



Open Quantum Institute (OQI) **Pilot Evaluation Report**

Presented by the OQI Advisory Committee
to the CERN Council

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FOREWORD FROM THE OQI ADVISORY COMMITTEE

In 2024, CERN began hosting the Open Quantum Institute. In doing so, the Organization did more than reaffirm its commitment to open science and to maximising the impact of technology on society. It acted on that commitment, and it did so boldly.

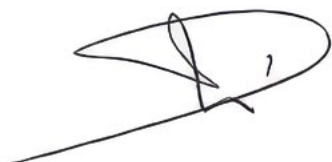
The Open Quantum Institute was unconventional in two ways. First, it was anticipatory: it took as its starting point a technology that had not yet reached maturity and acted early to prepare for the time when it would, so that its benefits could be made accessible to all. Second, it was multistakeholder by design, bringing scientists, diplomats, private-sector leaders and philanthropists around the same table in a field where these communities rarely come together until a technology has already reached society.

The ambition behind OQI extends beyond quantum computing. It is to test a different way of governing an emerging technology: one in which no one is left behind by scientific and technological progress, and in which benefits are shared rather than concentrated among those who arrive first. Quantum computing is the case at hand. The wider question is whether humanity can retain agency over the technologies it creates.

This was a pilot, and pilots are permitted to fail. When the Council took its decision in October 2023, none of us could be certain that this one would succeed. It has. Over the past three years, the Open Quantum Institute has met the objectives set at its inception and built something that did not exist before: a global community of practice spanning disciplines, sectors and geographies, and genuinely invested in the outcome. We are proud of what it has achieved.

We owe that result to many people. To CERN's management, for being willing to take a risk on an initiative beyond the Organization's usual remit, and for the sustained support that has made it work in practice. To the OQI community around the world—participants from 108 countries who contributed to OQI activities—who gave their time and expertise because they believed the question was worth answering. To all our members and partners who contributed computing capacity and technical expertise, and in particular to UBS, whose commitment as lead funding partner gave the Institute the means to operate globally from the outset.

This report sets out what the pilot achieved, what the evaluation found, and our recommendation to continue the Open Quantum Institute at CERN for a further four years. We make that recommendation because the work is not finished. The vision that motivated the Council's 2023 decision is closer to becoming reality than it was then, and it remains worth pursuing. We commend this report to the Council and hope that you will share our confidence in OQI's future.



Enrica Porcari
Chief Information Officer, CERN



Marilyne Andersen
Director General, GESDA

Co-Chairs of the Open Quantum Institute Advisory Committee, on behalf of all its members

ACKNOWLEDGEMENT FROM THE ADVISORY COMMITTEE CO-CHAIRS

As co-chairs of the OQI Advisory Committee, we warmly thank the members of the Committee, past and present, for their unwavering support throughout the pilot. They gave their time, expertise and networks freely across the scientific, diplomatic, private-sector and philanthropic communities, with a level of engagement that went well beyond what was asked of them. Their guidance shaped the Institute's direction at every stage, and this report is the product of their collective judgement.

We are equally grateful to the experts of the Scientific and Impact Evaluation Panels, whose rigour set and upheld the standard against which the Institute's work has been measured.

Finally, to the OQI team: a small team carried this initiative forward, with a dedication, persistence and care for the mission that were evident to all of us on the Advisory Committee. What the Institute has achieved is theirs first.

EXECUTIVE SUMMARY

At its 213th session on 5 October 2023, the CERN Council decided to host the Open Quantum Institute (OQI) - a science diplomacy initiative to harness quantum computing for societal good - for a three-year pilot phase, fully funded from external resources, specifying that a report should be prepared summarising accomplishments against specific deliverables¹, lessons learned and recommendations on how to move forward.

As the pilot phase concludes in December 2026, this report provides the evaluation, based on a structured assessment conducted February-April 2026 (cf. Annex 1).

The results of the evaluation show that the pilot meets all deliverables set at its inception by December 2026. Full results by objective are outlined in the table below and developed further in the document (Section 1).

OBJECTIVE	DELIVERABLES SET IN THE DECISION NOTE (5 OCT. 2023)	ACHIEVEMENTS (AS OF SEPTEMBER 2026)	STATUS
1. Establish OQI as a reference place for quantum computing applications for the SDGs and other societal challenges	Exploration of ≥20 projects targeting SDG-related use cases; 4–6 projects reaching completion; open repository	20 use case projects targeting 6 SDGs; 10 projects validated as proofs-of-concepts* by the Scientific and Impact Panels, of which 4 implemented on quantum hardware - exceeding the original target; open repository live; OQI methodological framework established as global reference	✓ EXCEEDED
2. Provide equitable access to quantum computing resources via the cloud	Pilot the pooling of state-of-the-art quantum computers made available free of charge by partners of the OQI via the cloud. Development of working interfaces and portals to support access	Model adapted in response to geopolitical constraints on quantum technology access **: one-on-one relationships with 32 providers across all modalities (neutral atoms, superconducting, trapped ions, photonic, annealing, HPC), rather than unified access portal	✓ MET (ADAPTED)
3. Develop educational tools targeting users from underserved regions	Best practices; inventory of training instruments	1000+ participants in hackathons; from 108 countries; 94-org consortium from 39 countries; 15 hackathons; 18 Quantum Diplomacy Games; use case educational module	✓ MET
4. Contribute to an open and equitable future governance model for quantum computing	Contribute to scientific and diplomatic discussions on quantum governance	54 international organisations engaged; 200 diplomatic briefings; 3 Intelligence Reports published; founding partner of UNESCO International Year of Quantum and Global Quantum Initiative	✓ MET

Table 1: OQI pilot deliverables summary – achievements updated as of Sept. 2026

¹ The note that based the CERN Council decision to host OQI in October 2023 specified objectives and specific deliverables against which accomplishments are assessed in this report, referred to throughout as "deliverables set in the decision note (5 Oct. 2023)".

* A validated proof-of-concept is OQI's completion milestone, validated by external scientific and impact panels; definition in annex 2.

** See Section 1 for full account.

The evaluators, representing world-class institutions in quantum computing, science policy and education, confirm that quantum computing continues to grow in science diplomacy importance - and that OQI has successfully built a global community of practice capable of steering the technology toward the benefits of all. Hosting OQI at CERN is a strongly symbiotic arrangement: CERN's credibility and neutrality give OQI its unique trusted environment, while OQI strengthens CERN and its community's front-row position in an emerging technological domain - shaping how it develops in the interest of society and thereby supporting CERN's position as a beacon of science diplomacy.

Section 2 of the report therefore presents the recommendation of the Advisory Committee to continue OQI for four-year (2027–2030) hosted at CERN and independent from CERN's core budget. The Advisory Committee recommends retaining the overarching goal and the four action lines unchanged, while growing only modestly and prioritising depth over breadth, concentrating effort where OQI has demonstrably complemented national and regional initiatives (global convening power, ability to provide a neutral space where collaboration continues despite geopolitical and business sensitivities, and capacity to deliver programmes in the geographies that most need them). It proposes five strategic evolutions:

Strategic Evolutions for OQI 2027-2030

- closer integration between capacity building and use case exploration;
- greater adaptation to regional realities, with programmes progressively led by local and regional actors;
- a reasonable extension to advanced classical computing modalities;
- a stronger focus on partnerships that bring the most promising use cases closer to deployment;
- and offering OQI as a sandbox for practice-based governance of quantum computing.

On governance, the Committee recommends that it remain the principal source of strategic guidance, complemented by four thematic commissions, and stresses that continuity and seniority of the OQI team are essential to delivery. Funding would remain entirely external, at an estimated CHF 2.5 to 4 million per year.

SECTION 1.

RESULTS OF THE OQI PILOT EVALUATION

INTRODUCTION

Institutional context

The Open Quantum Institute is a multilateral science diplomacy initiative established to promote global and inclusive access to quantum computing, and to support the development of applications addressing the United Nations Sustainable Development Goals (SDGs) operating through four strategic core activities.*²

Cutting across all four core activities is a transversal commitment to promoting and expanding an active and committed OQI community of supporters and beneficiaries. This community, spanning academia, technology providers, the private sector, diplomacy leaders, and philanthropic organisations across all continents, is united around a shared commitment to Open Science principles and use of quantum computing that benefits all. It is both the means through which OQI delivers on its objectives and a tangible outcome of the pilot in its own right.

Since January 2026, the OQI has been overseen by the CIO Office, as part of its “special projects”. The OQI Advisory Committee, co-chaired by the CERN Chief Information Officer and GESDA Director General, comprises 36 members drawn from the diplomatic, scientific, private sector and philanthropic communities (cf. annex 0). It provides strategic guidance of the initiative and serves as the primary interface between OQI and its stakeholder community. The funding of the OQI is entirely external. UBS, as lead funding partner, provides CHF 7 million in support of the three-year pilot phase (plus CHF 1 million for the incubation at GESDA).

Evaluation approach

This report draws on a structured evaluation conducted between February and April 2026, engaging **59 individuals** from the Advisory Committee, OQI partners, and beneficiaries. Their profiles span five communities:

1. academic quantum computing experts from leading global institutions
2. private sector research and innovation leaders from major quantum computing companies
3. representatives of international organisations and UN bodies
4. diplomacy and policy professionals including Permanent Representatives to the UN in Geneva
5. representatives of regional quantum ecosystems from underserved geographies across Africa, Southeast Asia, Latin America and the Middle East.

* The four strategic objectives are: (1) accelerating quantum computing applications for humanity; (2) providing equitable access to quantum computing resources; (3) advancing capacity building; and (4) activating multilateral diplomacy of quantum computing for the SDGs.

Evidence was gathered through a quantitative survey, interviews, focus groups, which involved a review of OQI's activity data and published outputs. The methodology and list of evaluators is set out in annex 1.

Key transversal takeaways of the OQI Pilot evaluation

The pilot of OQI will meet all deliverables by December 2026.

Full results are presented in the table above and developed by objective in Section 1.

OQI occupies a distinctive position in the quantum computing ecosystem, which is neutral, global and exclusively focused on the SDGs.

OQI is unique in its global scope and capacity to foster international collaboration in an area increasingly constrained by sovereignty imperatives, whilst remaining independent from specific interests. This positioning is underpinned by a combination of scientific credibility (reflected in the involvement of distinguished experts from both academic and private sector in the Advisory Committee), diplomatic resonance, and hosting at CERN. The focus on the UN SDG applications is notable and enables enhanced open collaboration in an otherwise very competitive field.

OQI's results are commensurate with the current maturity of quantum computing, and its target group.

Like other organisations exploring future applications of quantum computing, OQI operates within the constraints of existing hardware capabilities. The pilot surfaced the inherent tension at the core of OQI's mission: ensuring future equitable access to quantum computing and its benefits requires inclusive, early engagement on use cases well before the technology reaches full maturity. At the same time, maintaining scientific integrity demands transparency about the tremendous algorithmic and hardware advances still required before tangible outcomes can be achieved. A core function of OQI is to bring scientific rigour to the exercise, ensuring that inclusive engagement is accompanied by an honest assessment of the timeline for real-world impact. This challenge is even more pronounced given that OQI's primary target group comprises underserved geographies and emerging economies, where the quantum scientific and technological capacity is still nascent.

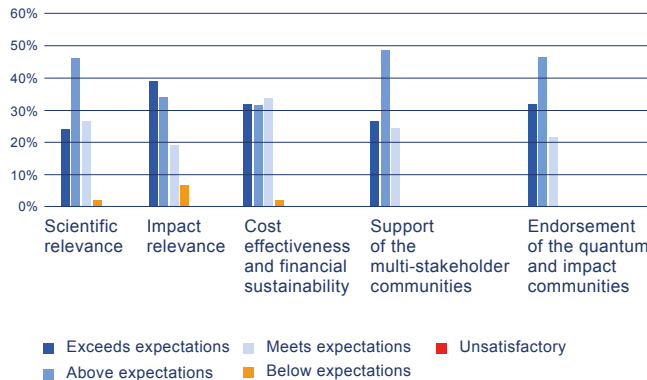
Hosting the OQI at CERN has been an enabler of OQI's credibility and reach.

CERN's scientific standing signals independence and rigour to all categories of OQI stakeholders. Its experience managing large-scale multinational collaboration provides OQI with a proven operational culture. Its global network has extended OQI's reach beyond what a standalone initiative could have achieved. And its status as a neutral intergovernmental institution has enabled OQI to maintain functional international collaboration across geopolitical fault lines that increasingly constrain exchanges in the field of quantum technology.

