demonstrates how regional observations from India and Japan can be examined within a wider global context. This kind of comparative research strengthens understanding of how environmental and space-weather phenomena vary across geographical regions and how shared methods can improve reliability.

The international model is especially valuable because it combines multiple observation platforms, shared research infrastructure, interdisciplinary expertise, international workshops, joint analysis and formal project reporting. KLEF can adapt these practices to other SDG themes by developing joint protocols for energy, water, climate, agriculture and disaster-resilience research.

COMPARATIVE PRACTICE OBSERVED	POTENTIAL KLEF APPLICATION
Multi-source observation: ground, ocean, aircraft and satellite data	Combine local measurements, remote sensing and open international datasets for climate, agriculture, water and disaster studies.
Joint data analysis and numerical simulation	Use common analytical protocols and cross-country validation to compare Indian and international results.
International workshops and technical exchange	Organise thematic workshops with partner institutions to compare methods and establish shared research questions.
Graduate-student mobility and research support	Provide joint supervision, research visits and shared laboratory experiences.
Formal project proposals and reports	Use milestone-based project plans, data management plans and joint outcome reporting.

4. Comparative Case Study II — Georgia State University, USA: gLOWCOST Global Cosmic-Ray Observation Network

KLEF's Department of Electronics and Communication Engineering formalised an MoU with Georgia State University (GSU), USA. Under this collaboration, a cosmic-ray muon detector was installed at KLEF's Space Technology and Atmospheric Science Laboratory and connected to the global gLOWCOST network. The network is led from Georgia State University and is designed around low-cost cosmic-ray detectors, shared observations and participation by universities and schools across countries.

The gLOWCOST approach demonstrates a comparative model for distributed scientific measurement: relatively accessible instruments are deployed at multiple locations, station metadata and geographic coverage are important to interpretation, and observations from many sites are combined to study space and terrestrial weather. The network's public description emphasises open data, accessible instrumentation, citizen-science participation and the scientific value of increasing geographic coverage.

For KLEF, this partnership offers a practical example of learning from an international model of affordable research infrastructure and adapting it to an Indian university laboratory. It also provides a template for other distributed measurement networks, including air quality, urban heat, rainfall, solar radiation, water quality and biodiversity monitoring.

GLOBAL APPROACH	LESSON FOR KLEF / SDG APPLICATION
Low-cost, replicable instruments	Develop affordable monitoring kits for local environmental and community data collection.
Distributed stations and comparable metadata	Adopt standard protocols for calibration, location, timing, units and quality control.
Open and shared observations	Promote interoperable datasets, clear access rules and responsible data sharing.
International network interpretation	Compare local measurements with partner-country data to identify regional patterns and transferable solutions.

Citizen-science and student involvement	Engage students and communities in measurement, data literacy and evidence-based action.

5. Comparative Case Study III — UCSI University, Malaysia: Academic Mobility and Quality Assurance

UCSI University and KLEF signed a Memorandum of Understanding on 9 January 2025 to foster academic cooperation. The agreement provides for exchange of academic and research staff and student mobility programmes. The partner announcement also identifies compliance with Malaysian Qualifications Agency (MQA) and Ministry of Education standards as part of the cooperation framework.

This partnership provides a route for comparing academic delivery, staff development, student mobility and quality assurance practices across the Indian and Malaysian higher-education contexts. Such comparison is relevant to SDG 4 (Quality Education) and SDG 17 (Partnerships for the Goals). It can help KLEF examine how learning outcomes, programme review, academic mobility, research supervision and quality assurance are implemented in a different national regulatory environment.



COMPARATIVE DIMENSION	PRACTICAL LEARNING OPPORTUNITY
Academic staff exchange	Compare teaching strategies, assessment design, curriculum delivery and faculty development.
Research staff interaction	Identify complementary expertise and opportunities for co-authored research.
Student mobility	Compare student support, experiential learning, intercultural learning and academic recognition.
Quality assurance	Review how programme standards and institutional expectations are operationalised under different national frameworks.

