

Going on a high note: the SEAFDEC Information Programs

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Since its establishment in 1967, SEAFDEC has always promoted the importance of information as means of enhancing its image as a regional center working towards the sustainable development of fisheries in Southeast Asia. Thus, with the main objectives of enhancing the management of fisheries of Southeast Asia towards sustainability and raising its visibility, SEAFDEC has institutionalized its Information Programs to focus on the production of three main broad types of materials, namely: institutional materials, fisheries information accounts, and technical reports and scientific articles. Institutional materials include reports of SEAFDEC annual meetings, workshops, seminars, periodic and annual reports of SEAFDEC and Departments, newsletters, Special Publication: Fish for the People. Fisheries information accounts comprise the annual Fishery Statistical Bulletin of Southeast Asia, and the quinquennial Southeast Asian State of Fisheries and Aquaculture. Technical reports include proceedings of workshops, symposia, technical conferences, and end-of-project technical reports, among others, while scientific articles are those papers written by Department staff based on results of their activities carried out in SEAFDEC facilities and published in technical journals. The technical information and related materials produced by SEAFDEC are specifically meant to promote sustainable fisheries management in the Southeast Asian region. Furthermore, databases had also been established in respective SEAFDEC Departments on particular subjects based on their areas of specialization.

Striking a chord: the historical circumstances

Since the establishment of SEAFDEC in 1967, its Secretariat has been taking on the responsibility of implementing and coordinating the information programs and activities of the Center. Among the early tasks of the SEAFDEC Secretariat was the publication of reports of SEAFDEC annual meetings and the quarterly production of the SEAFDEC Newsletter, and dissemination of materials developed by the Departments, to target clientele in the Member Countries of SEAFDEC.

Early on, the Marine Fisheries Research Department (MFRD) of SEAFDEC, which was initially mandated to investigate the status of the region's marine fishery resources for fishing ground development, had been compiling the data gathered from cruise surveys conducted since 1970 using its research vessel, the M.V. CHANGI. With the analyzed data and together with previous relevant data, MFRD published the Catch-and-Effort Statistics of the Offshore Waters of South

China Sea from 1969 until 1973. This paved the way for the development of a more comprehensive publication on the catch-effort statistics of Southeast Asia.

Concerned with the urgency of compiling up-to-date fishery statistics for the development of the region's fisheries, the SEAFDEC Secretariat was asked by the SEAFDEC Council of Directors in 1973 to come up with the accounts of the region's fisheries statistics. A working group comprising fishery statisticians of the Southeast Asian region was therefore established in 1974 and tasked to develop the contents and format of the region's fishery statistical bulletin. With full support from concerned countries' agencies involved in compiling their national statistics, the SEAFDEC Secretariat in cooperation with the SEAFDEC Training Department (TD) published in 1978, the first issue of the Fishery Statistical Bulletin for the South China Sea Area containing the 1976 fishery information and data. Taking heed of the recommendation of the SEAFDEC Council, the SEAFDEC Secretariat published the Bulletin on an annual basis, with fisheries production data and other relevant information from the countries in the South China Sea area, such as Brunei Darussalam, China (Taiwan), Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Viet Nam. The Catch-and-Effort Statistics of the South China Sea Area was included as a supplement to the Bulletin from 1976 until 1981. Henceforth, the catch-and-effort data had been incorporated as part of the Bulletin.

As the development of SEAFDEC was progressing fast and its functions expanded to cover not only marine fisheries development but also aquaculture and fisheries post-harvest, and in an effort to facilitate the dissemination of information compiled through its various projects, SEAFDEC launched a massive information program starting in 1981. With funding support from the International Development Research Centre (IDRC) of Canada, the SEAFDEC Secretariat embarked on a three-year project aimed at enhancing the relationship between extension workers and small-scale fishers and farmers in the region through exchange and dissemination of relevant information. Known as the Southeast Asian Fisheries Information Services (SAFIS), the project translated the various fisheries extension materials produced by SEAFDEC Departments into the languages of the Southeast Asian countries and disseminated to target clientele in the region. A network of fisheries information services in the Southeast Asian countries was set up through SAFIS, which had served as the basic structure of the subsequent information projects of SEAFDEC.