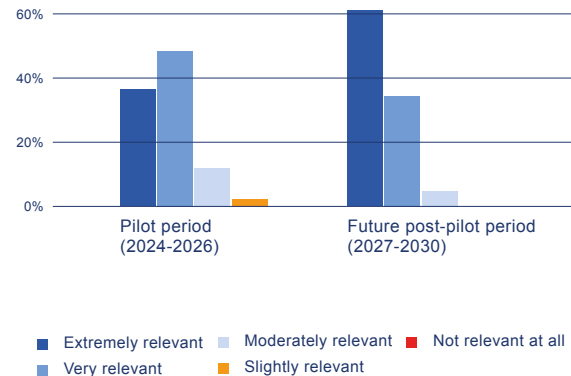
OQI's mission is relevant today and increasingly critical for the future.

OQI is performing well and its best years lie ahead. Across all five dimensions assessed, the majority rated performance as meeting or exceeding expectations (Graph 1). And when asked to look forward, confidence grows sharply (Graph 2). As quantum computing progresses towards maturity, its strategic importance grows from a science diplomacy point of view, and OQI's mission becomes increasingly relevant.

To what extent has OQI pilot achieved this transversal objective so far?



Please assess the overall relevance of OQI's scope within the scientific, technological and geopolitical context of the following two periods:



Graph 1 (left) and 2 (right): Evaluators' responses regarding the relevance of OQI's scope - pilot period vs post-pilot period

Value of OQI pilot for CERN and its community

The decision note of 5 October 2023 anticipated that hosting OQI would enhance CERN's societal impact, expand its networks, and strengthen its profile as a scientific institution serving humanity's most pressing challenges. The pilot confirmed these returns as follows:

- 1. Access to a world-class quantum computing network** – When the decision was taken to host OQI at CERN, the CERN Council was given the opportunity to appoint representatives to the OQI Advisory Committee. This meant that Member States (MS) and Associate Member States (AMS) gained direct access to a world-class network spanning quantum computing leaders from Google, Microsoft, IBM and NVIDIA, WHO, UNESCO and leading quantum institutions from across all regions. This access places CERN at the heart of a global network, allowing MS and AMS to actively shape how quantum computing develops - steering it toward societal good and the SDGs.
- 2. Network expansion beyond CERN's traditional community** – Through OQI being hosted at CERN, the organisation expands its reach into diplomacy, international organisations and industries whose connection to CERN's mission is not through particle physics but through a shared commitment to science in service of society. This broadens CERN's influence into communities and geographies it would not otherwise engage, strengthening its image as an organisation that serves humanity's most pressing challenges.
- 3. Front-row positioning in an emerging domain** – Member and Associate Member States are present at the table where quantum computing governance, methodology and diplomacy are being shaped, ahead of the technology reaching full maturity – a unique opportunity to influence how an emerging dual-use technology develops in the interest of society and to foster CERN's standing as a forward-looking institution committed to the global good.
- 4. Reputational return** – OQI's 1200 references, founding partnership in the UNESCO Global Quantum Initiative, and active involvement in the steering of the UN International Year of Quantum Science and Technology carry CERN's name into new institutional and diplomatic circles, reinforcing its profile as an institution that serves society on humanity's most pressing challenges.

1.1

DETAILED RESULTS OF STRATEGIC OBJECTIVE 1: Accelerating quantum computing applications for humanity

Approach and modus operandi

Strategic Objective 1 is to generate evidence of how quantum computing could be leveraged to support progress towards the United Nations Sustainable Development Goals (SDGs), in the framework of the UN 2030 Agenda and beyond.

More specifically, the decision note from 5 October 2023 stated as a goal to “establish the OQI as a reference place to develop applications of quantum computing for the SDGs and other societal challenges.”

In practice, OQI does not conduct research directly. It acts as a facilitator and capacity builder, fostering interdisciplinary collaboration between quantum computing experts and domain experts from industry, research institutions and universities with representatives of governments and relevant international organisations.

It accelerates the exploration of quantum computing applications through three interconnected means: an openly available methodological framework for use case exploration, vetted by 16 global quantum application centres; access to a diverse pool of cloud-based computational resources - including HPC, quantum simulators and QPUs - donated by public and private partners; and active mentoring and technical support by the OQI staff to advance use cases from ideation through to proof-of-concept. Use case teams are deliberately selected to reflect inclusive and diverse expertise, background and geographies, including regions with limited quantum computing infrastructure.

Set deliverables and achievements to date

The table below tracks the deliverables set by the CERN Council in October 2023 against achievements to date for Strategic Objective 1.

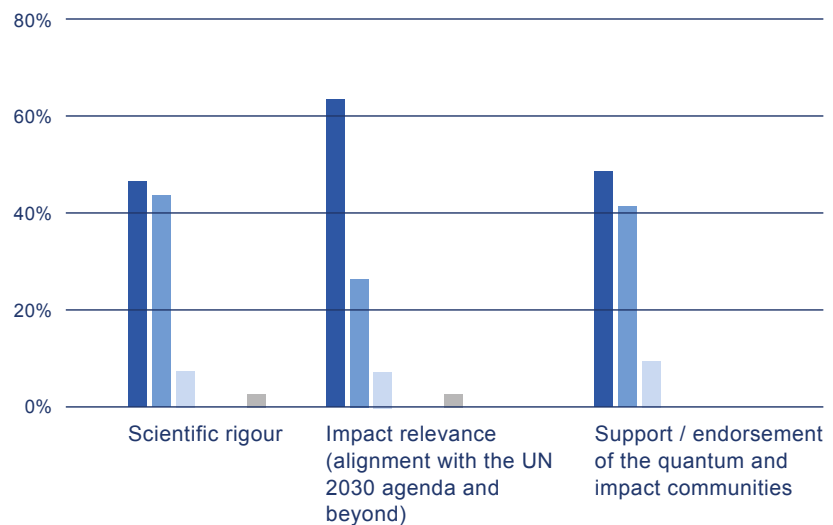
DELIVERABLES SET IN THE DECISION NOTE (5 OCT. 2023)	ACHIEVEMENTS	STATUS
Achieved by September 2026		
Exploration of at least 20 projects targeting SDG-related use cases and other societal challenges	20 use case projects targeting 6 SDGs (2, 3, 6, 7, 12 and 13)	✓ MET
4-6 projects should reach completion*	10 projects validated as proofs-of-concepts* by the Scientific and Impact Panels, of which 4 implemented on quantum hardware	✓ EXCEEDED
Provision of an on-line repository of project documentation	4 SDG Use Case White Papers published; GitHub repositories of proof-of-concept openly accessible; use case repository available online through OQI website with 27 use case ideas curated by OQI and more from external collaborators.	✓ MET
Reference methods	Openly available methodological framework validated by 16 leading regional and national quantum hubs, and translated into online training material; Compendium of regimes of quantum advantages of existing quantum algorithms, developed in collaboration with Advisory Committee members and leading institutions Yellow Report compiling the findings of all proof-of-concepts	✓ MET
Planned by end of the pilot (Dec. 2026)		
	Open publications as arXiv papers and conference proceedings on the above methods.	Achieved by Dec 2026

Table 2: OQI pilot Objective 1 achievements summary

* A validated proof-of-concept is OQI's completion milestone, validated by external scientific and impact panels; definition in annex 2

Evaluation findings

To what extent are the following aspects clearly demonstrated in the activities and outputs associated with Objective 1 of the OQI pilot?



Scientific rigour and impact relevance — notably alignment with the UN 2030 agenda — are strongly endorsed by the large majority of evaluators, confirming confidence in OQI's approach to use case exploration. Most notably, SDG alignment scores the highest of all three dimensions. Support and endorsement from the quantum and impact communities is also strongly positive, reflecting the breadth and quality of the community OQI has built.

The qualitative feedback from interviews, focus groups and survey responses outlined the following findings on Strategic Objective 1:

QUALITATIVE FEEDBACK

1. OQI has developed a **methodological framework** for use case exploration that is assessed as on par with the best practices of equivalent public and private organisations exploring future use cases of quantum computing for commercial applications. OQI's additional value resides in the fact that this methodology is thoroughly documented and made publicly available.

2. OQI's outputs should be understood as pushing the application domains and anticipating the impact of quantum computing. OQI explores the application of existing quantum algorithms to real-world problems. This involves some degree of development in adapting quantum algorithms to specific problems but differs from fundamental or applied research. Expectations should be framed accordingly (publications, funding etc.).

3. The use case exploration process functions, in practice, as a capacity-building exercise, given the profiles of the use case teams (diversity across disciplines and geographies, as well as levels of quantum expertise). The unique value delivered by OQI lies in its capacity to deliver knowledge transfer and the upskilling of interdisciplinary teams globally. OQI contributes to building a global community of practice that explores potential applications of quantum computing for humanity and thus increases global quantum readiness in preparation for the technology at scale.

QUALITATIVE FEEDBACK

4. OQI faces the same challenges as other organisations exploring use cases when balancing the external ask for short-term return and the effective maturity of the technology. It is crucial that OQI's stakeholders are fully aware of timelines to real-world impact. OQI's role includes communicating the current state and limitations of quantum computing with scientific rigour.

LESSONS LEARNED FOR THE POST-PILOT PHASE

1. Sharpen the narrative on **expected outcomes and impact of the use cases**. Whilst OQI focuses on rigorously anticipating how quantum computing could be applied to global challenges and anticipating the possible impact of the innovative solutions once deployed in the real-world, technology alone cannot solve these global challenges.
2. Expand the **capacity-building function of strategic objective 1** by encompassing a broader and more geographically diverse range of participants.
3. **Strengthen the scientific leadership** in the use case exploration activities to review technology readiness and timeline to real-world impact, to provide early-stage orientations on the use case portfolio and to provide guidance on the modalities to ideate new use cases regularly. This includes further involving scientific expertise of the application domains (subject-matter experts) in addition to quantum algorithm scientists.
4. **Consider complementary activities or partnerships on advanced AI and other advanced classical approaches** to accelerate tangible real-world impact ahead of full quantum hardware readiness. This would enable to reuse and fully leverage the preparatory work carried out by the use cases (data readiness, benchmarking, etc.) especially where a low potential for quantum advantage is ultimately found.

1.2

DETAILED RESULTS

OF STRATEGIC OBJECTIVE 2: Facilitate inclusive and equitable access to quantum computing resources

Approach and modus operandi

Strategic Objective 2 is to enable inclusive and equitable access to quantum computing resources - encompassing high-performance computing, quantum simulators, emulators and quantum processing units (QPUs) - available through cloud-based infrastructure.

OQI does not own or operate computing infrastructure directly. It builds and maintains a network of private companies and public centres that donate computational capacity and technical expertise. This pooled resource base supports both the use case exploration activities (strategic objective 1) and OQI's broader educational programme (strategic objective 3).

Set deliverables and achievements to date

DELIVERABLES SET IN THE DECISION NOTE (5 OCT. 2023)	ACHIEVEMENTS	STATUS
Strategic reorientation approved by Advisory Committee		

With Advisory Committee approval, OQI reoriented its approach from developing an open-access portal to building deeper bilateral relationships with targeted quantum providers. This reorientation was driven by three factors:

1. Evolving geopolitical conditions, including the tightening of export controls on quantum technologies;
2. the need to provide partners with reassurance regarding efficient use of resources and intellectual property considerations;
3. the diversified computational needs of use case teams (incl. HPC for quantum simulation ahead of QPU implementation).

