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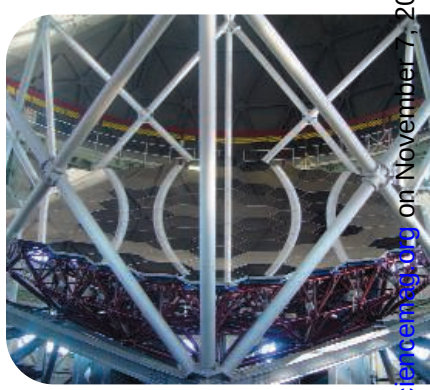
Making One World of Science

TWAS, THE ACADEMY OF SCIENCES FOR THE DEVELOPING WORLD, CELEBRATES ITS 25TH anniversary in Mexico City next month. When the academy was first established, a great divide existed between the science-rich North and the science-poor South. A quarter-century later, advances in biology, materials science, and information and communications technologies, among other fields, have further split the global scientific community into three worlds: the North, the surging South, and the stagnant South. The global community now faces the critical challenge of preventing lagging countries from falling even farther behind.

The United States continues to dominate global science. In 2007, U.S. scientists published nearly 30% of the articles appearing in international peer-reviewed scientific journals, which is comparable to the percentage a quarter-century ago. But China, responsible for less than 1% of publications in 1983, has recently surpassed the United Kingdom and Japan to become the world's second leading nation in scientific publications. China now accounts for more than 8% of the world's total, whereas India and Brazil produce about 2.5 and 2%, respectively, of the world's scientific articles. All told, scientists in developing countries generate about 20% of the articles published in peer-reviewed international journals.



It is gratifying to see such progress made by the surging South. But we cannot ignore the fact that these advances have been largely limited to just a few countries. The top five performers (China, India, Brazil, Turkey, and Mexico) contribute well over half of the scientific publications from the South. By contrast, sub-Saharan Africa, a region of 48 countries, produces just 1% of the world's scientific publications.

The building of scientific capacity is a main reason for the South's economic progress. Several developing countries—for example, Brazil, India, China, and even Rwanda—now spend 1% or more of their gross domestic product on science and technology. Indeed, over the past 5 years, the economies of the developing world have grown at a faster pace than those in the developed world, and investment in science and technology has a lot to do with it. We see this impact in the emergence of Brazil as a leader in the development of biofuels. We see it in India's increased capacity in information and communications technologies. And we see it in the growing prowess of China in nanoscience and nanotechnology.

Increased scientific capacity is not just good for the developing world; it benefits the entire world. For example, the Chinese SARS Molecular Epidemiology Consortium cooperated with international groups to trace the evolution of the SARS virus from an animal to a human pathogen after the outbreak of 2003. The Southern African Large Telescope (SALT) near Cape Town, South Africa, the largest single telescope in the Southern Hemisphere, has boosted research in astronomy and astrophysics internationally since it became operational in 2005. And innovative efforts to devise sustainable uses for biodiversity by the National Institute of Biodiversity (INBio) in Costa Rica have served as models for institutions in both the South and North for the past two decades.

The point is, in our global world, improved scientific capacity anywhere has the potential to help everyone everywhere. The global scientific community should care about countries that remain scientifically deficient. The progress that has been achieved represents only partial success. Resting on our laurels now will only increase the risk that inequities within the developing world will grow, further marginalizing scientifically lagging countries.

The 25th anniversary of TWAS is an opportunity to applaud the success of those developing countries that are building their scientific capacity. But we must not allow the scientific success of some developing countries to overshadow the troubling scientific stagnation in others. Enabling global science to truly flourish will require making one world of science. TWAS's ultimate vision—a world in which humanity is dedicated to solving common global problems together—can only be realized when all countries have attained scientific proficiency.

– Mohamed H. A. Hassan

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