SDG 17

PARTNERSHIPS FOR THE GOALS

THE IMPACT RANKINGS EVIDENCE REPORT

Indicator 17.2.3

International Collaboration on Gathering or Measuring Data for the SDGs

University of Bahrain

2024-2025

Executive summary

This report documents the University of Bahrain's (UoB) active participation in international scientific research, global data gathering, and cross-border measurement initiatives during the 2024–2025 academic year, demonstrating alignment with Times Higher Education (THE) Impact Rankings Indicator 17.2.3.

The University of Bahrain actively advances SDG 17 – Partnerships for the Goals by fostering strong international collaboration, multi-stakeholder data sharing, and cross-border scientific cooperation with UN agencies, global research institutions, and international technology hubs. Through strategic data-sharing agreements, joint research infrastructure, and participation in global networks, the university ensures that academic research, computational measurement, and health evidence are aligned with the United Nations Sustainable Development Goals.

The evidence presented highlights major international collaborations across key data and research domains:

- **International Scientific Data Collaboration with CERN:** UoB students and faculty engaged in high-performance computing, particle-physics data processing, and GPU performance auto-tuning through CERN's Patatrack Hackathon, the CERN Summer Student Program, and the CMS experiment utilizing the BENEFIT Advanced AI & Computing Lab infrastructure. Peer-reviewed research outcomes were published via the CERN Repository and *EPJ Web of Conferences* (CHEP 2024).
- **Global Health-Workforce and Institutional Assessment Data via WHO:** Through sustained partnership with the World Health Organization (WHO) and membership in the WHO Global Network of Collaborating Centres for Nursing and Midwifery, UoB contributed national health-workforce evidence, participated in regional strategy consultations, and completed an external WHO evaluation toward becoming a certified Health-Promoting University.
- **Cross-Border Nanotechnology & Medical Research:** UoB collaborated internationally with Alexandria University and Harvard University's Wyss Institute for Biologically Inspired Engineering, sharing specialized data-characterization infrastructure and methodologies to measure the efficacy of nanoparticle-based drug delivery for cancer treatment.

Impact Highlights:

- **Multiple CERN engagements:** Direct student and researcher participation in major data-intensive CERN initiatives, producing peer-reviewed computational outputs.

- **WHO institutional evaluation:** Successful external field assessment by a WHO evaluation team under the Health-Promoting University framework.
- **Cross-border scientific infrastructure sharing:** Collaborative data measurement and characterization leveraging advanced microscopy and analytics facilities with international partners.

Together, these documented initiatives provide comprehensive institutional evidence that the University of Bahrain actively participates in international collaboration on gathering and measuring data for the SDGs, fulfilling all requirements for Indicator 17.2.3

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1. International Scientific Data Collaboration through CERN's Patatrack Hackathon



In March 2025, University of Bahrain Computer Engineering student Abdulrahman Almarzouqi participated in the five-day Patatrack Hackathon at CERN in Switzerland, engaging directly in CERN's international, data-intensive scientific research environment.

Working alongside CERN developers, physicists, and software specialists, the UOB student contributed to the development of high-performance solutions for processing particle-physics data. The activity included collaborative brainstorming and debugging to explore methods for accelerating CERN software modules using FPGA processors, as well as the use of Intel oneAPI tools to improve processing efficiency and performance portability.

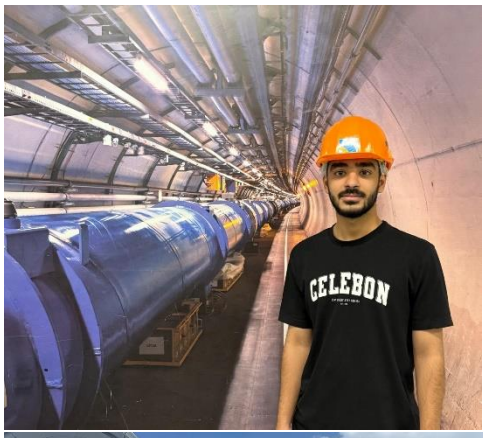
This participation demonstrates active international scientific data collaboration, extending beyond academic exchange into practical work on methods for processing, analyzing, and managing complex scientific datasets. By participating in a multinational research environment, UOB strengthened student capacity in scientific data processing, high-performance computing, collaborative analysis, and data-intensive research.

This initiative supports SDG 17.2.3 (International Collaboration on Gathering or Measuring Data for the SDGs) by enabling direct UOB participation in an international scientific collaboration focused on data processing, analysis, computational methods, and shared research infrastructure.