In an effort to expand SAFIS, SEAFDEC also implemented a six-year information project starting in 1983 to include not only information compilation but also library services to rationalize and enhance the dissemination of information. Also funded by the IDRC of Canada, the Southeast Asian Fisheries Information System (SEAFIS) was meant to establish national fisheries bibliographies as well as regional bibliographies on fisheries and aquaculture. Therefore through SEAFIS, the SEAFDEC Secretariat was able to respond to requests for information on various aspects of Southeast Asian fisheries from various clients within and outside the region. Moreover, SEAFDEC was able to promote self-reliance in fisheries information dissemination through regional cooperation, as SEAFIS served as the Southeast Asian regional input center for the Aquatic Services and Fisheries Information System (ASFIS) of FAO.

At the Department level, information dissemination has been carried out through their respective libraries. The Library of TD which was set up in 1973 continues to expand its collections through acquisitions, donations and exchanges. The main function of the TD Library is to serve the training and research staff of TD and the trainees who study at TD. With the completion of the Library Building in 1995, the new library standardized format and system for effective library services had been introduced and a computerized cataloging system developed to accommodate the growing number of library collections and users.

As TD sustains its support to the SEAFDEC Secretariat for the production of the Fishery Statistical Bulletin for the South China Sea Area starting in 1976, it also initiated its Audio-Visual Program in 1985 initially to produce audio-visual aids for the various training courses offered by TD, as well as provides inputs to the TD training courses for extension officers, especially in communication media design and development. Thus, the Program not only supports the



SAFIS publications



SEAFIS publications

training and research activities of TD but also promotes public awareness through its various audio-visual activities.

Meanwhile, the Library of SEAFDEC Aquaculture Department (AQD) had sustained the acquisition of substantial volumes of aquaculture materials, which had been accelerated through the installation of the Aquaculture Information System (AQUIS) in 1981. Through the FAO/UNDP-Network of Aquaculture Centres in Asia (NACA) Project, AQD acquired a computer mainframe and accessories for the computerization of its Library's material storage, retrieval and reproduction systems, and enhanced its information dissemination activities through AQUIS.

In 1984, AQD received a six-year grant from the IDRC of Canada for the establishment of the Brackishwater Aquaculture Information System (BRAIS) which was aimed at providing a regional database of aquaculture information through the establishment of links with other regional and international information systems. BRAIS also subsidized the acquisition of add-on computer facilities including the MINISIS software and Micro CDS/ISIS to facilitate the setting up of an aquaculture database at AQD, as well as for the expansion of AQD Library's computerized storage and retrieval systems. Aside from the publishing and disseminating aquaculture abstracts, state-of-the-art reviews and other aquaculture materials, BRAIS was also instrumental in linking the local fish farm operators, aquaculture industries and support agencies for the first time, to the leading aquaculture research and development centers all over the world.



BRAIS publications

After its establishment in 1992, the Library of the SEAFDEC Marine Fishery Resources Development and Management Department (MFRDMD) continued to increase its collection of fisheries-related publications. In 1996, MFRDMD established the Fishery Resource Information and Management System (FRIMS) to provide the Department with a proper facility for data collection, management and analysis. FRIMS is also capable of providing data access to other SEAFDEC Member Countries. MFRDMD also continued to take up the previous tasks of MFRD in compilation and publication of the Catch-Effort Statistics for the South China Sea Area starting in 1994 which in the interim was taken over by TD, as

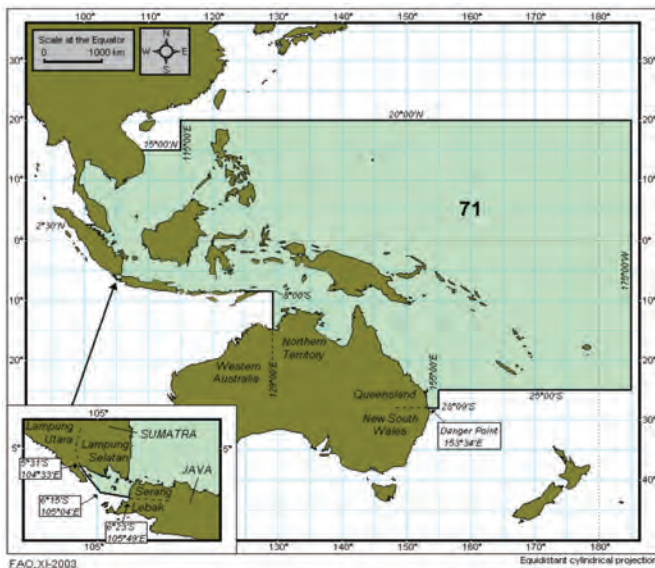


Fig. 1. FAO Fishing Area 71: Western Central Pacific

well as the collection of tuna statistics in the Southeast Asian region indicated as FAO Fishing Area 71 (Fig. 1). The data gathered by MFRDMD included tuna and tuna-like species in seven participating countries, namely: Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Viet Nam. Such data were analyzed and published as the Tuna

Fishery Statistics Bulletin since 1996, but later on, the said data had been incorporated as part of the Fishery Statistical Bulletin for the South China Sea Area.

