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Globalizing Science Publishing

PUBLISHING IN SCIENTIFIC JOURNALS IS THE MOST COMMON AND POWERFUL MEANS TO DISSEMINATE new research findings. Visibility and credibility in the scientific world require publishing in journals that are included in global indexing databases such as those of the Institute for Scientific Information (ISI). Most scientists in developing countries remain at the periphery of this critical communication process, exacerbating the low international recognition and impact of their accomplishments. For science to become maximally influential and productive across the globe, this needs to change.

The economy of electronic publication, open access, and property rights fuel current academic and policy debates about scientific publishing in the industrialized world. The concerns in the developing world (with few ISI-indexed journals) focus on more fundamental questions, such as sustaining local research activity and achieving the appropriate global reach of its science activities.

The essence of the African situation is captured by R. J. W. Tijssen's analysis of publications by African authors,* which was based not only on data from ISI indexing databases, but also on publications not indexed in this system. Surprisingly, half of the South African citations in the indexed ISI literature are to articles in nonindexed, locally published journals. Also, several nonindexed local journals are cited in the ISI system at about the same rate as are indexed journals. The share of indexed articles with at least one author with an African address remains steady at about 1%. About half of the ISI-indexed papers with at least one author with an African address have non-African partners outside of the continent. These figures vary, country by country, sometimes in surprising ways. For example, 85% of the papers published from Mali or Gabon involve collaborations on other continents, versus 39% and 29%, respectively, for South Africa and Egypt, the continent's leading research producers. Thus,

much of the African research system is now highly dependent on collaborations.

How can the global reach and potential impact of scientific research in Africa and other developing countries be optimized? Of primary importance is boosting the quality and quantity of work that is locally published, through measures including review of submissions by peers from within and outside the country, skilled editing, and exploitation of local niches and special research opportunities. A proliferation of journals, short-lived publications, print-only journals, and poor distribution constitutes a picture that must change. A nationally organized project can probably make the biggest difference, with investment by government and research-support agencies, as well as wide participation by local and regional scientific communities.

The work published in local journals must become more visible through search engines and bibliometric tools. An open-source software-based system called Scientific Electronic Library Online (SciELO), in development since 1998 with government support in Brazil, has two major aims. One is to index high-quality local journals, extending beyond the ISI-indexed titles, through a selection based on transparent assessment and performance monitoring. The second aim is to provide free worldwide electronic access to the content of these journals. This system has already revealed the existence of local journals and articles that are highly cited in ISI-indexed journals; it has also revealed journals and articles that have a high impact within the SciELO system itself.†

The SciELO system is now being extended to South Africa, with government support. Extension to other African countries and regions is readily possible with the appropriate program leadership and government support at national and international levels. Few forms of foreign aid would be more likely to yield real and recurrent dividends than the facilitation of a connected system of national and regional, open-access, quality-assured SciELO sites (or similar) throughout Africa, and even more so, across the entire developing world.

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*R. J. W. Tijssen, *Scientometrics* **71**, 303 (2007). †R. Meneghini, R. Mugnaini, A. L. Packer, *Scientometrics* **69**, 529 (2006).

