EQUISEA
The Ocean Science Fund for All

A Co-Designed Platform for Addressing Inequity in Ocean Science Capacity

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Executive Summary:

Ocean science capacity is distributed unequally, but a rapidly changing ocean requires widely and equitably distributed human, technical, and physical ocean science infrastructure. This concept note introduces EquiSea: The Ocean Science Fund for All – a platform co-designed through consensus-based stakeholder discussion with more than 200 scientists from around the world. EquiSea aims to improve equity in ocean science by establishing a philanthropic fund to provide direct financial support to projects, coordinating capacity development activities, fostering collaboration and co-financing of ocean science between academia, government, NGOs, and private sector actors, and supporting the development of low-cost and easy-to-maintain ocean science technologies.

Introduction:

The importance of ocean science is well recognized as critical to sustaining resilient economies and communities, particularly in the face of ocean change caused by anthropogenic activities. The physical, human, and financial infrastructure to conduct ocean science is currently inequitably distributed across the world. The 2017 Global Ocean Science Report from the Intergovernmental Oceanographic Commission noted that ocean science "accounts for between 0.1% and 21% of natural science expenditure and between <0.04% and 4% of total research and development expenditures" in different countries[1]. The report further notes that ocean science is primarily financed and conducted by a small number of countries, and higher resolution ocean observations, local models, or ecosystem studies that are critical to ensuring resilience are disproportionately available in higher income countries.

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[1] Global Ocean Science Report: The Current Status of Ocean Science Around the World. France: UNESCO Publishing, 2017.

Sustained ocean science requires a strong supporting environment, including consistent national government allocation of funding for ocean science, well-maintained research facilities and offshore assets, and a healthy job market for ocean science professionals. Robust ocean science capacity can thus be defined as having the infrastructure, human, and financial resources required to predict and respond to dynamic environmental change.

Barriers to sustaining ocean science programs and achieving this capacity are multiple and varied, and include:
- High cost and complexity of many ocean science technologies.
- Limited in-country access to basic infrastructure such as internet, stable electricity, and basic laboratory and field supplies.
- Limited international coordination and investment in ocean science capacity, leading to ad hoc training opportunities and inadequate financial resources for infrastructure and training.
- Limited employment and professional opportunities in oceanography in all but the traditionally well-funded nations.
- Limited public, private, and government interest in ocean science programs in lesser-resourced regions.
- Lack of funding to sustain any long-term monitoring efforts in lesser-resourced regions.

Inequitable distribution of ocean science capacity has broad ramifications. International accords and strategies are informed by scientific assessments, leaving regions without capacity to collect scientific data to be underrepresented in international policy and management decisions. Those regions with limited ocean science capacity are also less able to take advantage of the growing sustainable blue economy. In many cases, where there is blue growth, external contractors are brought in rather than hiring local scientists, further exacerbating the cycle of poor employment opportunities for ocean scientists in emerging economies. This preferential hiring of foreign contractors also discourages local institutions from investing in ocean science capacity development.

There are existing efforts to address ocean science capacity. These include international frameworks, such as the UN Decade of Ocean Science for Sustainable Development, international networks, such as the Partnership for the Observation of the Global Ocean, and many smaller scale initiatives based in academic or nonprofit settings. The authors of this concept note spoke with more than 200 representatives from those involved both in the design and execution of capacity development programs and those benefiting from them. Attached as an appendix to this concept note is a compendium of examples of these excellent programs.

While all of these efforts play an important role, there is consensus that there are significant needs not being met by the current structure. For example, the majority of existing ocean science capacity programs are underfunded and, in some cases unfunded, (e.g. the capacity development plan included with the UN Decade of Ocean Science for Sustainable Development Implementation Plan). As a result,

many capacity development efforts are small budget and short timeline projects, often added on to larger research projects rather than full projects in their own right. In other words, the funding does not match the scale of the problem. Another current challenge elucidated by stakeholder discussion was the lack of a coordinating network to ensure effective and strategic capacity development efforts. This insufficient funding and coordination also prevents the long term monitoring required to generate impactful data that influence ocean management.

Deliverables:

EquiSea is a response to the needs outlined by the ocean science community. It has been developed by a collective of researchers, resource managers, and program managers through in person and remote dialogues, including the Ocean Obs'19 conference. EquiSea is designed to be a permanent structure that will enable ocean science capacity development throughout the UN Decade of Ocean Science for Sustainable Development and the years beyond. EquiSea will be housed at The Ocean Foundation – an international community foundation that provides philanthropic and administrative services to the ocean community and has received the top scores from GuideStar and Charity Navigator for transparency and accountability. EquiSea will be governed by a representative stakeholder body that ensures equitable decision making and distribution of resources.

EquiSea has five primary objectives. It will:
1. Establish a philanthropic fund to enable equitable distribution of ocean science capacity, including through funding of training programs and infrastructure grants.
2. Coordinate with key international processes and partners to ensure effective delivery of capacity development.
3. Foster collaboration between scientists and policymakers to enhance national support for sustained ocean science programs.
4. Engage private sector actors to provide jobs training and employment opportunities in ocean science.
5. Engage with ocean science technology developers to ensure a pipeline of accessible technology suitable for use in under-resourced regions.

Establish a Philanthropic Fund to Enable Activities

A fund will be created to increase the availability of philanthropic support for ocean science capacity development and to provide a consistent place for practitioners to seek funding. This fund will be governed by a representative stakeholder group and will emphasize funding projects that address systemic inequities in ocean science. For example, projects managed or co-managed by and for under-resourced regions will be prioritized over projects led by higher resourced regions. Funding will aim to fill gaps in existing programs and enable long term success through multi-year investment.