As early as 1994, the accessibility, availability and timeliness of information had been identified as one of the major issues affecting the effective and efficient utilization of fishery information in the Southeast Asian region. In a study on “Fisheries Information Needs in Developing Countries: Issues, Constraints and Opportunities” carried out by the Strategy for International Fisheries Research (SIFR) of Canada (SEAFDEC, 1994), the results pointed to the need for various types of information, e.g. biological data, extension materials, policy statements and regulations, scientific literatures and technical reports, socio-economic data and indicators, for sustainable management of the fisheries sector. The study also identified the fishery information services and sources available during the survey, many of which still exist to date (Box 1).

The abovementioned study also identified the main issues and constraints that affect the effective and efficient utilization of fishery information. These include: accessibility, availability and timeliness of services; compatibility, reliability, and currency of information; appropriateness, completeness, relevance, suitability, and utility; sustainability; and

Box 1. Fishery information systems, services and sources worldwide

Categories	Fishery information systems, services and sources	Remarks
International information system	<i>International Information System for the Agricultural Sciences and Technology (AGRIS)</i>	Operational since 1975 at FAO Headquarters, Rome
	<i>Aquatic Sciences and Fisheries Abstracts (ASFA)</i>	Ongoing, based at FAO Headquarters, Rome
	<i>Aquatic Sciences and Fisheries Information System (ASFIS)</i>	Ongoing, based at FAO Headquarters, Rome
Commercial Products	<i>Biological Sciences Information System (BIOSIS)</i>	In U.K. and part of Thomson Reuters Web of Knowledge suite
	<i>Commonwealth Agricultural Bureau International (CABI)</i>	Operational since 1910 in U.K. and changed recently to the <i>Centre for Agriculture and Bioscience International</i>
	<i>Fish and Fisheries Worldwide (FFW)</i>	Had been recently incorporated with <i>Aquatic Biology, Aquaculture and Fishery Resources</i> , and renamed the <i>Fish, Fisheries and Aquatic Biodiversity Worldwide</i>
	<i>Current Contents (CC)</i>	Formerly known as the Institute for Scientific Information (ISI)
	<i>Scisearch</i>	Provided by Clarivate Analytics
	<i>Zoological Record</i>	1980-2004 published by BIOSIS, 2004 to date by Thomson Reuters
International and regional bodies	<i>FAO and FAO's various Commissions</i>	Ongoing
	<i>Indian Ocean Commission (IOC)</i>	Ongoing
	<i>Intergovernmental Organization for Marketing Information and Advisory Services for Fishery Products in the Asia and Pacific Region (INFOFISH)</i>	Launched in 1981 in Malaysia as a project of FAO, became an intergovernmental organization since 1987
	<i>Bay of Bengal Programme (BOBP)</i>	Operational in India, now the <i>Bay of Bengal Programme - International Organisation (BOBP-IGO)</i>
	<i>Network of Aquaculture Centres in Asia-Pacific (NACA)</i>	Operational since 1988 in Bangkok, Thailand

Box 1. Fishery information systems, services and sources worldwide (Cont'd)

Categories	Fishery information systems, services and sources	Remarks
Information programs of international and regional institutions	<i>Agricultural Information Bank for Asia (AIBA)</i>	Under the <i>Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)</i> in Los Baños, Laguna, Philippines
	<i>International Center for Living Aquatic Resources Management (ICLARM)</i>	Established in 1977 in the Philippines, and later renamed as the <i>WorldFish Center</i> with headquarters in Penang, Malaysia
	<i>Southeast Asian Fisheries Development Center (SEAFDEC)</i>	Treaty organization established in 1967, now operates the SEAFDEC Secretariat in Bangkok, Thailand and Technical Departments in Thailand, Singapore, Philippines, Malaysia and Indonesia
Professional societies and research networks	<i>International Association of Marine Science Libraries and Information Centers (IAMSLIC)</i>	Established in 1975 in Massachusetts, USA
	<i>Asian Fisheries Society (AFS)</i>	Operational since 1984 in Selangor, Malaysia
	<i>Aquaculture Genetics Network of Asia (AGNA)</i>	Regional network funded by the <i>International Development Research Centre (IDRC)</i> of Canada
	<i>Network of Tropical Fisheries Scientists (NTFS)</i>	Organized by ICLARM in 1982
Regional information systems		
National information systems		