Under this revised approach, the following was achieved by September 2026

Pilot the pooling of state-of-the-art quantum computers made available free of charge by partners of the OQI via the cloud and make the pool accessible in line with all relevant CERN policies and Council decisions. Specific deliverables include the development of working interfaces and portals to make quantum computers (and emulators) easily available to OQI users.	• 32 industry providers donate expertise and/or computational capacity to OQI, representing all current prominent modalities: neutral atoms, superconducting, trapped ions, photonic, annealing, and HPC for simulation. • The resources mobilised are sufficient to cover the full programme of work of the pilot phase. • Quantum providers participate actively in the governance bodies: 5 in the Advisory Committee, 1 in the impact panel, and 5 in the scientific panel	✓ MET (Adapted)
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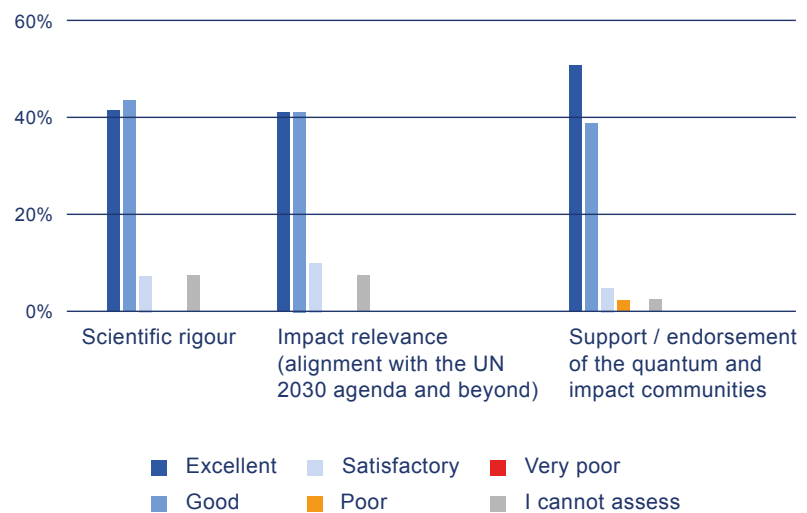
Table 3: OQI pilot Objective 2 achievements summary

Evaluation findings

The evaluation survey shows a positive assessment of OQI's capacity to broaden access to quantum computational capacity. The quality and quantity of resources enabled by OQI is overall positively evaluated.

Graph 4: Evaluators' assessment of Strategic Objective 2

To what extent has OQI pilot progressed towards Objective 2 of the OQI pilot?



The qualitative feedback from interviews, focus groups and survey responses outlined the following findings on Strategic Objective 2:

QUALITATIVE FEEDBACK

1. The **strategic reorientation** from developing an open unified access portal towards targeted, in-depth provider support **was the appropriate response** to the operational and geopolitical constraints encountered during the pilot. The revised approach is considered well-suited to the current maturity of the ecosystem.

2. OQI is able to provide access to the **full range of the technological modalities** currently in use and available through the cloud.

3. The **current legal and administrative set-up allowing capacity donations can be a source of friction**. In several cases, CERN's institutional structure imposes contractual requirements that are disproportionate to the nature of the contribution, creating barriers to provider engagement, especially from major industrial providers who have clear willingness to participate in OQI's mission otherwise.

LESSONS LEARNED FOR THE POST-PILOT PHASE

1. **Seek alignment with and mobilise public computational capacity** by systematically monitoring public investment in quantum computing, HPC and AI (national policies). This would complement the existing private sector provider network and could provide opportunities for longer term planning.
2. **Simplify the administrative and legal framework governing capacity donations**, whilst maintaining strong oversight by the Advisory Committee and scientific and impact panels. This includes leveraging standard access schemes of private providers when possible.
3. **Actively monitor the rapid progress of the technology**, including emergent open-source approaches, to ensure that OQI's access infrastructure remains technically current and interoperable.
4. **Ensure fairness in the allocation of computational resources by establishing clear criteria, whilst remaining independent from specific interests.**

1.3

DETAILED RESULTS OF STRATEGIC OBJECTIVE 3: Advancing capacity-building

Approach and modus operandi

Strategic Objective 3 is to develop educational tools, targeting in particular users from underserved regions.

During the pilot phase, OQI focused on two primary target groups: university students from quantum-underserved geographies and demographics, and diplomats and policymakers. OQI acted as a convener and amplifier - equipping both groups with knowledge and frameworks needed to grasp how to handle quantum computing applications for the SDGs, while complementing and building on existing educational programmes. To sustain and scale this work, OQI curated an education consortium comprising public, private and non-profit organisations committed to quantum computing education and to reducing disparities between geographies and demographics, leveraging its global community of practice to connect and align efforts across activities at local, regional and international level.

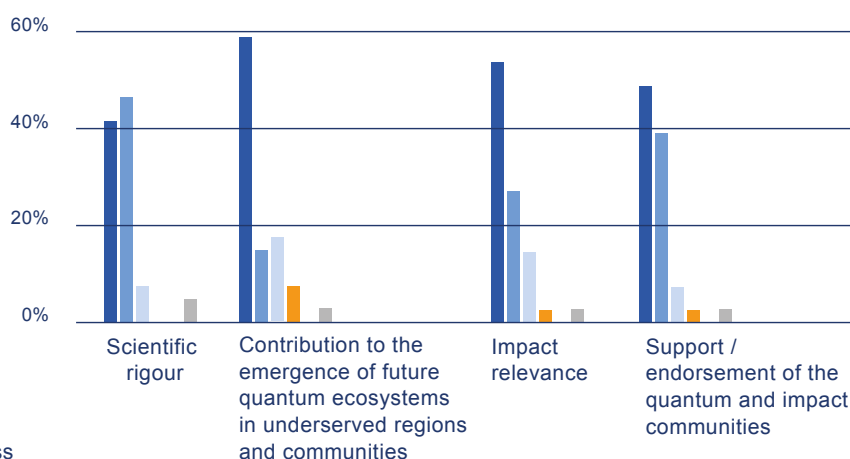
Set deliverables and achievements to date

DELIVERABLES SET IN THE DECISION NOTE (5 OCT. 2023)	ACHIEVEMENTS	STATUS
Achieved by September 2026		
Develop best practices on how to involve players from underserved regions in the use of quantum computing	- Educational resources posted on the OQI website including: a repository of freely accessible resources of the education consortium members, hackathon-in-a-box, quantum diplomacy, Use Case teams educational module - Specific activities for the target group “university students from quantum-underserved geographies” 15 hackathons in 12 countries, with 1000+ participants from 108 countries - Pre-hackathon training programme delivered, with 836 certificates awarded - Specific activities for the target group “diplomats and policy-makers” 18 Quantum Diplomacy Games delivered in 11 countries, with 497 participants - Regional ecosystem development: support to 5 regional quantum computing events QISTCon.ph 2025 (Philippines), Quantum Africa 7 (Morocco), ASEAN Quantum Summit (Malaysia), Africa Quantum Summit (Kenya) 2 publications at IEEE on lessons learned for the educational science and responsible computing community have already been approved	✓ MET
Achieved by end of the pilot (Dec. 2026)		
Initial inventory of OQI training instruments.	Education consortium of 94 organisations from 39 countries established, sharing best practices in educational activities	✓ MET
	- Pilot of a new format of event: connecting a hackathon to a use case ideation workshop and including an existing school by ICTP-SAIFR (Brazil) 4 additional hackathons in 4 different countries 5 to 11 additional Quantum Diplomacy Games	In progress. Will be achieved by the end of the pilot

Table 4: OQI pilot Objective 3 achievements summary

Evaluation findings

To what extent are the following aspects clearly demonstrated in the activities and outputs associated with Objective 3 of the OQI pilot?



Contribution to the emergence of future quantum ecosystems in underserved regions and communities scores the highest of all four dimensions, reflecting strong evaluator confidence in OQI's geographic reach and inclusive model. Impact relevance, scientific rigour and community endorsement are also strongly positive. A small number of critical responses on ecosystem emergence signal that scaling regional impact remains a challenge - a finding echoed in the qualitative feedback

The qualitative feedback from interviews, focus groups and survey responses outlined the following findings on Strategic Objective 3:

QUALITATIVE FEEDBACK

1. OQI's uniqueness lies in its capacity to bridge communities globally, accelerating the exchange of best practices and cross-fertilisation, across peers and between disciplines (quantum computing and its application domains), and across geographies.

4. In target geographies, the primary incentive for engagement is future job creation. A clear content focus on the application of quantum algorithms to real-world challenges is therefore well-aligned with local needs, as is close collaboration with industry. It was noted that this approach inherently develops complementary competencies in HPC and AI. This dimension could be made more explicit when articulating OQI's educational offering.

3. Hackathons are effective as an entry point but insufficient as a standalone intervention. The most motivated participants require access to **more sustained programmes** to consolidate and deepen the skills acquired.

2. The objective to foster the emergence of local and regional ecosystems, with future quantum leaders progressively assuming ownership of regional efforts, is well aligned with the effective capacity of OQI.

5. Scaling impact is difficult within a centrally operated model. The existing train-the-trainer approach could be expanded to enable greater regional and local leadership.

LESSONS LEARNED FOR THE POST-PILOT PHASE

- 1. Develop a more integrated educational offering**, that progressively equips students with technical quantum computing skills and impact awareness, increasing their readiness to engage with Strategic Objective 1.
- 2. Transition from a centrally-driven delivery model towards one in which leadership is assumed by local and regional actors**, with OQI's role repositioned around global convening, cross-fertilisation, quality assurance and the acceleration of best practice exchange.
- 3. Broaden the current target group** definition beyond university students from underserved geographies and policy-makers to include professionals and students from adjacent fields for whom quantum computing serves as an enabling technology. Partnering with international organisations and national agencies on capacity building programmes on quantum awareness and readiness would also enable scaling the policy target group beneficiaries.

1.4

DETAILED RESULTS OF STRATEGIC OBJECTIVE 4: Activating multilateral diplomacy of quantum computing for the SDGs

Approach and modus operandi

Strategic Objective 4 is to draw on OQI's and its community's practical experience to contribute to discussions around a future governance model that would allow quantum computing to be leveraged in an equitable and inclusive manner in support of the SDGs. This objective is considered an enabling condition for OQI to deliver on its broader mission.

OQI engages directly with diplomatic stakeholders, including Permanent Representations to the UN in Geneva, international organisations and relevant national ministries, and contributes to diplomatic forums convened by like-minded organisations. Six Permanent Representatives to the UN in Geneva serve on the OQI Advisory Committee, ensuring the integration of diplomatic and geopolitical considerations into OQI's work.

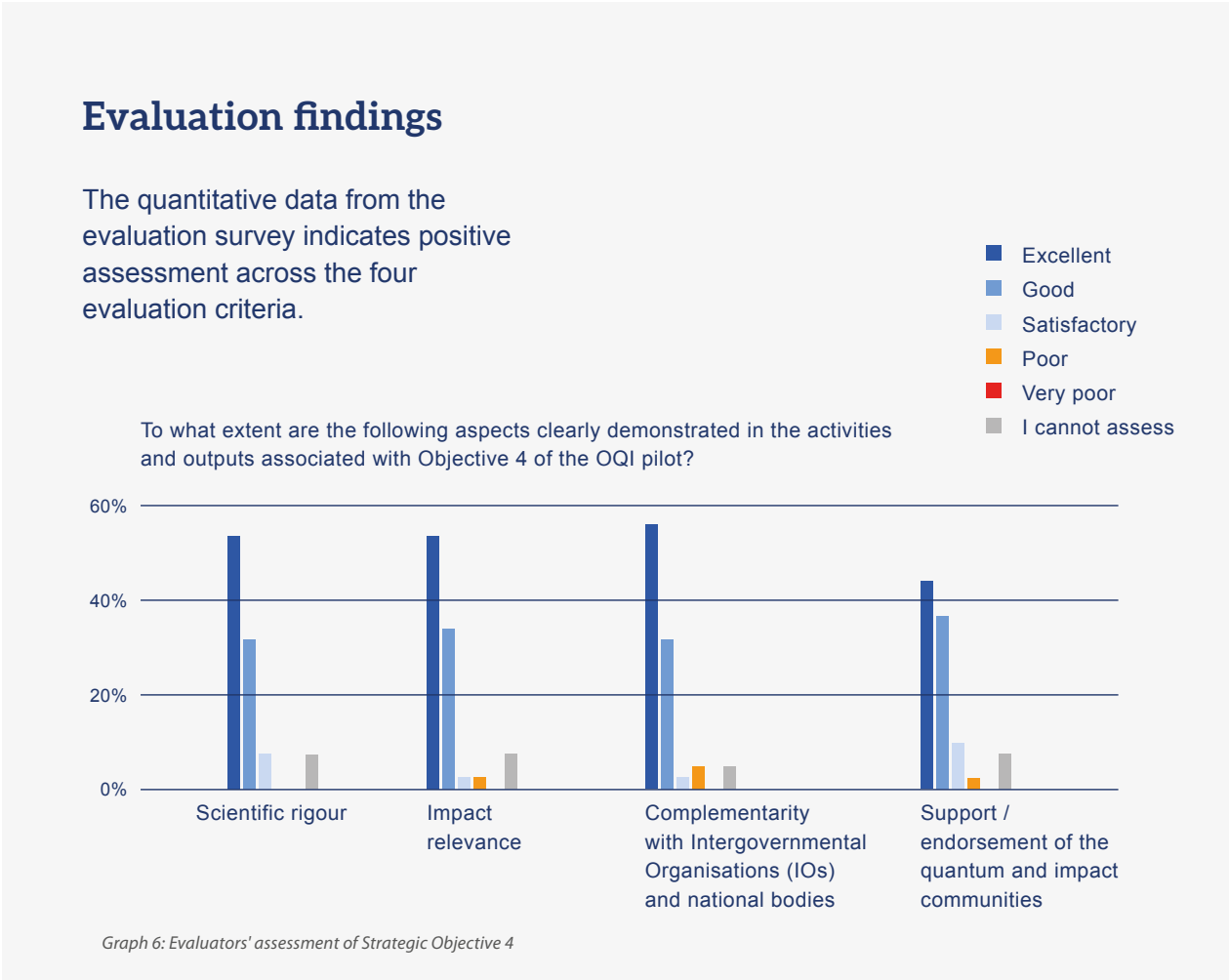
Set deliverables and achievements to date

