HINARI and AGORA: revolutionizing access to scientific information in the developing world

HINARI (Health Internetwork Access to Research Initiative) and AGORA (Access to Global Online Research in Agriculture) are sister programs which offer free or very low cost access to scientific journals for the developing countries. HINARI is coordinated by the World Health Organization and AGORA by the UN Food and Agriculture Organization in collaboration with the scientific publishers and other partners. This article describes the programs and how they work together to share the costs of system development and outreach and training. The article presents early feedback on the use of AGORA since its launch in October 2003. Challenges and barriers to uptake are also described.

In recent years, scientists have made tremendous strides in conquering disease and improving health and life expectancy. Much of the developing world, however, has been isolated from this progress. One key factor is lack of information. A consultation conducted by the World Health Organization with developing world health researchers and scientists determined that access to the priced literature, particularly journals, was their most pressing ‘information problem’. The modern research library is basically non-existent in the developing world, with many libraries in developing countries receiving no new journals in the last five years. Doctors, scientists and researchers in developing countries have not had access to the world’s knowledge and, as a result, they are likely to be unaware of advances in their fields of practice or research.

Two programs recently developed by the scholarly publishing industry, in conjunction with the UN World Health Organization (WHO) and the UN Food and Agriculture Organization (FAO), with key administrative support from Cornell and Yale university libraries, have the potential to change this situation. HINARI (Health Internetwork Access to Research Initiative) was launched in January 2002 to provide access to online research and clinical medical journals for institutions in developing countries. Following close behind was its sister project, AGORA (Access to Global Online Research in Agriculture), launched in October 2003, offering access to journals in nutrition, agriculture, environmental science and related disciplines. Together these two programs offer access to almost 3,000 scientific journals to doctors, scientists, researchers and students working in health, nutrition, agriculture and environmental science in the developing world, sometimes at very low cost, but in most cases without charge.

How HINARI and AGORA work

HINARI (www.healthinternetwork.org) and AGORA (www.aginternetwork.org) are entirely voluntary partnerships between the two UN agencies and the scientific publishers. Not a single contract has been signed between any of the partners, yet the programs function well. HINARI and AGORA provide portals through which users can get easy access to publishers’ journal content. While HINARI and AGORA link to the publishers’ e-journal sites, the content all remains with the publishers. The portals, while offering some basic functionality, simply facilitate access. Participating institutions sign a user license agreement to discourage abuse of the system, and no serious problems have been observed.

HINARI provides access to over 2,400 journals in the biomedical field. The HINARI site offers
access to the journals by title, subject and language. By logging in, users are authenticated (or approved for access) through a special server at WHO. Users are then free to move about throughout the HINARI web site and onto participating publishers’ web sites to view and print, if desired, full-text journal articles. AGORA, which offers over 500 journals in the field of agriculture and related social and environmental sciences, works in the same way. The two systems have been developed in a coordinated way, so that users of one site will be easily able to use the other. In addition to providing a similar interface, developing synergistic systems allows for sharing the cost of developing the platform and collaborating on training and outreach in the developing world.

The libraries at WHO and FAO provide the day-to-day management for the sites. Two authentication servers residing at WHO are used to ensure that only authorized users are able to get access to the HINARI and AGORA journal offerings. HINARI and AGORA staff distribute and administer passwords, promote the service and train users, assure institutional compliance with the user agreement, offer help desk services for questions about searching and technical support, and facilitate the formation of local networks of HINARI/AGORA users. New publishers continue to join the programs, and staff at WHO and FAO work with them to activate HINARI or AGORA IP ranges; currently 50 publishers from nine countries are providing access to their information.

The partnerships of HINARI and AGORA go beyond the UN and participating publishers. Yale University for HINARI and Cornell University for AGORA have provided key support for program design and technical development. Significantly, the National Library of Medicine has attached a HINARI tag to each article in the HINARI catalogue on MedLine, and has created a tailored HINARI search filter. Donor agencies, such as the Rockefeller Foundation, the UK Department for International Development (DFID), and the United States Agency for International Development (USAID), have provided much needed start-up funds for AGORA. HINARI and AGORA represent a truly remarkable public–private partnership, working to help close the digital divide in
the research communities of the developing world. This public–private partnership extends even beyond the partners in AGORA and HINARI, however, since the publishers can only provide free or low cost access to the poor if the institutions in the developed world accept that they are part of the ‘social contract’ to help bridge the digital divide.

HINARI and AGORA users

Approximately 1,200 institutions in over 100 countries are using HINARI and/or AGORA. When AGORA was launched on October 14, 2003, there was an immediate response. E-mails from around the world flowed into the AGORA mailbox asking to register for the program. Comments, such as this from a new AGORA user and the second from a HINARI user, indicate the value of having access to an online library like AGORA or HINARI:

"Many thanks for giving us opportunity to access to your very very very useful site AGORA. Scientists, professors and staff of our Can Tho University of Vietnam are very excited to make use of this…"

Dang Duc Tri
Science & Technology Information Center, Director
Can Tho University, Vietnam

"Je ne cesse de me réjouir quand je trouve un article et ne cesse de vous remercier pour ce travail d’intérêt scientifique accompli. Je ne sais pas si vous imaginez combien l’accès à HINARI apporte une bouffée d’oxygène au chercheur des pays en développement et en particulier aux chercheurs du CERMES-Niger. Merci beaucoup de votre générosité et vous encourage énormément pour ce travail bien fait."