Source: SEAFDEC (1994)

qualification of information staff. Specifically, the major concerns were: insufficient local and institutional information resources and services due to poor local communication and transportation infrastructure; inadequate systematic methods and mechanisms for collection, organization, analysis, synthesis and dissemination of information; insufficient number of information staff; weak leadership; and inadequate financial support and resources.

The study suggested some actions necessary to improve the utilization of fishery information in Southeast Asia. These include: improving local or national information resources and services; summarizing, packaging and disseminating fishery technology on locally appropriate form; analyzing and synthesizing information in the context of national and local fishery resources management needs and issues; compiling,

producing, and disseminating comprehensive directories and inventories on fisheries infrastructure; networking and sharing of information resources and skills; developing national and regional capabilities to facilitate information flow and utilization; and ensuring the sustainability of information systems.

Plight of SEAFDEC Information Programs

As the financial grants from various sources that sustained the information programs of SEAFDEC were concluded after the projects had been completed, the SEAFDEC Secretariat and Departments continued their information-related activities at low scale using their respective financial resources. Notwithstanding such minimal scale, acquisition of information materials was continued mostly through



Some of the regular publications produced by the SEAFDEC Secretariat

exchanges. While recognizing the need to promote the image of SEAFDEC as a unified organization, the SEAFDEC Council asked SEAFDEC in 1994 to develop an information staff exchange program involving the concerned staff of the Departments that would aim for the enhancement of information networking in the Southeast Asian region. This paved the way for the implementation of the SEAFDEC Information Staff Exchange Program (ISEP) which was launched in 1995, and later renamed the SEAFDEC Information Staff Program (ISP).

Recognizing the vital role of information as a tool in the development and management of the fisheries sector, the SEAFDEC Council adopted in 1998 the Center-wide Information Network Program, aimed at keeping the SEAFDEC Member Countries, other organizations and the public well informed of the SEAFDEC activities; raising public awareness and visibility of SEAFDEC; and providing various forms of fisheries information to support decision-making, management and development of the fisheries sector. Guided by the SEAFDEC Information and Communication Policies, several information materials and services had been developed and/or enhanced by the SEAFDEC Secretariat as coordinator of the Program, in collaboration with the SEAFDEC Technical Departments. In line with achieving such objectives, various information materials have been produced to promote the activities and visibility of SEAFDEC, communication among SEAFDEC staff as well as with Member Countries and other organizations has been enhanced, and human resource development opportunities have been provided to relevant SEAFDEC staff to improve not only their skills but also their knowledge on the programs and activities that SEAFDEC has been carrying out.

Having considered the need to streamline information activities in a most cost-effective manner, and to enhance the visibility of the Center, the SEAFDEC Council adopted the Information Strategies for Enhancing SEAFDEC Visibility and Communication in 2007 (**Box 2**), which also includes performance indicators for future implementation as framework for the formulation and implementation of

Box 2. Main Features of the Information Strategies for Enhancing SEAFDEC Visibility and Communication
Strategy 1: Production of relevant, timely, and useful information materials to meet the requirements of target audience
Strategy 2: Capacity development of information staff at all levels
Strategy 3: Enhancing the accessibility of SEAFDEC information to target groups
Strategy 4: Strengthen cooperation and networking with other organizations
Strategy 5: Enhance internal communication and information sharing
Strategy 6: Raising SEAFDEC image at international, regional and national levels
Strategy 7: Sustainability of financial support for information and communication activities
Strategy 8: Regular monitoring and evaluation of information activities

SEAFDEC information activities under the Center-wide Information Network Program. The SEAFDEC Council also encouraged the SEAFDEC Secretariat to monitor and evaluate the implementation of the Strategies by the SEAFDEC Departments, the progress of which should be reported and discussed for improvement during the annual Meetings of the SEAFDEC ISP.