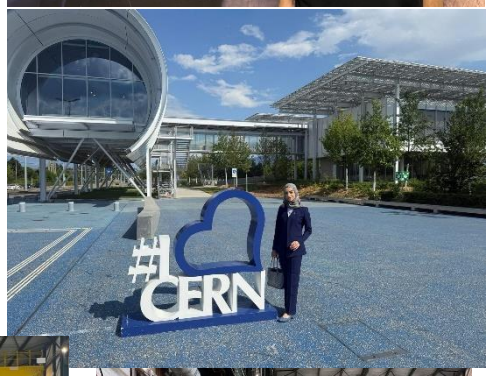
Evidence Source:
https://www.uob.edu.bh/uob-student-participates-in-cerns-data-processing-hackathon/

2. International Data and Research Collaboration through the CERN Summer Student Program

In September 2025, University of Bahrain students Nibras Jafil and Ali Ridha Al-Adraj participated in the 2025 CERN Summer Student Program in Switzerland, continuing UOB's engagement with CERN's international scientific research environment.



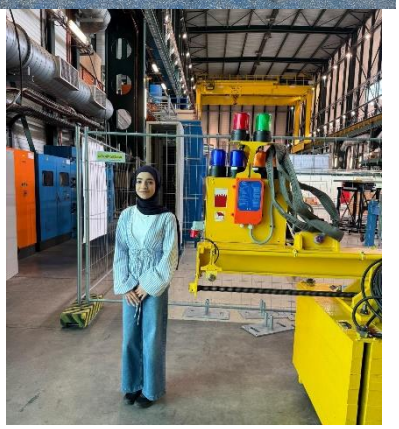
Nibras worked directly with CERN's IT Department and the LHCb experiment at the Large Hadron Collider, developing a dedicated knowledge database and training an artificial intelligence model. The activity provided practical participation in the development, organization, and application of scientific data and knowledge within an international research collaboration.



The international research dimension was further strengthened through participation in a multinational CERN hackathon team applying quantum-computing methods to identify high-conductivity materials. This research was directed toward materials capable of reducing energy loss, with potential applications across energy, healthcare, and industry. Ali also participated in technical activities involving infrastructure assessment and engineering within CERN's international research environment.

This initiative supports SDG 17.2.3 by enabling UOB students to participate directly with CERN departments, experiments, and multinational research teams in scientific data development, knowledge-database creation, AI-supported analysis, collaborative research, and evidence generation, including research relevant to energy efficiency and technological innovation.





Evidence Source:
https://www.uob.edu.bh/uob-students-participate-in-cern-summer-program/

3. International Health-Workforce Data and Evidence Collaboration through WHO

During the academic year 2024-2025, the University of Bahrain maintains an ongoing partnership with the World Health Organization through the WHO Collaborating Centres Network for the Eastern Mediterranean Region. During 2025, this relationship enabled UOB experts to participate directly in regional health-workforce consultations involving evidence exchange, national priority identification, strategy development, and evidence-informed decision-making.

In July 2025, UOB participated in a WHO consultation to co-develop strategies for the ethical recruitment of health workers. In August, the University contributed to the WHO Regional Director's flagship initiative by helping identify national priorities for developing a resilient health workforce. In September, UOB participated in a consultative process supporting the development of advanced health-professions education policies aligned with WHO standards.

This evidence contribution builds on UOB's earlier role in leading Bahrain's national input to the WHO Global Nursing and Midwifery Strategy 2021–2025, demonstrating the University's contribution of country-level health-workforce information and national evidence to international assessment and strategy-development processes.

This initiative advances SDG 17.2.3 (International Collaboration on Gathering or Measuring Data for the SDGs) through international evidence collaboration, contribution of country-level health-workforce information, national priority identification, evidence exchange, assessment, and evidence-informed planning involving WHO and regional health stakeholders. The activity supports SDG 3 (Good Health and Well-being) by contributing evidence used to strengthen health-workforce resilience, professional education, and regional health planning.

Evidence Source:

https://www.uob.edu.bh/uob-enhances-its-partnership-with-who-by-contributing-to-regional-health-policies/

4. Institutional Participation in the WHO Global Network for Nursing and Midwifery Collaboration





Since 2020, the University of Bahrain, through its Nursing Department, has participated in the WHO Global Network of Collaborating Centres for Nursing and Midwifery as a WHO Collaborating Centre for Nursing Development. The relationship provides UOB with an established international collaboration mechanism for contributing expertise to global nursing and midwifery development and participating in WHO initiatives.

Through its membership, UOB contributes technical expertise in nursing workforce development and participates in cross-border cooperation on health-workforce capacity and implementation of WHO initiatives. The network connects UOB with WHO collaborating centers internationally and provides a structured mechanism through which national academic and professional expertise can contribute to international health-development processes.