6. Wider International Academic and Research Partnerships

KLEF's internationalisation activities include foreign-university collaborations, faculty and student exchange, semester-abroad opportunities, joint research and collaborative academic programmes. The institution's public collaboration records identify partnerships and academic linkages with universities in the United States, Japan, Malaysia, Thailand and Romania, among others. The university's participation in the Indo-US Council for Engineering Education (IUCEE) has also supported international workshops, faculty development and teaching by visiting international experts.

These mechanisms allow KLEF to review international approaches to curriculum design, engineering education, research supervision, innovation, laboratory practice and industry engagement. They provide the institutional channels needed to compare approaches and adapt those that are appropriate to the university's academic, regional and societal context.

- International visiting faculty and expert-led courses can support comparative teaching practice and curriculum enhancement.
- Joint conferences and research workshops can bring researchers together to discuss methods, evidence and implementation challenges.
- Student and faculty mobility can support experiential learning and cross-cultural research collaboration.

- Joint research and co-supervision can build shared standards for research design, data quality, publication and responsible innovation.

7. Comparative Review: International Approaches and Lessons for SDG Action

The four collaboration examples show complementary approaches to tackling sustainable-development challenges. They are not identical projects; each contributes a different element of international good practice. Their combined lessons can inform a university-wide approach to comparative research and the adaptation of solutions.

PARTNER / MODEL	APPROACH REVIEWED	TRANSFERABLE BEST-PRACTICE LESSON	SDG LINK
ISEE, Nagoya University	Interdisciplinary space–Earth research; multi-platform observations; joint analysis; international workshops and student support.	Use common research protocols, multi-source evidence, cross-country validation and formal project reporting.	9, 13, 17
Georgia State University / gLOWCOST	Low-cost distributed detectors; multi-location observations; shared network data; student and citizen-science engagement.	Develop affordable, replicable monitoring systems with standard metadata, quality control and open-data principles.	4, 9, 13, 17
UCSI University, Malaysia	Academic and research staff exchange; student mobility; quality-assurance awareness across national systems.	Benchmark curriculum, learning outcomes, mobility support and programme quality across partner institutions.	4, 17

8. KLEF Best-Practice Framework for SDG-Oriented International Collaboration

Building on the comparative lessons above, KLEF can consolidate its international partnerships into a repeatable institutional framework. The following framework translates partnership experience into a practical cycle for reviewing global approaches, adapting them to local needs and evaluating their impact.

STAGE	RECOMMENDED UNIVERSITY PRACTICE	EXPECTED OUTPUT
1. Identify the SDG challenge	Select a defined SDG target or local problem with a clear rationale and stakeholder need.	SDG challenge statement and baseline.
2. Select international comparators	Identify partner institutions or research networks with relevant expertise, methods or implementation experience.	Comparative partner and practice map.
3. Conduct structured review	Compare research methods, governance, technology, costs, data standards, inclusion and implementation context.	Comparative review report and lessons learned.
4. Co-design adaptation	Develop a joint protocol with partner researchers and local stakeholders; identify what can and cannot be transferred.	Joint implementation plan and adaptation rationale.
5. Pilot and validate	Test the adapted approach in a defined campus, community, laboratory or field setting.	Pilot data, validation results and user feedback.
6. Evaluate outcomes	Measure effectiveness, cost, scalability, equity, environmental impact and unintended effects.	Outcome evaluation against SDG targets.
7. Publish and disseminate	Prepare joint publications, datasets, policy briefs, workshops and training resources.	Open or appropriately governed outputs and shared learning.
8. Institutionalise best practice	Integrate validated practices into policy, curriculum, research protocols, centres and community programmes.	Approved guidelines, repeatable protocols and annual review.