Meanwhile in 2003, the Member Countries of SEAFDEC had expanded to include all ASEAN Member States, so that the SEAFDEC Secretariat refocused the compilation of fishery information and statistics for Southeast Asia. Thus, the Fishery Statistical Bulletin for the South China Sea Area which was published by SEAFDEC annually since 1978 was changed to the Fishery Statistical Bulletin of Southeast Asia. This necessitated the compilation of fishery statistics from the Southeast Asian countries and Members of SEAFDEC. So, starting with the information and statistics in 2008, the new Statistical Bulletin published annually now covers the Southeast Asian countries, namely: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam.

Paradigm shift in information dissemination

The libraries of SEAFDEC Secretariat, TD, MFRD, AQD, MFRDMD, and recently the IFRDMD have continued to provide information services for their respective staff members as well as external visitors. For the Secretariat, the library contains publications produced by the Secretariat and Departments, and aimed primarily to serve as reference materials for staff and visitors. With collections of reference materials produced by SEAFDEC and other sources, particularly on subject matters that fall under their mandates, the Department libraries offer general library services, book loan services (including interlibrary loans), and on-line information services through their departmental websites as well as online bibliographic search. These services are



Launching of SEAFDEC Information Staff Exchange Program in 1995

meant to help in enhancing the dissemination and sharing of SEAFDEC information with the Member Countries, other international and regional organizations, and the public. The libraries have also established cooperation and exchanges of publications produced by SEAFDEC with other libraries and relevant regional and international organizations all over the world. The SEAFDEC libraries have demonstrated the best examples of creating a platform where information and communication technologies are being maximized to reach out to the users.

With the onslaught of changes in information and communication technology services, the SEAFDEC libraries have to adapt the new technologies to meet the challenges in information dissemination. This paved the way to the enhancement of the libraries' on-line services. The AQD library has advanced in this aspect as most of its collections are now being digitized and online information services are provided through a WebOPAC using the OPAC/Follet software, which was launched in July 2000, and recently through other web systems as well. The Online Public Access Catalog (OPAC) is a comprehensive listing of available library collection that the public can access using the internet facilities.

In July 2011, AQD launched an on-line repository of the in-house and external publications of its researchers to provide the public with free and easy access to scholarly and reliable aquaculture research information. The SEAFDEC/AQD Institutional Repository (SAIR) (<http://repository.seafdec.org.ph>) makes use of DSpace, an open-source software developed by the library of the Massachusetts Institute of Technology of USA, and is Open Archives Initiative (OAI)-compliant. Initially, SAIR contains preprints, full-texts or abstracts of journal articles, books and conference proceedings written by AQD researchers and published in international and peer-reviewed publications, and in-house publications such as fish farmer-friendly books, handbooks, policy guidebooks and extension manuals. It also contains institutional and annual reports, conference proceedings and newsletters (e.g. Aqua Farm News and SEAFDEC Asian Aquaculture) which can be retrieved and downloaded. Future contents will include images, presentations, as well as audios and videos. SAIR aims to provide reliable means for AQD researchers to store, preserve, and share their research outputs, as well as provide easy access and increase the visibility of AQD scientific publications and technical materials.

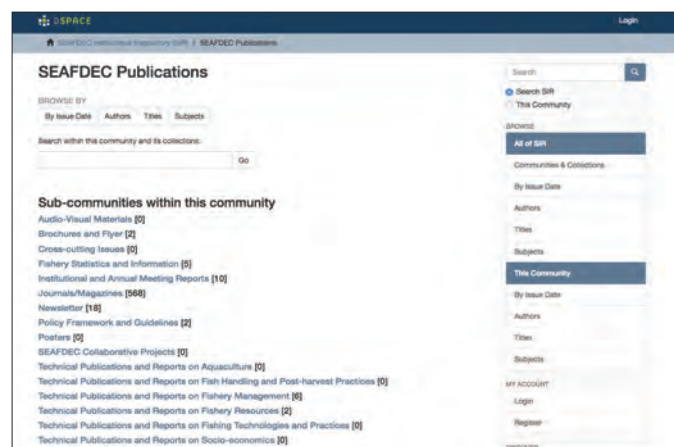
Recognizing the advantages of SEAFDEC Institutional Repository (SIR) in enhancing the visibility of SEAFDEC, the Sixteenth Meeting of the ISP in 2015 encouraged all Departments to develop their respective institutional repositories to be coordinated into the SIR. As a means of formalizing the establishment of the Departmental repositories, the SEAFDEC Secretariat organized the

Box 3. Benefits that could be obtained through the establishment of SEAFDEC Institutional Repository