The governance body of the fund will issue a set of requests for proposals on an annual basis. Examples of funding priorities include, but are not limited to:

- Research grants that advance ocean science priorities in under-resourced regions
- Support for regional technical workshops for early and mid-career scientists
- Funding for graduate fellowships for scientists from under-resourced regions
- Infrastructure grants to establish, maintain, or repair physical infrastructure such as laboratories, plumbing, and boats
- Funding for the distribution and maintenance of ocean science technology, with an emphasis on low-cost, modular, and easy-to-maintain technologies
- Funding to support the use of open-source global tools and data sets (e.g. global models) in under-studied regions
- Funding to strengthen the connection between scientists and governments, including through improving data delivery from scientists to managers
- Travel grants or online connectivity grants to enable participation in key international scientific and management meetings and trainings
- Funding to support ocean science education and curriculum development for younger students and the general public

The Ocean Foundation commits to providing the administrative and grantmaking services for this fund, and to raising capital for the fund through donor engagement. The fund may include support from multilateral institutions, private family foundations, for-profit entities, and individuals.

Coordinate Effective Delivery of Capacity Development

EquiSea does not endeavor to create new structures or mechanisms where mechanisms are already in place. Rather, EquiSea aims to bolster existing efforts by driving additional funding towards them, to coordinate activities across mechanisms, and to fill gaps where they exist. EquiSea will actively work with key international partners such as the IOC, GOOS, POGO, and others to ensure alignment with institutional and international priorities. EquiSea is working to create operational collaboration structures for other programs designed for the UN Decade of Ocean Science for Sustainable Development, including CoastPredict, MBON, and the Ocean Best Practices System. EquiSea will host an annual meeting of its governing body, which will include equitable representation from ocean basins as well as representatives from key partner organizations.

Stakeholders interviewed during the drafting of this concept note identified the following areas for improved coordination:

- Enhanced digital networking and digital learning opportunities
- A common calendar of training opportunities
- Improved data sharing mechanisms and opportunities for under-resourced regions
- A technical assistance system to provide support to under-resourced regions

EquiSea will address these needs by both bolstering existing programs and creating new ones. For example, to enhance digital networking, EquiSea will support existing online tools such as the Ocean Teacher Global Academy and the Ocean Best Practices System. To address other needs, EquiSea intends to operate a master calendar of training opportunities, and plans to create a "help desk" for ocean scientists. This help desk would provide direct coaching and support on issues such as data management and quality control, sensor maintenance, and research design.

Additional coordinating activities will be undertaken based on stakeholder requests and recommendations made at the annual meeting.

Foster Collaboration to Enhance National Support

Sustained ocean science that meets management and sustainable development needs requires a strong relationship between the science community and government in a given country. The government acts as a user and funder of scientific research and products, and scientists act as service providers and advisors. In many of the countries that currently conduct the majority of ocean science the government is the primary funder and employer of ocean science and scientists.

Stakeholders interviewed for this concept note identified weak relations between government and ocean scientists as a challenge. Thus, EquiSea will seek to foster improved collaboration between scientific and government stakeholders. EquiSea will do this by incorporating requirements for government and science connections within RFPs – for example a project seeking funding for a new monitoring system will be required to explain which government agency it will be serving its data to, and demonstrate existing or planned collaboration with that agency. EquiSea may also help facilitate specific convenings and meetings to encourage co-development and co-funding of research.

Engage Private Sector Actors

To capitalize on the potential of the emerging sustainable blue economy and to ensure the safe and predicted ocean required to make those economies profitable, private sector investment and engagement is needed in currently under-resourced areas. Even in countries with robust academic infrastructure the lack of jobs in the ocean sciences deters students from pursuing this course of study.

EquiSea will seek to enhance private sector engagement with ocean scientists in under-resourced areas by:
- Facilitating discussions between private sector, government, and academic partners at national and regional levels to identify areas for co-financing of ocean science activities and jobs that bolster the sustainable blue economy
- Funding activities that provide specific jobs and business training to ocean scientists to encourage job creation through startup and other business models
- Direct co-financing of job placement and training programs with private sector partners

Engage Ocean Science Technology Developers

Most ocean science technology is developed by and for highly resourced countries. Thus, operation of those technologies often requires infrastructure, supplies, and specialization that is not available in many under-resourced or remote areas. There is a high need for more accessible, easy-to-maintain technologies that will address ocean science needs. To help ensure a pipeline of these technologies and transfer of these technologies to where they are needed, EquiSea will work directly with technology developers to incentivize and distribute such technologies. For example, EquiSea intends to host an annual technology workshop specifically focused on the needs of ocean scientists in under-resourced or remote areas. This annual event will provide a platform for co-design and development of technologies between technology developers and end users. EquiSea may also consider partnering with prize-based technology developers to further incentivize development of technology that is suitable for use in under-resourced areas. EquiSea will also seek to engage ocean science technology developers in the co-design and co-funding of job placement and training programs.

Budget:

The authors of this concept note and the stakeholders consulted believe a significant investment will be required to address the widespread inequities in the distribution of ocean science capacity. The authors have created multiple budget scenarios based on how quickly the program would scale up and the focus of each RFP round. To achieve all that has been listed in this concept note the authors recommend an annual budget of at least $13 million USD. This budget would enable widespread funding for physical infrastructure, training, private and public sector partnership, a pipeline of low cost and effective technologies, and other activities. The annual operating budget of EquiSea will begin at a smaller level as EquiSea's governance structure is built and funding commitments are secured. EquiSea should be fully funded and operational by 2025 in order to meet the goals of the UN Decade of Ocean Science for Sustainable Development and the 2030 Agenda.

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