This sustained institutional relationship directly supports SDG 3 (Good Health and Well-being) by strengthening nursing and midwifery workforce capacity and SDG 17 (Partnerships for the Goals) by embedding UOB within an established international health collaboration network.

For SDG 17.2.3, the importance of this evidence is that it demonstrates the institutional infrastructure for sustained international collaboration through which UOB can contribute health-workforce information, technical knowledge, and evidence to international WHO processes. The specific evidence and data contributions produced through this relationship, including UOB's participation in WHO regional consultations and national priority-setting exercises, are documented separately.

Evidence Source: UOB Joins Global WHO Committee for Nursing and Midwifery

5. International Assessment and Measurement of Health-Promoting University Practices with WHO

The University of Bahrain implemented the WHO Health Promoting Universities framework through its Healthy University Initiative, launched in 2024 and continued through 2025. The initiative applies an internationally recognized health-promotion framework across institutional policy, curriculum, nutrition, mental health, physical activity, sanitation, waste management, and green space, providing a structured basis for assessment, monitoring, and evidence-informed improvement related to health and well-being.



UOB established a Health Promoting University Executive Committee comprising academic, clinical, and administrative members to embed health and well-being across university policy, curriculum, and campus practices. Activities included health education, workshops and health fairs, alongside institutional interventions addressing sanitation, waste management, green space, nutrition, mental health, and physical activity.





On November 19, 2025, an evaluation team from the World Health Organization, in coordination with Bahrain's Ministry of Health and Higher Education Council, conducted a field assessment at UOB under the Health-Promoting University program. The evaluation involved meetings with university leadership, faculty members, and students, direct observation of ongoing initiatives, and review of institutional policies supporting health and well-being.

The assessment represents a structured international collaboration in evidence gathering, institutional assessment, monitoring, stakeholder consultation, observation, and policy review. By assessing UOB's implementation against the WHO Health Promoting Universities framework, the process connects locally generated institutional evidence with an international health-assessment mechanism and provides a basis for continuous improvement.



This initiative advances SDG 17.2.3 (International Collaboration on Gathering or Measuring Data for the SDGs) by bringing together UOB, WHO, the Ministry of Health, and the Higher Education Council in an international assessment and measurement process focused on health and well-being. It directly supports SDG 3 (Good Health and Well-being) by using an internationally recognized framework to assess, monitor, and strengthen health-promoting policies, environments, education, and practices across the University.

Supporting evidence:

- WHO Assesses the University of Bahrain as a WHO Health-Promoting University
- UOB Conducts a Self-Assessment Towards Becoming a Health-Promoting University

6. International Scientific Data Collaboration with CERN through the BENEFIT Advanced AI & Computing Lab

From October 2024 to May 2025, researchers from the University of Bahrain collaborated with the European Organization for Nuclear Research (CERN) through the Compact Muon Solenoid (CMS) experiment on high-performance computing research involving the processing and reconstruction of large-scale experimental particle-physics data from the Large Hadron Collider. The collaboration involved Dr. Abdulla Ebrahim Subah, Prof. Wael Elmedany, and Dr. Hesham Al-Ammal from UOB working with Andrea Bocci within the CERN CMS research environment.

Using the BENEFIT Advanced AI & Computing Lab's NVIDIA T4 and A100 GPU infrastructure, the researchers developed and tested a multi-fidelity GPU performance auto-tuning framework for CMS particle-track reconstruction. The approach achieved documented improvements in execution speed, throughput, and GPU resource utilization compared with default CMSSW kernel configurations, strengthening the capacity to process and analyze large-scale experimental scientific datasets.

The collaboration produced documented international research outputs. Performance Auto-tuning Framework for GPU Applications was published through the CERN Repository in 2024, while Optimizing the Configuration of the CMS GPU Reconstruction was published in EPJ Web of Conferences as part of CHEP 2024. The Lab's research records identify these as UOB–CERN collaborative outputs, demonstrating sustained international scientific cooperation in advanced data-intensive research.