- Repositories facilitate sharing of SEAFDEC information to external clients and users and increasing its visibility
- The Institutional Repositories of SEAFDEC can be harvested by other search engines and repositories, thus enhancing SEAFDEC visibility
- Repositories allow better searching of SEAFDEC materials through search engines (e.g. Google, Worldcat) than through SEAFDEC websites, while materials could be searched not only from bibliographic records, but also the metadata and contents (for PDFs that has been subjected to Optical Character Recognition (OCR))
- Through a centralized repository hosted by SEAFDEC Secretariat, users will be able to access all SEAFDEC publications (of all Departments), as the system allows the institutional repository of the SEAFDEC Secretariat to harvest materials available in Departments' institutional repositories automatically (minimizing redundancy of files at both Departments and Secretariat)
- The SEAFDEC Institutional Repository will serve as the digital archive of each Department and all contents would have permanent and persistent link (URL) in the future.

SEAFDEC Inter-Departmental Workshop on Establishment of Institutional Repository of SEAFDEC Secretariat and Departments in March 2017 in Thailand. As the Departmental repositories could accommodate various types and forms of information based on results of SEAFDEC works, these would ensure enhanced access and dissemination of information materials produced by SEAFDEC and improve the visibility of SEAFDEC to the public. Although the SEAFDEC Secretariat and Departments have been maintaining their own information materials accessible through their respective websites and through a compilation available DVD-ROMs, the creation of institutional repositories using the same DSpace platform is being promoted within SEAFDEC in view of the additional anticipated benefits that could be derived from establishing institutional repositories (**Box 3**).

Based on the results of the 2017 Workshop, the Secretariat and Departments have already initiated the establishment of separate repositories, which would carry the domain names: *repository.seafdec.org* (for the SEAFDEC Secretariat and MFRD), *repository.seafdec.or.th* (for TD), *repository.*



Example of community and sub-communities in the SEAFDEC Institutional Repository

seafdec.org.ph (for AQD), *repository.seafdec.org.my* (for MFRDMD), and *repository.seafdec.org.id* (for IFRDMD) which would be maintained by the Secretariat and the respective Departments. To minimize duplication of efforts, the repository of Secretariat would only link to the PDF files stored in Departmental repositories and not harvest the files from the Departments. Thus, the Secretariat would maintain only a smaller server than those of the Departments.

Way Forward

As the platform that would facilitate the monitoring and evaluation of the implementation of the Information Strategies for Enhancing SEAFDEC Visibility and Communication, ISP meetings are convened annually. During the Eighteenth Meeting of the ISP in Singapore in October 2017, the SEAFDEC Secretariat and Departments agreed to exert more efforts in finding the ways and means of improving the information-related activities and enhancing the visibility of SEAFDEC notwithstanding the considerable progress that had been based on the agreed indicators for monitoring the implementation of the SEAFDEC Information Strategies.

Specifically, enhancement of the visibility of SEAFDEC would be made further by SEAFDEC Secretariat and Departments through the use of video channels, *e.g.* YouTube as well as social media, *e.g.* Facebook, especially for uploading not only publications but also the URL of videos produced by the Departments. The SEAFDEC Secretariat and Departments would develop and/or improve their respective institutional repositories as these would enhance public access to publications produced by SEAFDEC, particularly through search engine, and increase the visibility of SEAFDEC to the public. In this connection, monitoring of citations of SEAFDEC publications would be carried out, which would be facilitated through the use of citation databases, *e.g.* Web of Science, Scopus, Google Scholar. Such effort could enhance not only the motivation of Department staff to write more articles but also the credibility of SEAFDEC as source of useful technical materials required by the target audience.

Moreover, the SEAFDEC Secretariat and Departments would soon be creating their respective Google Scholar accounts for their technical staff (using official e-mail address) to facilitate the monitoring of the citations. This would also pave the way for monitoring the usefulness of SEAFDEC publications to users, and enables SEAFDEC to know the kinds of publications and articles that people are interested in and to respond to such needs.

During its past 50 years, SEAFDEC has been exerting efforts to enhance its visibility not only in the Southeast Asian region but also to the whole world, through the production and dissemination of various information materials, and networking with other information systems worldwide. Along this direction, the responsibility of AQD in providing inputs including publications of SEAFDEC Secretariat and Departments to the Aquatic Sciences and Fisheries Abstracts (ASFA) would be sustained as through this platform, the accessibility of SEAFDEC publications is improved and the visibility of SEAFDEC is enhanced.

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