

Q&A: Amal Kasry works to strengthen science where it's most needed

For the UNESCO section chief, “striking a balance between global coherence and respect for national ownership and cultural diversity is both essential and complex.”

By **Toni Feder**

Amal Kasry left academia in 2021 to become UNESCO's chief of section for basic sciences, research, innovation, and engineering. “Science achievements are cumulative, and you cannot see the impact overnight,” she says. “I wanted to do something on the ground that would benefit people directly.”

The section aims to advance fundamental science in all 193 United Nations member states. Kasry's team develops programs and policies. In three words, says Kasry, the mission is “science for peace.”

Kasry grew up in Egypt, earning her physics bachelor's degree at Cairo University in 1993. A decade later, she went to Germany to pursue her PhD in materials science. Starting with her doctoral studies, she bounced between continents and between academic and private-sector research positions for about 13 years before returning to Egypt as a faculty member at the British University in Egypt. Four years in, she was tapped to serve as director of the university's Nanotechnology Research Centre. She did that for two years until she took the job at UNESCO.

The following interview has been edited for length and clarity.

Why did you go into physics?

I have loved science, and physics, since I was very young. After high school, I started by studying electrical engineering. But I didn't really find myself there, so I switched to physics.

Briefly describe your research.

My supervisor at the Max Planck Institute for Polymer Research in Mainz, Wolfgang Knoll, had developed an amazing plasmonic system to detect DNA and proteins, which helps detect disease at early stages. I developed a technique based on long-range surface plasmon res-

onance to enhance sensor sensitivity. The approach combines fluorescence with enhanced electromagnetic fields to detect very low concentrations of DNA and to study protein-protein interactions.

Where did your career take you after your PhD?

For about three years, I was a postdoc, first in Germany, then in the US, and then Wales—that was all research related to biosensing. Then, I went to IBM in New York. It was 2009, and graphene was a hot topic. Next, I was recruited by a Japanese company in Singapore. I wanted to go back to academia, so I moved to the Austrian Institute of Technology, where I worked on biosensors using nanoparticles and nanowires.

In 2015, I joined the British University in Egypt as a faculty member in engineering. I taught physics. And then the university selected me as the director of a new research center in nanotechnology. I continued to lead my own research group developing sensing techniques while also managing the center administratively.

That's a lot of moving around. How was it?

Moving around so much was exhausting and expensive, but at the same time, it was a great experience. I learned different techniques in each place. And I met people and was exposed to cultures. That is beautiful.

What drew you to UNESCO?

I always wanted to travel to help people and maybe leave science. Not because I wanted to leave science—it was the idea of finding ways to help people directly that was the main motivation for me.

For years, I had explored opportunities and agencies that have science mandates. UNESCO has a unique role in advancing fundamental sciences within a broader interdisciplinary framework.



▲ (Photo courtesy of Amal Kasry.)

What do you do there?

My section is responsible for helping member states in developing and strengthening capacity in the fields of basic sciences, engineering, and STEM education. We work directly with governments—that's an advantage we have. Part of our job is to advise member states on what they can do to advance in these fields.

What are some of the programs you and your team are involved with?

Generally, we talk with member states and try to find solutions to some of their problems.

We coordinate the needs of the

scientists and the equipment. We find the laboratories and the partners who are willing to give access. We follow up with monitoring to see the impact, to see how many benefited and how they benefited.

For example, we developed a program to give scientists in the Global South remote access to sophisticated laboratory techniques that they don't have, such as single-crystal x-ray diffraction. The scientists send their samples abroad, but then they do the work themselves, which makes a huge difference in the quality of the research and their results.

We are trying to work with African member states to explore

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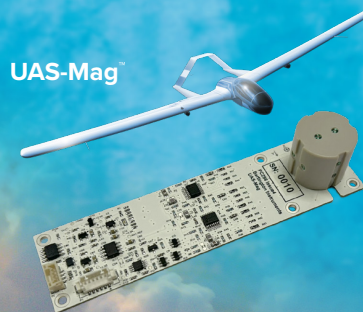
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the possibility of having an African synchrotron facility. This is a long-term plan and a huge investment. African member states are very excited about this. For now, we try to work with some of the existing synchrotrons to give access to African scientists.

What's an example of a program in education?

We started a new initiative on science clubs for STEM education. We launched the first network, consisting of about 200 clubs—and the number is growing—in Africa in December 2025. The clubs are all different, but the goal is the same: Offer hands-on extracurricular training for teachers. The training can be in robotics, 3D printers, and so on.

Besides STEM training, the clubs are an opportunity to enhance scientific literacy. This fits well with our goals for the decade of science for sustainable development.

Please elaborate on the International Decade of Sciences for Sustainable Development.

The International Decade of Sciences for Sustainable Development was proclaimed by the UN General Assembly in 2023. It is the decade from 2024 to 2033, and UNESCO is the lead agency. We came up with five anticipated outcomes. The first is enhancing scientific literacy, to make sure that science reaches everyone in every corner and people really understand the value and importance of science.

The other anticipated outcomes are to develop actionable knowledge; advance basic sciences; advance open science—sharing knowledge and infrastructure; and transform national innovation systems. A key dimension of the fifth outcome is to work with experts to improve how science is measured and evaluated, to make sure that

it's not only about numbers but about quality.

Tell me about UNESCO's Global Quantum Initiative.

The IQ [International Year of Quantum Science and Technology] showed us that there is a huge global divide: More than 150 countries do not have policies or strategies to cope with the changes that will come with quantum technology. We ran a survey to understand and identify gaps when it comes to scientific infrastructure in quantum. That led to our Global Quantum Initiative, which includes capacity-building activities, raising awareness, and working with governments to reduce the divide. For example, under the initiative, we may continue the online courses on quantum algorithms for female African scientists that we organized as part of the IQ.

What are the challenges to achieving your goals?

One of the key challenges is working across a highly diverse global landscape. UNESCO serves all its member states, which means aligning with a wide range of policies, priorities, and cultural contexts while at the same time ensuring that scientists and governments have the flexibility to implement programs in ways that are locally relevant. Striking a balance between global coherence and respect for national ownership and cultural diversity is both essential and complex. It is also highly rewarding.

Another major challenge is resources. Broader geopolitical dynamics can affect the availability of funding and shape relationships among member states. UNESCO continues to work with all partners, and by engaging directly with the scientific community, we are able to bring people together. That remains one of our greatest strengths. **PT**