Translation (short version): I cannot overstate my joy every time I find an article, nor my thanks to you…. I do not know if you can imagine how access to HINARI has brought a burst of oxygen to the developing country researchers, and particularly to those at CERMES-Niger. Thank
you for your generosity, and hearty encouragement for a job well done.

Mahaman Sani Haladou
Centre de Recherche Médicale et Sanitaire
Niamey, Niger

In addition to anecdotal evidence of the value of HINARI and AGORA, early statistics from the AGORA servers show users beginning to take advantage of the system. Figure 3 shows the increase in PDF article downloads and use of bandwidth, each a measure of article usage. Figure 4 illustrates the quick uptake of AGORA. As of early May 2004, 270 institutions in 50 countries were registered for AGORA. Figure 5 shows the number of institutions throughout the world that have registered for AGORA and Figure 6 shows the geographic distribution of the eligible countries.

AGORA Web logs indicate that some users have registered, but are not yet steady high bandwidth users. We can only speculate on the reasons for this at this point, but expensive and unreliable Internet connectivity is a likely cause. The time it takes to distribute passwords to all eligible users may also be a limiting factor in these first months.

HINARI has been in use for approximately two years, registering its 1000th user in late 2003. Clearly, there has been a tremendous response to

![AGORA Usage (Full-text & Bandwidth)](image)

**Figure 3.** AGORA PDF downloads and use of bandwidth

![AGORA Registrations](image)

**Figure 4.** AGORA registered institutions and number of countries represented (of the 69 eligible countries)
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*Figure 5. AGORA eligible countries by region with number of institutions registered for AGORA as of 9 June 2004 ( )*
the offer of access to the medical literature in the developing world.

Training

The HINARI and AGORA programmes are coordinating their training efforts and working together to develop training material. Librarians and users trained to use one system should feel quite comfortable using the other. AGORA held its first three-day workshop in Harare in April 2004, training librarians to train users back in their home institutions. For librarians in the developed world, hands-on training sessions can sometimes be challenging, with Internet connections going down at just the wrong time. However, the challenges of hands-on online training in the developing world can be enormous. Imagine moving your entire training session to an Internet Café at the last minute because the Internet is not working in the training facility. It makes the burnt-out bulb on the projector seem small in comparison.

Evaluation program

HINARI and AGORA are beginning work on a joint evaluation program. It is important for all of the partners and stakeholders to understand how the systems are being used and whether they are making an impact. The overarching long-term goal of both programs is to improve the health and quality of life of the people in developing countries. The ripple effect starting from improved access to this research literature, and translating into better health and nutrition for the people of the developing world may take years to actually be measurable. However, a plan is in place to assess the value of HINARI and AGORA to users by gathering information from participating institutions.

Challenges ahead

While there are many challenges, perhaps the biggest obstacle for HINARI and AGORA uptake is the lack of reliable, reasonably priced Internet connectivity throughout the developing world, particularly in Africa. There are a number of reasons for this, many not purely technical. In these countries, the cost of Internet connectivity is often prohibitively expensive. For example, institutions in some African countries pay $400 or more per month for a leased line 56k connection. Institutions might pay over $12,000 per month for a 1 Mbps VSAT connection. Connectivity is a very expensive resource in most developing countries. Telecommunications monopolies in many countries also keep costs for Internet service artificially high and set up barriers to installing improved connections. Figure 7 illustrates sample Internet costs in Africa. A number of initiatives to improve this situation are underway, but there is much to be done to enhance access now that excellent scholarly content is available. Improving Internet connectivity is another area where a public private-partnership has the potential to make a significant impact on closing the digital divide.

Adding to the technical challenges, computers and peripheral equipment (printers, ink cartridges and paper) are often in short supply in the institutions of the developing world. Unlike the campuses of the US and other western nations, the universities of the developing world are almost always severely under resourced. Moreover, access to computers and content is only the beginning. Developing an ‘information culture’ in the institutions that now have access to HINARI and AGORA is an important next step. Librarians and faculty in participating institutions will be working hard to train users to search, effectively utilize, and manage the wealth of information now suddenly available to them.

Another challenge is expanding the content in HINARI and AGORA. Providing access to the research literature coming from the developed world is not enough. In the long term, HINARI and AGORA need to promote better access to the scientific research coming from the developing countries. This can be accomplished by enhancing...
the ability of developing country scientists to publish in core international journals and, equally important, by assisting in the development of strong local publishing programs.

**Conclusion**

HINARI and AGORA in their present guise will continue at least until the end of 2006, and are likely to endure in some way for long after that. They have the potential to revolutionize research and teaching in the sciences in the developing world. For the first time, researchers in the developing countries have access to a research library comparable to those in some of the best universities and teaching hospitals in the world. While it is a long journey from the sharing of knowledge and ideas to improving the health and nutrition of the people of the developing world, HINARI and AGORA are an important first step.

HINARI and AGORA Partners:
- American Association for the Advancement of Science (AAAS)
- American Academy of Pediatrics (AAP)
- The American Association for Cancer Research (AACR)
- The American Cleft Palate – Craniofacial Association
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