DELIVERABLES SET IN THE DECISION NOTE (5 OCT. 2023)	ACHIEVEMENTS	STATUS
Achieved by September 2026		
Based on the practical experience and lessons learned from the work within the OQI, contribute to discussions at scientific level, among governments and with international organisations around quantum computing and the SDGs, to anticipate an open, inclusive, fair and equitable future governance of this new technology	• Thought leadership and publications OQI referenced in 1,200 academic and general interest articles as a novel governance model for emerging technologies* – 3 Intelligence Reports on Quantum Diplomacy published as open access documents • Diplomatic engagement – 200 individual briefings and 4 Regional Group briefings delivered to Permanent Representations to the UN in Geneva and their country-based counterparts (52% addressed to delegations from quantum-underserved geographies) • Engagement with international organisations – Substantive engagement with 20 international organisations based in Geneva, including ITU, UNIDIR, UNOG, UNICC, UNU, WHO, UN Habitat, WEF and GIGA/UNICEF • Engagement with 34 international organisations in other locations, including UNESCO, OECD, ILO (ITC ILO), WFP, WBG, IDB and UNFCCC • UN International Year of Quantum Science and Technology (IYQ) – Participation in the steering committee, active contribution recognised through strong visibility at opening and closing ceremonies – OQI confirmed as a founding implementation partner of the Global Quantum Initiative, in cooperation with UNESCO, which is the continuation of IYQ launched at the closing IYQ, and spearheaded by UNESCO and with GESDA among the founding partners. • Quantum Diplomacy Symposium, Geneva, June 2024 • Conference on Quantum Diplomacy in Action, Geneva, May 2026	✓ MET (Adapted)

* as tracked through continuous media monitoring over the pilot phase (January 2023 – December 2025)

DELIVERABLES SET IN THE DECISION NOTE (5 OCT. 2023)	ACHIEVEMENTS	STATUS
	Planned by end of the pilot (Dec. 2026)	
	Intelligence Report on Quantum Diplomacy in Action No. 4	In progress. Will be achieved by end of the pilot (October 2026)

Table 5: OQI pilot Objective 4 achievements summary



OQI's diplomatic engagement is strongly endorsed across all four dimensions by the large majority of evaluators. A small number of responses signal room for growth on quantum governance discussions and complementarity with intergovernmental organisations — pointing to a natural area of focus for the post-pilot phase.

The qualitative feedback from interviews, focus groups and survey responses outlined the following findings on **Strategic Objective 4**:

QUALITATIVE FEEDBACK

1. OQI's diplomatic engagement is assessed as complementary to national quantum policies, addressing a need that national policies and traditional multilateral approaches are not structured to meet. OQI can notably mobilise coalitions of willing partners and move to implementation, piloting concrete actions across multiple geographies.

*2. OQI's direct operational experience (through the exploration of use cases with international teams and the deployment of educational programmes globally) and its community of practice constitute a **valuable evidence base for informing policy discussions** at the international level.*

*3. OQI has contributed to **rebalancing the diplomatic narrative** on quantum computing, complementing the predominant focus on risk and threat at the start of the pilot towards a more differentiated recognition of the technology's potential and opportunity for global impact.*

*4. OQI provides a **neutral space for international collaboration** to continue despite the geopolitical sensitivity of the technology. This function is considered increasingly important in the current context and is relevant for other emerging dual-use technologies.*

LESSONS LEARNED FOR THE POST-PILOT PHASE

1. **OQI should preserve and reinforce its position as a neutral, expert-led platform**, independent from technology-specific, industry-specific and country-specific interests.
2. **Managing the balance between openness and technological sovereignty** and security will become increasingly critical in the coming years as quantum computing approaches real-world technological readiness at scale. OQI's stakeholders will require increased oversight of this balance in the post-pilot phase.

DETAILED RESULTS OF COMMUNITY BUILDING OBJECTIVE

The decision note of 5 October 2023 listed promoting and expanding an active and committed OQI community of supporters and users as an important objective. In practice, the pilot demonstrated that community building is not a distinct activity, but a natural outcome and enabler of all four strategic objectives presented further in Section 1.

36

Advisory Committee
representatives

1048

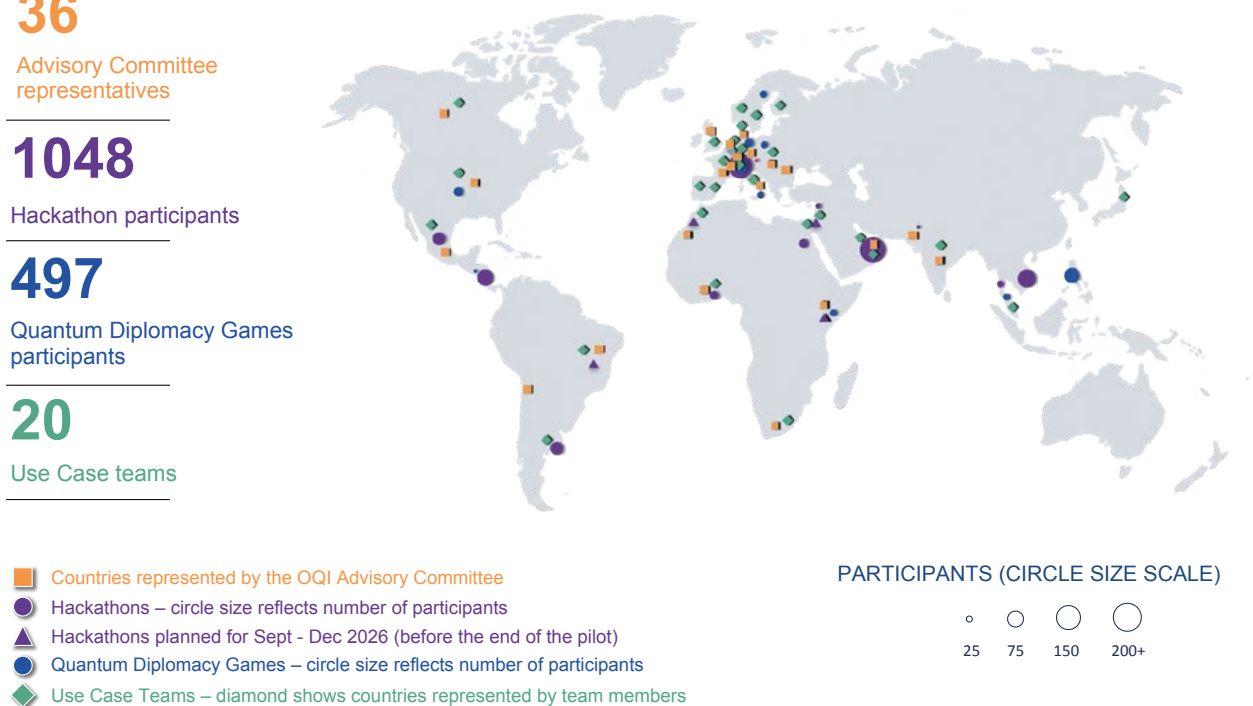
Hackathon participants

497

Quantum Diplomacy Games
participants

20

Use Case teams



Map 1: OQI's global community built during the pilot phase (2024–2026) to harness quantum computing for the benefit of humanity

OQI built its community through three interconnected channels, showcased on the map above.

Governing bodies. 36 Advisory Committee members from 20 countries and 24 scientific and impact panel experts from 10 countries bring together world-class expertise across science, diplomacy, industry and philanthropy (Annex 0).

Educational activities and use case exploration. By September 2026, 15 hackathons in 12 countries with participants from 108 countries, 31 Quantum Diplomacy Games in 13 countries, 95+ members of OQI's educational consortium from 39 countries, 20 use case teams, as well as numerous responsible computing and science policy experts expanded the community into new geographies and disciplines.

Beyond its scale, the community's distinctive value lies in its function: a global community of practice building the collective knowledge, relationships and capacity needed to leverage quantum computing when it reaches scale, increasing quantum readiness across geographies that would otherwise remain on the margins of this technological transition.

SECTION 2.

RECOMMENDATIONS OF THE ADVISORY COMMITTEE FOR OQI POST-PILOT PHASE

2.1 Recommendation to continue OQI within CERN

In light of the pilot evaluation presented in Section 1, the Advisory Committee strongly recommends the continuation of the OQI at CERN for a further four years (2027-2030), in alignment with CERN's overall strategic planning cycle. This recommendation reflects the pilot's successful delivery against its original deliverables, with all four strategic objectives met or exceeded, the strong endorsement of the global quantum community, and the growing importance of science diplomacy in the quantum domain as progress toward fault-tolerant quantum computing accelerates.

The Advisory Committee recommends maintaining the OQI's overarching goal unchanged: to enable quantum computing to deliver the widest possible societal impact by championing pathways for access to quantum resources and technical expertise. The Advisory Committee notes that achieving this goal in the current and expected scientific, technological and geopolitical context will demand sustained commitment and determination.

The OQI's four lines of action equally continue to offer a solid framework for the post-pilot phase, i.e: (1) Use Case Exploration, (2) Access to quantum and quantum-simulation computing capabilities, (3) Education and Capacity-Building, and (4) Multilateral Quantum Diplomacy and Governance. Detailed recommendations to frame the activities per action line are provided later in this Section.

2.2 Overall scope of the initiative

The Advisory Committee recommends that OQI grow only modestly in scale. The priority should be to maintain the level of quality and depth over breadth.

The effort should be concentrated where OQI has already shown it complements national and regional initiatives (global convening power, ability to provide a neutral space where collaboration continues despite geopolitical and business sensitivities, and capacity to deliver programmes on the geographies that most need it), as well as on sharpening the translation to real-world deployment of use case exploration and the impact expected for educational and science diplomacy programmes.

To do so, the Advisory Committee advises considering the following strategic evolutions for the OQI post-pilot phase:

First, closer integration between capacity-building and use case exploration, ensuring efficient cross-exchange of beneficiaries, methodologies, and findings between the two activities.

Second, greater emphasis on adapting activities to specific regional realities, OQI programmes should continue to be needs-based, policy-aligned, and should be progressively led by local and regional actors.

Third, a reasonable extension to advanced classical computing modalities, directly or through structured partnerships. This reflects the increasingly hybrid quantum-AI workflows. It should also allow use cases to be pursued even where quantum computing has not yet demonstrated a short-term advantage, so that the preparatory work carried out by use case teams can deliver short-term value.

Fourth, a strengthened focus on partnerships for impactful deployment, bringing the most promising use

cases closer to implementation and market readiness (by considering partnerships with impact investors and incubators).

Fifth, offer the OQI as a concrete sandbox to collect practice-based experience for the multilateral governance of quantum computing for the SDGs.

The Advisory Committee notes that the effective delivery of the above-mentioned partnerships will require greater agility in collaboration models. It therefore recommends streamlining legal and financial processes for the post-pilot phase, while preserving the oversight, accountability, and governance provided by CERN's governing bodies and the Advisory Committee.

2.3 Governance

OQI within CERN

CERN's strategy 2026-2030 positions quantum technology within Pillar 4 - Wider Societal Impact, which defines two complementary strands: the application of quantum technologies for fundamental science carried by the Quantum Technology Initiative (QTI); and the Open Quantum Institute (OQI), "looking at the relevance of quantum computing to developing nations". It is recognised that OQI and QTI are two distinct initiatives, each retaining its own mandate, while continuing to collaborate closely where their activities intersect.