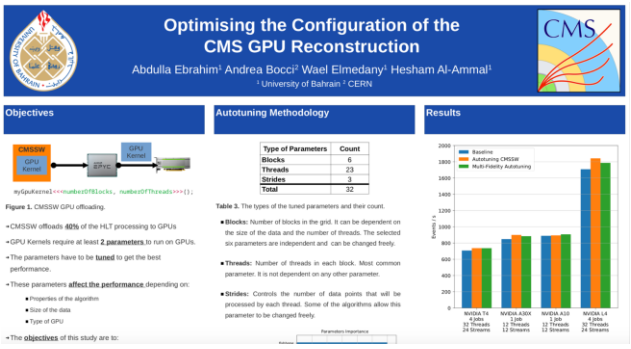


Figure 1: Peer-reviewed CERN CHEP 2024 research poster 'Optimizing the Configuration of the CMS GPU Reconstruction'



This initiative supports SDG 17.2.3 (International Collaboration on Gathering or Measuring Data for the SDGs) through UOB's participation in an international scientific collaboration involving large-scale experimental data processing, scientific measurement and reconstruction, collaborative data analysis, and shared high-performance computing infrastructure. It contributes particularly to SDG 9 (Industry, Innovation and Infrastructure) by strengthening advanced scientific research capacity, computational infrastructure, technological innovation, and international cooperation in science and technology.

Supporting evidence

- Performance Auto-tuning Framework for GPU Applications, CERN Repository
- https://www.epj-conferences.org/articles/epjconf/abs/2024/05/epjconf_chep2024_11015/epjconf_chep2024_11015.html
- https://ailab.uob.edu.bh/
- https://www.uob.edu.bh/university-of-bahrain-and-benefit-advance-ai-research-government-collaboration-and-national-capacity-building/

7. International Research Collaboration and Knowledge Exchange in Nanotechnology for Cancer Treatment



In 2025, the University of Bahrain (UOB) highlighted an international collaborative research program led by Professor Adnan Bekhit of UOB's Department of Pharmacy, focused on applying nanotechnology and advanced drug-delivery systems to breast cancer treatment. The research investigates nanoparticles and nanomicelles designed to improve the effectiveness and reduce the toxicity of anticancer agents.

International collaboration is integral to the research. UOB works with Alexandria University in Egypt, where researchers share access to specialist tools and infrastructure required for nanoparticle identification and characterization, including a Zetasizer, transmission electron microscope, and confocal electron microscope. This enables researchers to undertake characterization and screening that require sophisticated technological capabilities.

The research also involves collaboration with Harvard University's Wyss Institute for Biologically Inspired Engineering, providing access to innovative methodologies and technologies for evaluating research projects. Alongside these international partnerships, Professor Bekhit works with former students and researchers in Egypt and supports young researchers in Bahrain through knowledge sharing on the preparation of nanoparticles and nanomicelles for cancer-treatment applications.

The collaborative research has supported the development and evaluation of nanoparticles and nanomicelles combining multiple anticancer agents. Reported research results include reductions in tumor volume in animal studies, alongside computational analyses investigating the signaling pathways through which anticancer-loaded nanomicelles may inhibit cancer progression.

This initiative supports SDG 17.2.3 through international research collaboration, shared research infrastructure, exchange of scientific expertise, and access to advanced methodologies and technologies. By connecting UOB researchers with partners at Alexandria University and Harvard University's Wyss Institute, the collaboration strengthens the University's capacity to generate and evaluate research relevant to SDG 3 (Good Health and Well-being), particularly the development of potential approaches to cancer treatment.

Evidence Source: How the University of Bahrain is building a strong local team to boost nanotechnology research, Times Higher Education.

8. University Input to Bahrain's National Human Development Report on Digital Transformation



During the 2024–2025 academic year, the University of Bahrain (UOB) contributed university-sector expertise to the development of Bahrain's National Human Development Report on Digital Transformation, undertaken through collaboration between the Bahrain Center for Strategic, International and Energy Studies (Derasat) and the United Nations Development Program (UNDP).

UOB's contribution was provided through Dr. Mazen Mohammed Ali, Dean of the College of Information Technology, who participated in the review process and provided expert observations on the maturity and current use of artificial intelligence in universities. The University's feedback contributed higher-education perspectives on AI adoption and its implications for areas including skills, governance, data, cybersecurity, responsible technology use, human-capital development, and innovation.

The engagement connected university expertise with national research and international development expertise. Derasat conducts strategic research intended to inform policymakers and stakeholders and aligns its initiatives with the United Nations Sustainable Development Goals, while UNDP provided the international development dimension to the report-development process. UOB's contribution therefore supported the gathering and interpretation of information relevant to Bahrain's digital transformation and human development.

This activity provides evidence for SDG 17.2.3 through UOB's participation in an internationally collaborative information-gathering and interpretation process. Rather than participating only as an event attendee, UOB supplied sector-specific expertise and feedback for a national human-development report developed in collaboration with UNDP, demonstrating the University's contribution of knowledge and institutional perspectives to SDG-relevant analysis and evidence development.

Evidence Source:

- https://www.uob.edu.bh/university-of-bahrain-contributes-expertise-to-bahrains-national-human-development-report-on-digital-transformation/
- https://www.derasat.org.bh/?lang=en