9. Priority Areas for Comparative SDG Research

SDG AREA	INTERNATIONAL COMPARISON OPPORTUNITY	POTENTIAL KLEF OUTPUT
SDG 3 — Good Health and Well-being	Compare public-health interventions, clinical technology, digital health and population-health methods with international partners.	Validated local health interventions, joint studies and evidence briefs.
SDG 4 — Quality Education	Compare international teaching practice, assessment, faculty development, mobility and digital learning models.	Joint courses, exchange modules, teaching guidelines and learning-outcome evaluations.
SDG 6 — Clean Water and Sanitation	Compare water-quality sensing, wastewater treatment, reuse and community water-governance approaches.	Field-tested water monitoring and treatment protocols.
SDG 7 — Affordable and Clean Energy	Compare renewable integration, energy efficiency, storage, smart-grid and demand-management approaches.	Demonstration projects and comparative energy-performance reports.
SDG 9 — Industry, Innovation and Infrastructure	Compare low-cost research instruments, resilient infrastructure, digital technologies and technology-transfer models.	Replicable monitoring systems, prototypes and joint technology development.
SDG 11 — Sustainable Cities and	Compare urban mobility, climate resilience, waste management,	Local pilot projects and evidence-based city/community

Communities	air quality and smart-city methods.	recommendations.
SDG 13 — Climate Action	Compare climate observations, satellite data, extreme-event analysis, forecasting and adaptation practices.	Joint climate-risk assessments, datasets and adaptation guidance.
SDG 17 — Partnerships for the Goals	Compare governance models for joint research, shared data, mobility, co-funding and long-term institutional networks.	Sustained partnership agreements, shared work plans and joint outputs.

10. Overall Assessment

KLEF's international research partnerships provide substantive opportunities to review and learn from comparative approaches to sustainable development. The ISEE collaboration illustrates international interdisciplinary research based on multi-platform observations and joint analysis. The Georgia State University partnership connects KLEF to a global distributed measurement network and demonstrates the value of affordable instrumentation, shared data and broad participation.

Supported by its Research Board, research promotion policy, international exchange mechanisms and interdisciplinary research environment, KLEF has an institutional foundation for benchmarking global practices and adapting suitable approaches to local priorities. The partnerships therefore contribute to a cycle of international knowledge exchange, comparative research, local adaptation and dissemination of SDG-relevant solutions.

11. Suggested Institutional Response for Indicator 17.2.4

Yes. Koneru Lakshmaiah Education Foundation (KLEF), Deemed to be University, actively uses international collaboration and research to review comparative approaches and strengthen good practices for addressing the Sustainable Development Goals. Through its research engagement with the Institute for Space–Earth Environmental Research (ISEE), Nagoya University, Japan, KLEF faculty work within an international framework that integrates ground, ocean, aircraft and satellite observations, laboratory experiments, data analysis and numerical modelling. The KLEF–Georgia State University collaboration, through the global gLOWCOST network, provides exposure to a distributed, low-cost scientific monitoring model based on shared observations and international data comparison. The MoU with UCSI University, Malaysia, supports academic and research staff exchange and student mobility, enabling comparison of educational practices and quality-assurance approaches. The collaboration between KLE University and Thomas Jefferson University, USA, demonstrates the value of bilateral health research, population-health evidence, clinical innovation and technology assessment for application in the Indian context. These partnerships, supported by KLEF's Research Board and Research Promotion Policy, create opportunities to benchmark international methods, adapt suitable practices to local needs, and disseminate research outcomes through joint projects, publications, academic exchange and scientific forums. The university's comparative-learning approach is particularly relevant to SDGs 3, 4, 9, 13 and 17.

12. References

1. KLEF Research Promotion Policy — Research Board, interdisciplinary research, sponsored research, extension, faculty exchange and centres of excellence. Open source
2. KLEF functional MoUs / linkages record — activities and purposes of institutional collaborations. Open source
3. UCSI University — UCSI University and KLEF India sign collaborative MoU, 9 January 2025. Open source