CERN's role as host is a unique asset that enables OQI to deliver its mission effectively. CERN brings exceptional scientific credibility, both within its own community and through its global network of scientific partners. This credibility is essential for maintaining scientific rigour across all programmes and for establishing OQI as a trusted, evidence-based voice in a field often subject to significant hype. CERN's long-standing experience in international and multi-stakeholder collaboration, combined with its neutrality, further supports the principles of inclusion and diversity that are central to OQI's mission. Additional strengths include CERN's proven expertise in public-private partnerships for R&D and scientific education, as well as its commitment to the meaningful participation of countries with diverse scientific capabilities and profiles, whether Member States, Associate Member States, or non-Member States. Finally, CERN provides robust governance, oversight, and project review mechanisms that ensure accountability and effective follow-up.

The Advisory Committee notes that more opportunities for complementarity exist within CERN, beyond the existing collaboration with QTI, in particular with Stakeholder Relations, on education and science diplomacy, and the Open Science function. These opportunities also align closely with the CERN strategy for 2026-2030. Within Pillar 3, OQI's mission resonates with Aim 15's commitment to making CERN's research openly available and reusable for the benefit of the scientific community and society at large, and with the strengthening of CERN's Open Science framework under the Office of the CIO. There is also further potential for alignment within Pillar 5, in Aim B, CERN as a beacon of inclusivity in science; in Aim D, sustainability across all that CERN does; and in Aim F, to strengthen global outreach and build capacity in education.

OQI organisation

Since January 2026, OQI has been part of the special projects of CERN's Office of the Chief Information Officer (OCIO), operating under the supervision of the Chief Information Officer. The Advisory Committee is satisfied with this arrangement.

In addition to the "normal governance" as part of CERN, the recommendation regarding OQI-specific

governance bodies is to maintain the Advisory Committee as the main provider and evaluator of strategic input to the OQI team (keeping its structure and terms of reference - see Annex). The Advisory Committee proposes that, in addition, four specific thematic commissions, Scientific, Education, Diplomacy and Governance, and Impact Deployment, be set up to provide the OQI team with in-depth, domain-specific expertise. Each commission would draw at least half of its membership from the Advisory Committee, complemented by invited distinguished experts vetted by the Advisory Committee, and would convene at least once a year in person to support the drafting of the programme of work for the following year.

Beyond these advisory structures, the Advisory Committee notes that continuity of the OQI team, seniority commensurate with the initiative's ambitions, and personnel committed for the full duration of the post-pilot phase are essential to its delivery.

The Advisory Committee acknowledges that, at the time of this report, the precise administrative structure for hosting OQI within CERN remains to be confirmed, pending further consultation with CERN's Legal Service.

2.4 Funding model

Annual funding need

Consistent with the recommendation for measured growth, the annual funding requirement for the post-pilot phase is estimated at CHF 2.5-4 million. This target is considered realistic in light of the fundraising progress achieved since 2026. As of early September 2026, UBS, the pilot's lead funding partner, has committed CHF 1 million annually for the first three years, and there are strong indications that a further CHF 1 million per year will be secured by the end of 2026. Additional funding opportunities are being actively pursued, with the aim of diversifying OQI's funding base through global philanthropic contributions and impact investors, which are expected to serve as the principal complementary funding streams during the post-pilot phase. A further source of support is emerging from organisations interested in adapting OQI's programmes to their own regional contexts. Over time, this funding stream is expected to become an increasingly important complement to core funding, directly supporting the broader shift toward regional adaptation described above.

Partnerships/ in-kind contributions

Alongside financial funding, OQI's post-pilot phase will also continue relying on strong partnerships providing in-kind contributions of computing capability and technical expertise, from HPC and QPU access to expert support on use case development and educational activities. Partners will be selected to ensure representativeness across geographies, scientific focus (quantum computing theory, algorithms, etc.), application domains of the use cases (materials science and chemistry, medical research, logistics, etc.), technology modality utilised (superconducting, trapped ions, photonic, etc.) and type of entity (start-up vs. corporate, new player vs. incumbent). Partnerships should continue to be regularly assessed over the post-pilot phase and as the technology evolves. Assessment will be based on the competence and expertise partners can bring, and the level of their commitment in time and resources to OQI, on the recommendation of the OQI Advisory Committee. All partnerships will be validated against CERN policies and frameworks to ensure that decisions of the Member States concerning CERN collaboration are fully respected.

2.5 Programmatic principles for the post-pilot phase: details per action line

Based on the results of the evaluation, the Advisory Committee recommends the below programmatic principles per action line. The principles capture the sharpened focus and adaptations that the pilot evaluation identified as needed within each action line, providing strategic direction for 2027–2030 while preserving operational flexibility across all four action lines. The Advisory Committee intends to serve as the custodian of these recommendations, ensuring their continued coherence and alignment with OQI's mission. A mid-term evaluation in 2029 will assess their ongoing relevance and effectiveness.

Use Case exploration

Objective: Confirm the OQI as the reference place for international cooperation on the exploration of applications of quantum computing for the SDGs and other societal challenges

PROGRAMMATIC PRINCIPLES	ENABLING CONDITIONS
The portfolio of use cases demonstrates equitable and inclusive participation of quantum-underserved geographies	• Mobilization of multidisciplinary experts from target geographies (starting with awareness-raising of onboarding subject-matter experts) is a prerequisite for inclusivity and equity in the use case support • Structured engagement and capacity-building with local (computing and domain-specific) institutions will ensure they act as co-creators of use cases (rather than being downstream beneficiaries) • Ideation of use cases is aligned with regional policy priorities and local SDG application domain expertise to maximise targeted participation and impact
Scaling real-world impact gains focus in the post-pilot phase	• The use case exploration consists of applying existing quantum algorithms for real-world impact (not designing novel algorithms); quantum-adjacent solutions are part of the scope • Transferability of the approach for a specific use case to other SDG challenges is systematically assessed with impact and application domain experts • AI-based solutions pathways bridging near-term impact and future quantum scale are pursued through institutional partnerships with like-minded institutions
Beyond their immediate outputs, the use case exploration activities serve as a vehicle for capacity building, fostering a global community of practice	• The use case exploration is guided by a robust quantum application framework, constantly updated by independent scientific and impact expert panels to integrate new findings and promising prospects towards quantum advantage into OQI activities. • Methodologies and insights stemming from individual use case projects are translated into educational and training resources for dissemination across multidisciplinary communities
Open Science and Human Rights to science are guiding frameworks of the use case exploration process	<i>Dedicated working group to be set up</i>

Access to computing capability

Objective: secure a resilient diversified pool of quantum and adjacent state-of-the-art computing, through public and private partnerships, and make it accessible free-of-charge to a global diverse and inclusive group beneficiaries

PROGRAMMATIC PRINCIPLES	ENABLING CONDITIONS
Comprehensive access is provided by OQI and its partners across all activities and full development pipeline	• Access covers all computational needs of capacity-building and use case development, from HPC for simulation to QPUs for implementation • Access encompasses not only computational resources but also the technical expertise required to make effective use of them • OQI Scientific Commission actively monitors and recommends integrating emerging components of the technology stack (e.g: AI-assisted coding tools) in due course, as the ecosystem evolves, with particular emphasis on HW-agnostic access middleware/mechanisms
The pool of computational capacity provided by OQI and its partners is balanced and representative of state-of-the-art solutions	• The pool of capacity covers all prominent quantum computing modalities currently available and relevant to the use case portfolio • A deliberate public-private balance is maintained: public investment in quantum computing and HPC is systematically monitored and mobilised to complement private sector contributions • Geographical diversity of providers is actively sought
The allocation of resources is open, accountable and needs-based	• A defined set of criteria governs allocation decisions, ensuring consistency, fairness, and independence from provider interests • Allocation of computational resources and technical support covers all action lines and is calibrated to specific needs rather than applied uniformly • Effective use of the allocated resources is monitored qualitatively and quantitatively • Allocation criteria and decisions are revised on a yearly basis by the Advisory Committee, ensuring accountability and oversight

Education and capacity-building

Objective: provide and support the deployment of educational resources to support the involvement of players from underserved regions in the development of quantum computing applications

PROGRAMMATIC PRINCIPLES	ENABLING CONDITIONS
Capacity-building activities form an integrated programme, allowing for learning journeys adapted to audiences with diverse degrees of engagement with quantum computing	• Outreach extends beyond STEM university students to experts and scientists from application domains • Activity formats are diversified and adapted to ensure inclusivity across all learning journeys and engagement levels • Explicit links between activities and systematic integration of OQI-wide insights ensure the programme delivers cumulative impact, with follow-up mechanisms ensuring continued support to participants from underserved geographies beyond the initial activity

PROGRAMMATIC PRINCIPLES	ENABLING CONDITIONS
Programmatic coherence is ensured through strong scientific oversight and focus on OQI's differentiating value proposition	- Activities are calibrated to the current technological readiness level of quantum computing: OQI remains aware of the risks associated with hype and engages closely with the scientific community to maintain credibility - Each individual capacity-building programme is scientifically validated by the Education Commission - All capacity-building programmes integrate the two core points of OQI's value proposition: grounding in real-world challenges and societal impact awareness - Links with use case exploration and multilateral diplomacy are systematically strengthened, so that insights and methodologies flow between action lines
Regional ecosystems drive the design of the programmes, ensuring relevance to local conditions and impact challenges	- OQI systematically seeks collaboration with nascent ecosystems and initiatives in the target geographies, rather than creating parallel structures; OQI's value-add is focused on connecting them to the adequate expertise - A structured approach to community-building enables trained leaders in under-served regions to train other leaders - When commissioning or co-developing educational resources, OQI gives precedence to partners of quantum-underserved regions and CERN Member States
Return on experience of capacity-building activities is channelled into evidence-based policy-making	- OQI's global reach and neutrality enable the collection of diverse data on learners and quantum communities; findings are synthesised with academic partners and fed back into programme design - In collaboration with partners including UN organisations, OQI supports quantum-underserved governments in building quantum readiness through scalable programmes

Multilateral governance and quantum diplomacy for the SDGs

Objective: based on the practical experience and lessons learned, contribute to discussions among governments and with international organisations around quantum computing and the SDGs, and beyond, to anticipate an open, inclusive, fair and equitable future governance of this new technology

PROGRAMMATIC PRINCIPLES	ENABLING CONDITIONS
The SDGs (and succeeding UN framework) remain the entry point for OQI's work in quantum governance	OQI's diplomatic engagement starts from a concrete question: what governance conditions are needed for quantum computing to deliver on its potential for the SDGs (and succeeding UN framework)?
The target is that all countries can have a voice in the quantum diplomacy and governance discussion (regardless of quantum capacity)	- OQI actively works to ensure every country, with or without existing quantum computing capacity, has a voice in shaping the future governance of quantum computing - Engagement is designed to widen geographical representation, and to build the trust and fluency of quantum-underserved nations to participate as informed interlocutors

PROGRAMMATIC PRINCIPLES	ENABLING CONDITIONS
OQI is geopolitically aware, whilst as neutral as possible	• OQI provides evidence, analysis, and structured dialogue to inform multilateral governance • This practice-based posture is maintained consistently with national governments and multilateral institutions alike • OQI addresses the dual-use nature of quantum computing, including the growing number of governmental restrictions on shared access to quantum systems • OQI monitors the geopolitical landscape to ensure its engagement remains relevant and its neutrality credible: the OQI serves as a global neutral forum
OQI operates on the premise that quantum is only beneficial if it is responsible	• Equity, security, environmental impact, openness and human rights are not constraints on quantum development but conditions for it to deliver value at all.
OQI is a sandbox for quantum governance models - it is not reinventing the wheel	• OQI provides a space to design, test, and iterate new governance models for emerging technologies; it is designed to build on the learnings from existing approaches and improve on them • Lessons learned from these trials are shared as concrete contributions to the broader multilateral discussions on governance of transformative technologies • Partnerships to advance the lessons learned and share governance experiences collected at OQI are actively sought

ANNEXES

Annex 0 – Composition of OQI’s Advisory Committee

Name	Affiliation	Position
Alain Labrique	WHO	<i>Director of Digital Health and Innovation</i>
Alexander Kmentt	Permanent Mission of Austria to the United Nations Office	<i>Permanent Representative</i>
Anousheh Ansari	XPRIZE Foundation	<i>CEO</i>
Arindam Bagchi	Permanent Mission of India to the United Nations Office	<i>Permanent Representative</i>
Barry Sanders	Quantum City, University of Calgary	<i>Scientific Director</i>
Bilal Ahmad	Permanent Mission of the Islamic Republic of Pakistan to the United Nations Office	<i>Permanent Representative</i>
Luis Plaza Gentina	Permanent Mission of Chile to the United Nations Office	<i>Permanent Representative</i>
Cornelius Hempel	ETH Zürich – PSI Quantum Computing Hub	<i>Group Head</i>
Diederick Croese	Centre for Quantum & Society, QDNL	<i>Director</i>
Dominik Heinrich	WFP	<i>Director of Innovation</i>
Elica Kyoseva	NVIDIA	<i>Director of Quantum Algorithm Engineering</i>
Francesca Mendez	Permanent Mission of Mexico to the United Nations Office	<i>Permanent Representative</i>
Francesco Petruccione	Stellenbosch University, National Institute for Theoretical and Computational Sciences (NITheCS)	<i>Professor, Director</i>
Genya Crossman	IBM Quantum	<i>Quantum Engineer & Data Strategist</i>

ANNEXES

Name	Affiliation	Position
George Pantelimon Popescu	University Politehnica of Bucharest	<i>Head of Quantum Computing</i>
James Waweru	Permanent Mission of the Republic of Kenya to the United Nations Office	<i>Permanent Representative</i>
Julia Thiele	Amazon Web Services (AWS)	<i>EMEA Business Development and Go-To-Market Strategy for Quantum Computing</i>
Luigi Maria Vignali	Permanent Mission of Italy to the United Nations Office	<i>Permanent Representative</i>
Manfred Plank	UBS	<i>Group Head of Quantitative Risk Modelling</i>
Marco Gilli	Fondazione Compagnia di San Paolo	<i>Chair</i>
Matthias Christandl	University of Copenhagen Quantum Hub (UCPH)	<i>Professor, Chair</i>
Matthias Troyer	Microsoft Quantum	<i>Technical Fellow and CVP</i>
Nitin Arora	Stakeholders Interaction Unit, UN Climate Change Secretariat (UNFCCC)	<i>Lead</i>
Omar Zniber	Permanent Mission of the Kingdom of Morocco to the United Nations Office	<i>Permanent Representative</i>
Ozge Aydogan	Beyond Lab, United Nations Geneva	<i>Director</i>
Philippe Chomaz	Commissariat à l'énergie atomique et aux énergies alternatives (CEA)	<i>Executive Scientific Director</i>
Prince Osei	African Institute for Mathematical Sciences (AIMS), Quantum Leap Africa (QLA)	<i>Lead Scientist, Director</i>
Rosario Fazio	Trieste Institute for Quantum Technologies, (TQT), Abdus Salam International Centre for Theoretical Physics (ICTP)	<i>Director</i>
Ryan Babbush	Google	<i>Head of Quantum Algorithms & Applications</i>
Sana Odeh	New York University and New York University Abu Dhabi (NYUAD)	<i>Professor</i>
Simon Plant	National Quantum Computing Centre (NQCC)	<i>Deputy Director for Innovation</i>
Tovar Da Silva Nunes	Permanent Mission of Brazil to the United Nations Office	<i>Permanent Representative</i>
Urbasi Sinha	Raman Research Institute, Head of Quantum Information and Computing (QuIC) laboratory	<i>Professor, Head</i>
Vincenzo Savona	Ecole Polytechnique Fédérale de Lausanne	<i>Professor</i>
Vladimír Bužek	Slovak Academy of Sciences	<i>Professor</i>

Annex 1 – OQI Pilot Evaluation methodology

Objectives

In line with the requirements of the CERN Council in its session of 5 October 2023, the objectives of the evaluation were set by the Advisory Committee (AC) as follows:

1. to assess if OQI is on track to fulfil the objectives assigned by the end of its pilot
2. to consider whether its mission and scope remain relevant in view of the evolving quantum computing, stakeholder needs and diplomatic context
3. to identify conditions necessary for the continued success of OQI in its post-pilot phase

Evaluation timeline

- Sept.-Oct. 25** Proposal of a framework for OQI Pilot evaluation by a dedicated task force (subset of the AC) – proposal of evaluation criteria and modalities
- 6 Oct. 25** Validation of the evaluation framing by the OQI AC
- Feb.-Apr.26** Evaluation process with consultations of the full AC, key partners and the wider quantum community
- Aug. 26** Validation of the Evaluation Report by the OQI AC
- Sept.-Dec. 26** Presentation of the Evaluation Report to the CERN Council and GESDA's Board for decision on the continuation of OQI at CERN

Evaluation modalities

All evaluators received an information package ahead of collection of their feedback. This feedback was gathered through the following means:

Survey: A questionnaire sent to 98 members of the OQI community including all Advisory Committee members, beneficiaries of OQI programmes, partners and like-minded institution. The sample was validated by the OQI pilot evaluation task force to ensure geographical, community and stakeholder profile representation. The response rate reached 42% after three follow-ups.

Focus Groups: Three focus groups took place to conduct deep-dives into specific questions surfaced by the questionnaire or one-to-one interviews: one with a scientific group, one with an impact group (philanthropy, private sector and UN stakeholders) and one with an education stakeholder group.

One-to-one interviews: 16 interviews were conducted with selected members of the OQI Advisory Committee and community.

Evaluation information packages

The evaluation information packages are available to the readers of this report here:

Strategic Objective – Community and Outreach: cern.ch/oqi-strategic-objective-community-outreach

Strategic Objective 1: cern.ch/strategic-objective-1

Strategic Objective 2: cern.ch/strategic-objective-2

Strategic Objective 3: cern.ch/strategic-objective-3

Strategic Objective 4: cern.ch/strategic-objective-4

List of evaluators

	Name	Affiliation	Position	Role with OQI
1	Abdessamad Belfakir	University Mohammed VI Polytechnic (UM6P)	<i>Assistant Professor</i>	A1 - use cases
2	Alain Labrique	WHO	<i>Director of Digital Health and Innovation</i>	AC member
3	Albert Werner	University of Copenhagen	<i>Associate Professor</i>	Scientific Panel
4	Amal Kasry	UNESCO	<i>Chief of Section for Basic Sciences, Research, Innovation and Engineering</i>	Impact Panel
5	Anousheh Ansari	XPRIZE Foundation	<i>CEO</i>	AC
6	Areeya Chantasri	Mahidol University	<i>Associate Professor, Department of Physics, Faculty of Science</i>	A3 - Hackathon, Beneficiary, Focus Group Education
7	Barry Sanders	Quantum City, University of Calgary	<i>Scientific Director</i>	AC member; Focus Group Scientific
8	Beatrice Ferrari	Canton Geneva	<i>Director of International Affairs</i>	A4 - other
9	Bilal Ahmad	Permanent Mission of the Islamic Republic of Pakistan to the United Nations Office	<i>Permanent Representative</i>	AC member
10	Brad Kim	Korea Quantum Industry Association	<i>Chief Quantum Officer</i>	Multiplier
11	Brad Lackey	Microsoft	<i>Quantum Architect</i>	Scientific Panel
12	Christian Sarra-Bournet	Institut Quantique, University of Sherbrooke	<i>Executive Director</i>	A1 - framework; Partner
13	Clément Javerzac	FHNW / EPFL	<i>Professor, Group leader</i>	Scientific Panel
14	Cornelius Hempel	ETH Zürich – PSI Quantum Computing Hub	<i>Group Head</i>	AC member
15	Damien Somé	GARDP	<i>External Affairs Senior Manager</i>	Focus Group Impact
16	Daniel de Horas Moraes	Venturus	<i>Head of Emerging Technologies</i>	A1 - use cases, Focus Group Scientific, Beneficiary
17	Daniel Stilck Franca	University of Copenhagen	<i>Associate Professor</i>	Scientific Panel
18	Davide Fanciulli	Beyond Lab	<i>Programme Management Officer</i>	Impact Panel
19	Diederick Croese	Centre for Quantum & Society, QDNL	<i>Director</i>	AC member, Focus Group Impact
20	Dominik Heinrich	WFP	<i>Director of Innovation</i>	AC member

List of evaluators

	Name	Affiliation	Position	Role with OQI
21	Eleni Diamanti	CNRS	<i>Director of the Paris Centre for Quantum Computing</i>	Focus Group Scientific
22	Elica Kyoseva	NVIDIA	<i>Director of Quantum Algorithm Engineering</i>	AC; Focus Group Scientific
23	Farai Mazhandu	Africa Quantum Consortium	<i>Founding Executive Director and Convenor</i>	A3 - all, Beneficiary
24	Francesco Petruccione	Stellenbosch University, Director of the National Institute for Theoretical and Computational Sciences (NITheCS)	<i>Professor, Head</i>	AC member
25	Genya Crossman	IBM	<i>Quantum Engineer & Data Strategist</i>	AC member, Focus Group Impact
26	Graham Alabaster	UN Habitat	<i>Head of Office</i>	A1 - use cases
27	Hiro Mori	QSTAR	<i>Facilitate open innovation with global partner and Toshiba, Chair of Global Consortium Alliance WG</i>	A1 - framework
28	Julia Cramer	QDNL, Leiden University	<i>Assistant Professor</i>	Impact Panel
29	Julia Thiele	AWS	<i>EMEA Business Development and Go-To-Market Strategy for Quantum Computing</i>	AC member, Focus Group Impact
30	Klaus Ensslin	Swiss Quantum Commission (SQC), ETH Zurich	<i>President, Professor</i>	A4 - other
31	Marco Fischer	Federal Department of Foreign Affairs (Switzerland)	<i>Head of Section Science Diplomacy</i>	A4 - other
32	Marco Gilli	Fondazione Compagnia di San Paolo	<i>Chair</i>	AC member
33	Matteo Ceccarelli	University of Cagliari	<i>Professor</i>	A1 - use cases
34	Matthias Christandl	University of Copenhagen Quantum Hub (UCPH)	<i>Professor, Chair</i>	AC member
35	Matthias Troyer	Microsoft Quantum	<i>Technical Fellow and CVP</i>	AC member
36	Mauricio Gutierrez	University of Costa Rica	<i>Associate Professor</i>	A3 - QDG Costa Rica, Beneficiary
37	Mira Wolf-Bauwens	GESDA	<i>Head of Initiatives Development</i>	Impact Panel
38	Mourad Beji	Pasqal	<i>Chief Software Officer</i>	A1 / A2 - Partner
39	Natasha Oughton	UKRI National Quantum Computing Centre (NQCC)	<i>Policy and Ethics Lead</i>	Impact Panel
40	Olivier Ezratty	Quantum Energy Initiative (QEI)	<i>Cofounder</i>	Scientific Panel

List of evaluators

	Name	Affiliation	Position	Role with OQI
41	Pak Shen Choong	Universiti Putra Malaysia, Malaysia	<i>Theoretical physicist in quantum information theory</i>	A3 - Hackathon, Beneficiary
42	Philipp Thomas	Planqc	<i>Quantum Algorithms Engineer</i>	A1 - use cases
43	Philippe Chomaz	Commissariat à l'énergie atomique et aux énergies alternatives (CEA)	<i>Executive Scientific Director</i>	AC member
44	Prince Osei	African Institute for Mathematical Sciences (AIMS), Quantum Leap Africa (QLA)	<i>Lead Scientist, Director</i>	AC member
45	Rafael Sotelo	Universidad de Montevideo	<i>Cofounder of Quantum-South. Director of ITC Department - School of Engineering</i>	A3 - Hackathon, Beneficiary
46	Ricky Young	qBraid	COO	Partner, Focus Group Education
47	Ronin Wu	QunaSys	<i>Project Director</i>	A1 - use cases, Focus Group Scientific
48	Rosario Fazio	Trieste Institute for Quantum Technologies, (TQT), Abdus Salam International Centre for Theoretical Physics (ICTP)	Director	AC member
49	Sana Odeh	New York University	<i>Professor</i>	AC member, Focus Group Education
50	Simon Plant	National Quantum Computing Centre (NQCC)	<i>Deputy Director for Innovation</i>	AC member
51	Sofia Vallercorsa	CERN	<i>Coordinator of CERN Quantum Technology Initiative (QTI)</i>	Scientific Panel
52	Stela Mocan	World Bank	<i>Acting Director, DPI & Services, Digital & AI Vice Presidency</i>	Impact Panel
53	Tobias Denzler	QAI Venture	<i>Head Science & Technology</i>	Multiplier
54	Tommaso Calarco	EU/EC, QuIC	<i>Professor, co-founder</i>	A4 - other
55	Urbasi Sinha	Raman Research Institute, Quantum Information and Computing (QuIC) laboratory	<i>Professor, Head</i>	AC member, Focus Group Scientific
56	Vincenzo Savona	Ecole Polytechnique Fédérale de Lausanne	<i>Professor</i>	AC member
57	Worawat Meevasana	QTRic, Suranaree University of Technology, Thailand	<i>Lead of Thai Quantum Consortium</i>	A3 - Hackathon, Beneficiary, Focus Group Education
58	Youssef Eldakar	Bibliotheca Alexandrina, International School of Information Science	<i>Head</i>	A3 - Hackathon, Beneficiary
59	Zeki Can Seskir	KIT/ TUM	<i>Researcher</i>	A3/ A4, Focus Group Education

Annex 2 – Defining the success metrics of Strategic Objective 1

CERN Council's decision to host OQI in October 2023 was based on a note that established as a Key Performance Indicator (KPI) for Strategic Objective 1 (SO1) that “OQI should support the exploration of at least 20 projects targeting SDG-related use cases and other societal challenges, of which 4-6 projects should reach completion”.

Projects that reach completion during the OQI pilot are projects evaluated as proof-of-concepts. The evaluation is sanctioned by OQI's Scientific and Impact Evaluation Panels. The Advisory Committee defined a **proof-of-concept (PoC)** as a demonstration that quantum computing can solve a problem, either on current quantum hardware devices within the Noisy Intermediate-Scale Quantum (NISQ) era, or in terms of future Fault-Tolerant Quantum Computing (FTQC) hardware. In addition, the problem addressed must be representative of a real-world SDG challenge, and its quantum solution must explore a pathway in pursuit of some form of advantage over classical counterparts, at least in the FTQC regime.

To support use case teams towards achievement of this KPI, OQI and its Advisory Committee articulated a structured methodology and practical guidelines — the [OQI Quantum Application Framework*](#) — which was subsequently reviewed and vetted by 16 global leading quantum applications centres. This framework defines the multiple phases of development of a use case project, from ideation to PoC, and specifies the successful output expected at each phase, as well as the criteria governing the advancement through the phases (illustrated in Figure 1 and detailed in Table 1).

Ongoing support from OQI to interdisciplinary collaboration teams, through pairings with quantum, domain and SDG experts

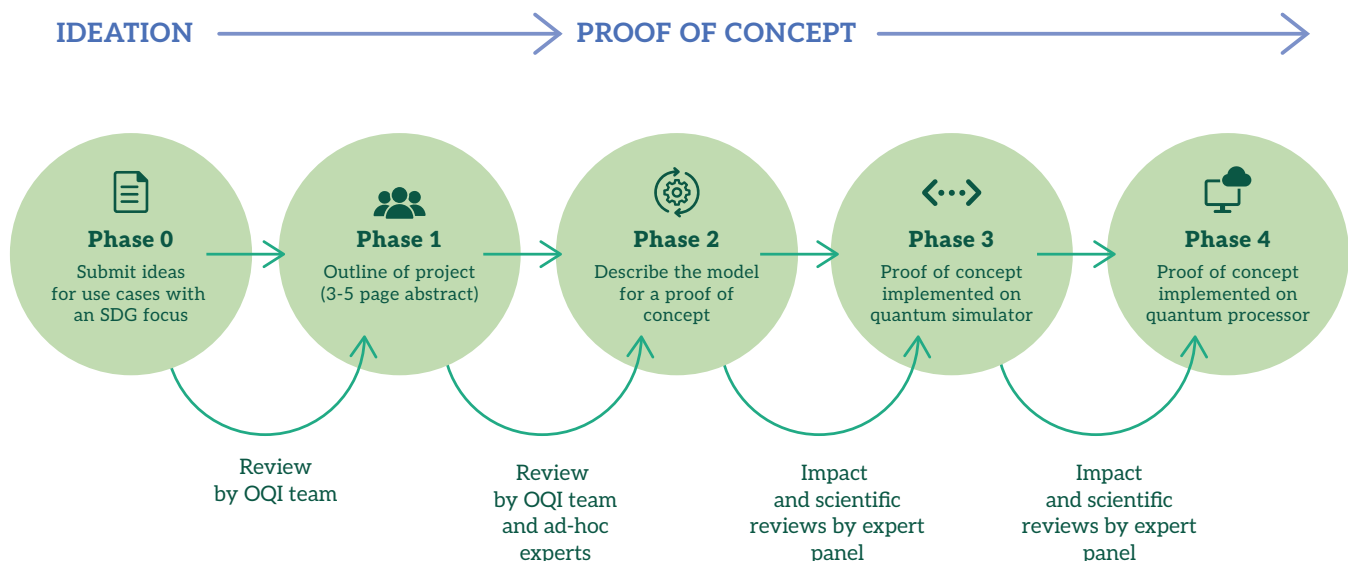


Figure 1. Phases of development of use case projects, from ideation to completion of PoC.

* <https://repository.cern/records/gyty7-jwc61>

To keep the use case portfolio relevant, OQI engages leading experts at every stage of this methodological framework, ensuring alignment with both the current state and the evolving capacity of the technology. The Scientific and Impact Evaluation Panels can recommend discontinuing OQI's support for a use case project at any stage of this process. Through this continuous review, OQI ensures the use case portfolio remains scientifically rigorous, socially impactful, and responsive to progress in quantum computing.

The figure below illustrates the decision process of evaluating a PoC and of advancing it through the development phases, under a fixed timeframe, with the support of OQI.

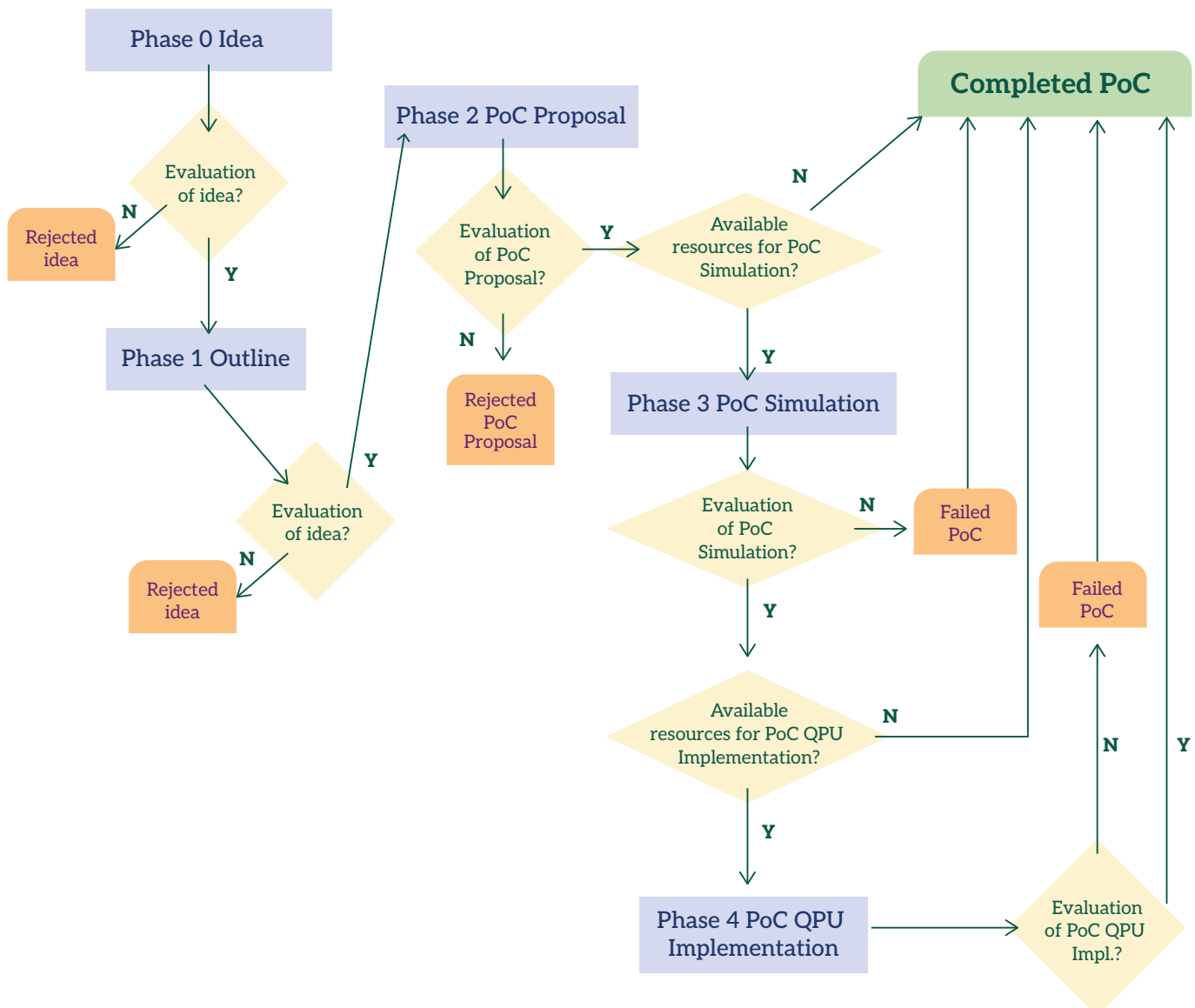


Figure 2. The flow chart indicates the process of evaluation, advancement and completion for PoCs along the OQI pipeline. Please refer to Table 2 for more information on each use case project, and their current standing.

As of September 2026, and among the 20 use case projects selected for support by OQI, **5 reached the stage of completed evaluated PoC**, with an **additional 5 PoCs in progress**.

TABLE 1 - PoC phases

Phase	Expected Output	Evaluation of PoC Following an evaluation by the Scientific and Impact Evaluation Panels, decision can either:	Status of OQI pipeline Sept. 2026
Phase 2 – PoC Proposal	Full proposal reviewed by the Scientific and Impact Panels (evaluation criteria in Table 3). The full proposal presents a convincing computational model with a rigorous justification of the quantum approach and a strategy for benchmarking with classical computers. The proposal includes a rigorous resource assessment, which is a projection of the needs for (i) HPC simulation, (ii) current quantum computing hardware (NISQ) and/or (iii) scalable solution on future quantum platforms (FTQC). It also presents an impact assessment of the potential quantum solution.	i) approve proposal for PoC and advance to Phase 3 ii) approve proposal for PoC and complete PoC, if the full proposal was convincing but cannot yet be addressed due to resource constraints or technological limits iii) reject proposal for PoC, if the full proposal does not satisfy the evaluation criteria	i) 10 full proposals were approved for PoC and advanced to the next phase ii) 4 full proposals rejected
Phase 3 – PoC Simulation	Simulation report reviewed by the Scientific and Impact Panels (evaluation criteria in Table 4). The simulation report presents meaningful results from the small-scale PoC implementation on cloud-available quantum simulators. Simulation tests are performed to optimise the potential quantum computing solutions.	i) pass and advance PoC to Phase 4 ii) fail and complete PoC, if the simulation report does not satisfy the evaluation criteria, for instance if advancing to Phase 4 is constrained by the maturity of current quantum computational technologies or the availability of sharable resources within OQI, or if the strategy of the full proposal was carried out but did not achieve positive results (e.g. limited pathway for advantage and scaling on QPU)	i) 4 advanced to the next phase ii) 3 completed evaluated PoCs In progress: 3 additional PoCs are still to be evaluated
Phase 4 – PoC QPU Implementation	QPU implementation report reviewed by the Scientific and Impact Panels (evaluation criteria in Table 5). The QPU implementation report presents meaningful results from the small-scale PoC implementation on cloud-available quantum processors. The report should conclude with an assessment of the performance scaling on future large-scale fault-tolerant quantum computers (FTQC). This implementation also serves as practical capacity building for effective use of the computing resources.	i) pass and complete PoC ii) fail and complete PoC, if the final report does not satisfy the evaluation criteria. Note: Advancing to a further phase, with deployment and testing in real-world settings, is beyond the scope of OQI.	i) 2 completed evaluated PoCs In progress: 2 additional PoCs are still to be evaluated

TABLE 2 - Status of the PoCs (as of Sept. 2026)

Phase	Use Case	Description	Status
Phase 3 – PoC Simulation	Molecular Docking to Clean Up Pollution	Quantum simulation and quantum machine learning solution to accurately model the chemical process of molecular docking involved in removing organic pollutants in water.	Completed evaluated PoC Simulation results indicate that further steps would need quantum hardware that is unavailable today to perform QPU implementation.
	Predicting Gastrointestinal Cancer	Quantum machine learning solution to improve accuracy of gastrointestinal cancer diagnosis and speed up medical treatment and prevention.	Completed evaluated PoC Simulation results from selected quantum approaches yield no meaningful pathway for advantage over classical methods.
	Water Leak Detection	Quantum optimization solution to optimally position sensors and detect water leaks in urban water systems.	Completed evaluated PoC Simulation results from selected quantum approaches yield no meaningful pathway for advantage over classical methods.
	Weather and Climate Forecasting	Quantum fluid dynamics simulation to improve the reliability of weather and climate forecasts.	PoC in progress
	Women's Healthcare	Quantum simulation of the molecular interaction of the biological targets and drugs involved in the treatment of endometriosis.	PoC in progress
	Forest Degradation Monitoring	Quantum machine learning solution to monitor forest degradation in the Amazon by more efficient satellite analysis.	PoC in progress
Phase 4 – PoC QPU Implementation	Sustainable Food Production	Improving sustainability of global food systems by making them more resilient to climate change through a quantum optimization solution to produce more nutritious food locally on less land.	Completed evaluated PoC QPU implementation results demonstrated how the quantum approach could scale on a large-scale QPU. Scientific paper submitted to 2026 IEEE Quantum Week.
	Accelerating Novel Antimicrobial Discovery	Quantum machine learning solution to accelerate antimicrobial discovery and lower resistance to drugs.	Completed evaluated PoC QPU implementation results demonstrated how the quantum approach could scale on large-scale QPU. Scientific paper submitted to 2026 IEEE Quantum Week.
	Plant Genomics	Quantum computing solution to improve wheat, corn and soy yield by targeted gene editing.	PoC in progress
	Drug Metabolism Design	Quantum simulation of electronic structures to understand metabolic processes of enzymes to reduce adverse drug reactions.	PoC in progress

TABLE 3 - Evaluation criteria of PoC full proposals (Phase 2)

1. Problem Formulation

(evaluation done by all Experts)

(20% total weight)

- a. To what extent is the problem clearly defined, both in terms of scientific rigour and its relevance to a concrete real-world problem?
- b. To what extent would the quantum solution transform how the identified SDG challenge is addressed?

2. Scientific and computational relevance

(evaluation done by Scientific Experts)

(45% total weight)

- a. To what extent is the problem clearly detailed mathematically?
- b. To what extent is the computational approach framed, and to what extent are state-of-the-art classical bottlenecks clearly identified?
- c. To what extent is there a detailed justification of the relevance and need for quantum computing (e.g. does the level of complexity of the problem require quantum computing)?
- d. To what extent is the feasibility of a proof of concept clearly detailed (with computing resource requirements clearly estimated and benchmarking strategy against state-of-the-art classical computing solutions detailed)?
- e. To what extent could a small-scale proof of concept be tested on small-scale devices (NISQ) with potentially meaningful results, and be realistically executed within the indicated timeframe?

3. Impact relevance

(evaluation done by Impact Experts)

(25% total weight)

- a. To what extent does the quantum solution meet a "business" need (i.e. challenge validated or prioritised by an IGO)?
- b. At a local level, to what extent is the impact on people, planet and prosperity assessed across short-, medium- and long-term timeframes?
- c. At a global level, how transposable is the use case project to other contexts?
- d. At a macro-level, to what extent have the interlinkages between SDGs been clearly assessed (benefits vs risks to negatively impact other SDGs)?

4. Team composition

(evaluation done by all Experts)

(10% total weight)

- a. To what extent does the team have the necessary expertise and means to achieve the project?
- b. How diverse and inclusive is the team, in terms of geography and demography?

TABLE 4 - Evaluation criteria of PoC reports (Phase 3)

1. Implementation strategy (evaluation done by Scientific Experts) (20% total weight)	To what extent does the implementation strategy methodology clearly articulate the simulation approach, identify bottlenecks encountered, and describe the refinements or mitigation strategies implemented to address the bottlenecks?
2. Results and benchmark (evaluation done by Scientific Experts) (20% total weight)	To what extent are the main simulation results clearly presented and rigorously compared against classical state-of-the-art benchmarks?
3. Scaling and performance (evaluation done by Scientific Experts) (20% total weight)	To what extent are the quantitative performance metrics (runtime, accuracy, resource usage, etc.) comprehensively reported, and compared to classical baselines, with uncertainties quantified and robustness adequately assessed?
4. Discussion of impact (evaluation done by Impact Experts) (20% total weight)	Drawing on the simulation results, to what extent does the analysis provide a realistic and well-reasoned assessment of the solution's anticipated impact in a future real-world deployment?
5. Justifications for implementation on QPUs (evaluation done by Scientific Experts) (20% total weight)	To what extent does the team provide convincing justification for the feasibility and readiness of implementation on quantum processing units, which would imply to advance into Phase 4 with OQI support?

TABLE 5 - Evaluation criteria of PoC reports (Phase 4)

1. Implementation strategy (evaluation done by Scientific Experts) (20% total weight)	To what extent does the implementation strategy methodology clearly articulate the simulation approach, identify bottlenecks encountered, and describe the refinements or mitigation strategies implemented to address the bottlenecks?
2. Results and benchmark (evaluation done by Scientific Experts) (20% total weight)	To what extent are the main QPU implementation results clearly presented and rigorously compared against classical state-of-the-art benchmarks?
3. Scaling and performance (evaluation done by Scientific Experts) (20% total weight)	To what extent are the quantitative performance metrics (runtime, accuracy, resource usage, etc.) comprehensively reported, and compared to classical baselines, with uncertainties quantified and robustness adequately assessed?
4. Discussion of impact (evaluation done by Impact Experts) (20% total weight)	Drawing on the simulation results, to what extent does the analysis provide a realistic and well-reasoned assessment of the solution's anticipated impact in a future real-world deployment?
5. Justifications for implementation on QPUs (evaluation done by Scientific Experts) (20% total weight)	To what extent does the team provide clear assessments of the performance scaling on future large-scale fault-tolerant quantum computers (FTQC)?

Annex 3 – Multilateral Quantum Diplomacy Action Line

The Multilateral Quantum Diplomacy action line of the Open Quantum Institute (OQI) constitutes its diplomatic and governance engine, translating the challenges – but also opportunities – that come with the scientific developments in quantum computing into actionable policy frameworks for the international community. Grounded in the principles of Anticipatory Science Diplomacy — a methodology developed by GESDA — this action line was designed not to react to quantum disruption, but to get ahead of it.

Founding Principles: Anticipatory Science Diplomacy

The action line is built upon four interlocking principles that together define a new mode of science-informed international engagement:

- **Science Anticipation:** Rather than responding to emerging technologies after they reshape the world, this action line maps plausible quantum breakthroughs 5, 10, and 25 years ahead. This horizon-scanning function equips policymakers with the scientific literacy needed to govern technologies that do not yet fully exist.
- **Honest Brokering:** this action line convenes physicists, diplomats, UN agencies, private companies, and civil society before policy decisions crystallise. By bringing together actors whose interests and expertise rarely intersect, the OQI creates a neutral forum for early, substantive dialogue – particularly vital for countries not currently considered quantum powers.
- **Global Action:** Governance principles are tested and refined through multilateral pilot projects and regulatory sandboxes. Rather than producing declarations, this action line advances governance through structured experimentation – enabling iterative learning while real-world quantum applications remain nascent.
- **Capacity Building:** this action line invests in training cross-sector leaders — from Geneva Permanent Representations to UN agencies — enabling them to navigate technological complexity with both insight and legitimacy. Scientific fluency at the diplomatic level is treated not as a luxury but as a governance prerequisite.

Strategic Approach: Opportunity-First Governance

Where much of the international discourse on quantum computing has focused on risk — most notably the potential for quantum-enabled attacks on classical encryption — this action line adopted a deliberately opportunity-first posture. The OQI identified 18 concrete challenges faced by UN organisations and NGOs for which quantum computing may offer solutions, reframing quantum governance as a vehicle for advancing the Sustainable Development Goals rather than solely a security challenge to be managed. This approach does not ignore risk; seizing opportunities and mitigating threats are treated as complementary imperatives. Anticipating breakthroughs at an early stage is simultaneously an avenue for solving urgent global problems and the most effective deterrent against misuse.

Achievements and Outputs: A Phased Progression

This action line has pursued its mandate through a deliberate, phased approach — moving systematically from awareness-raising to deep understanding to concrete action.

- Phase 1: Awareness and Common Understanding (2021-2023):** this action line has established the diplomatic baseline through the publication of the [2023 Intelligence Report on Multilateral Governance of Quantum Computing for the SDGs*](https://repository.cern/records/hcer9-z1408), in which participating Permanent Representations shared working observations on the quantum opportunity and the growing quantum divide. The first Quantum Diplomacy Symposium, organised jointly by GESDA and the OQI in 2024, brought these discussions into a multilateral setting. Its outcomes were subsequently consolidated in the [2024 Intelligence Report on Quantum Diplomacy for the SDGs**](https://repository.cern/records/5zcf3-xyy63).
- Phase 2: Deep Understanding (2025):** GESDA and the OQI partnered with UNESCO, ITC ILO, and UNIDIR to conduct in-depth analysis of required interventions across three thematic domains: equity, the future of labour, and security. These partnerships produced new insights: a first holistic survey among UNESCO member states to qualify the quantum divide, revealed that one in three researchers worldwide reports lacking access to necessary quantum technologies. These insights are captured in [the Intelligence Report on Quantum Diplomacy in Action 2025–2026***](https://repository.cern/records/8dabm-zq450). It also presents a concrete roadmap for quantum security action (with UNIDIR), a substantive analysis of quantum computing's implications for the global workforce (with ITC ILO) and a coherent framework for the development of quantum use cases for the good.
- Phase 3: From Understanding to Action (2026 and beyond):** In 2026, GESDA and the OQI convened the *Quantum Diplomacy in Action Conference*, a milestone event bringing together the international community to identify and commit to concrete steps addressing the quantum divide, the energy efficiency of quantum computers, and related governance priorities. This marks the transition from analysis to multilateral action and the fulfilment of the anticipatory diplomacy model that has guided this action line since its inception.

Across all three phases, this action line has demonstrated that quantum governance needs not lag behind quantum science. By embedding anticipation, inclusion, openness and action at the heart of its diplomatic methodology, the action line has positioned the OQI as an indispensable convener for the multilateral quantum future.

* <https://repository.cern/records/hcer9-z1408>

** <https://repository.cern/records/5zcf3-xyy63>

***<https://repository.cern/records/8dabm-zq450>

In Practice: The Quantum Diplomacy in Action Conference

The Quantum Diplomacy in Action Conference, held in Geneva on 6 May 2026 and jointly convened by GESDA and the OQI, illustrates how this action line’s four principles move from methodology to impact. It gathered ambassadors, senior scientists, private-sector leaders, and representatives of intergovernmental organisations to convert five years of diplomatic preparation into specific, attributable governance commitments.

Scale and Convening Power

The conference demonstrated the OQI’s capacity to convene the breadth of actors that meaningful quantum governance requires:

- 75 participants out of which over 30 different diplomatic and IO representatives
- 6 diverse national quantum approaches presented
- 4 thematic workstreams
- Over 30 action points identified

Co-Construction with International Organisations

Each of the four thematic workshop streams was co-designed and co-chaired with a partner intergovernmental organisation, embedding multilateral ownership into the conference architecture from the outset — a direct expression of this action line’s honest-brokering principle:

Workshop Stream	IO Partner	Key Outputs
Quantum Divide &	UNESCO / Global Quantum Initiative	• Access, education & human capacity • Cooperative Advantage Index covering economic interest, reliability, security, future projection, and global impact
Security & Dual-Use	UNIDIR	• Post-quantum cryptography migration • Quantum-safe observatory
Intellectual Property & Human Right to Science	WIPO (anticipatory engagement)	• IP framework for cooperative quantum projects • Patentability horizon work
Energy & Environmental Impact	Quantum Energy Initiative	• Vendor-neutral energy standard • Transparent energy reporting by vendors

Principles into Practice

The *Quantum Diplomacy in Action Conference* is the most concrete illustration available of OQI’s operating logic. Science anticipation shaped the agenda. Honest brokering ensured the right partners co-owned each stream. Global action produced attributable commitments rather than aspirational language. Capacity building was itself an outcome of the process. The conference thus stands not only as an achievement of this action line, but also as evidence of anticipatory science diplomacy as an engine for governance.

