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# ***Building the CIARD Framework for Data and Information sharing -- Papua New Guinea Case***

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Senior Anzu

The National Agricultural Research Institute (NARI)

## **Section 1**

### **The importance and role of organizational and/or national policies and strategies in your country in fostering sharing of scientific information/data**

The national government and its agencies generally encourage sound policies and strategies as important framework for effective planning, implementation and productivity. This is true for the agriculture sector in which national and organisational policies and strategic frameworks have been developed over the years. The importance of communication and sharing of scientific information/data are thus accounted for in such initiatives.

The Government of PNG, through the Department of Communication and Information, has recently introduced a National ICT Policy (2009). This policy sets out a strategic framework for meeting the Governments objectives in the ICT sector; which is crucial for the agriculture sector as well. The National Agriculture Development Plane (2007-2016), a sectoral blueprint, outlines strategies for agricultural development in which ICT use and communication are regarded as important mechanisms for greater sharing of information/data.

The NARS, through a paradigm shift in the context of AR4D, have realigned and prioritized their programmes and activities in which the function of sharing of scientific information/data is given equal prominence. This is well accommodated in institutional strategic plans.

These policy initiatives and plans aim at contributing towards organisation goals and achievement of overall national plans such as the Medium Term Development Plan (2011-2015) and Vision 2050 set by the Government.

### **Mechanisms, channels, obstacles and constraints for sharing and exchange of research information/data within your country and with the outside world**

The following are some of the common **mechanisms and channels** in sharing and exchange of research information/data.

**ICT Tools:** The trend in access and use of **computers** is very high with almost every person in ARD organisations having fulltime access during working hours. Therefore information processing, storage and transfer happen on daily basis. Scientists and information professionals also have **email accounts** either

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through domain name or free, search-based webmail service such as Gmail and yahoo. Access to **internet** varies across institutions as many use modems and lease line systems while NARI is the only institute that has broadband across all its research centres. ARD organisations have their own fully functional **websites** with web links to other partners and collaborators. There is a **cell phone** SMS project on market information for vegetables with mobile company Digicel; a collaborative initiative involving the private sector. Facilitated by email and internet services, electronic resources such as **electronic newsletters, blogs** and **social networking** have become a timely and speedy media of information/data sharing which a lot of research organisations have adopted.

**Information systems:** National Agricultural Information System, Research Management Information Systems and Geographical Information System are becoming important tools and resources for knowledge acquisition, management and sharing and for planning and development of resources.

**Tractional Media:** Use of traditional media is still common in sharing scientific information. Such media include newspapers (newspapers give prominence to agriculture news and features in their daily issues. Of particular importance are the weekly columns provided free to agriculture); use of television is occasional with PNG's two television stations, especially in their news and feature programs; news and agriculture programs are also common with radio stations, which still main a wider coverage including the rural areas.

**Print publications:** Information resources such as newsletters, magazines, posters and banners, leaflets, and banners are common in all ARD organisations. Also popular are a range of scientific and extension publications and journals.

**Office Correspondence:** Telephone and facsimile still remain the instant mediums of sharing research information/data within and between institutes and stakeholders. Other compacted media for information/data storage and usage such as CD-ROMs/DVDs are common.

**Resource Centres:** NARI is promoting the Community Based Resource Centre concept to bridge the gap between rural communities and researchers. These centres should become one-stop-centres in which scientific information can be distributed to stakeholders. This arrangement can also take advantage of ICT interventions.

**Public events** – Research organisations have engaged their scientists to participate in public forums such are innovations shows, open days, field days, cultural shows, ceremonies, conferences, seminars, road-shows and festivals. They also organise information boots and displays of sample materials of technologies. The advantages are the face-to-face question and answer engagement between sciences and stakeholders and distribution of scientific information materials.

However, there are also **obstacles and constraints** faced in the exchange and sharing of scientific information/data.

- Human Resource capacity is a critical challenge. Scientists and information professionals involved in packing and disseminating of scientific
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information and data need specific skills to deliver results at expected levels.

- Institutional capacity in terms of infrastructure and technology is lacking due to prioritization and investment issues.
- Funding is a major constraint, as most ARD organisations rely on the Government which has its own priorities and budget allocation limits.
- Besides there are high costs of equipment and telecommunications, poor infrastructure facilities with unreliable power supply, poor quality of internet connectivity, and lack of broadband technology in most NARS.
- Attracting and maintaining critical mass in the agriculture sector is a major challenge as IT professionals prefer the industrial and mining sectors due to better working conditions and pay packages.
- There is no IT manufacturing industry in PNG. All computer hardware and software are imported from the Asian or Australian markets, thus making the country rely entirely on foreign IT industries.
- Further, though hardware sales and service have increased in recent years, service and support in most cases are unreliable.
- Telecommunication infrastructure was limited to the major urban centres, leaving centres in rural areas unserved. However, this is slowly changing since the introduction of the National ICT Policy (2009) with private sector driving the cell phone industry with reduced costs.
- The rugged geographical terrain and other social issues such as vandalism also pose major challenges.
- While PNG development partners are keen in adopting changes in technology, resources for ICT are limited. This is a challenge at hand that requires input from all actors.
- Due to technology wise constraints mentioned above, scientists' and information processors' access to information systems and databases is limited thus not many of them are aware of the pool of useful knowledge that is available in the public domain.

### **Concrete examples of interoperability between types of digital information/data and the outcomes and benefits derived**

NAIS and GIS are examples of such interoperability in digital information which involves a lot of resources from different scientists and institutions. See the explanation on NAIS and GIS below in case studies.

NAIS is extensively used by scientists and scholars for research and education purposes, journalists for reporting and news purposes, information professionals for documentation and packaging communication resources while other stakeholders use for training and meeting other information needs.

The use of GIS has been critical in development planning and resource management especially by research and development organisations, local level governments, resource developers, NGOs and government agencies.

### **Priority areas, current and potential, where interoperability between types of digital information/data will really enhance sharing of agricultural research outputs**

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A regional system, known as Melanesian Agricultural Information System (MAIS) for three Western Pacific countries – PNG, Vanuatu and Solomon Islands is being developed presently under an EU ACP Science and Technology programme. This new system is intended to consolidate and increase wider sharing and exchange of individual NAIS (National Agricultural Information System) of each country at the regional level. This is a promising intervention in the making for the benefit of the Pacific Island nations and territories. It should be expanded to the entire Pacific region and further linked with the CIARD system.

The CIARD initiative on building framework for data and information sharing is a promising development at international level which will be of benefit in PNG. Having registered with CIARD, contributing resources and accessing the pool of knowledge made available in the public domain through this initiative should become a priority for all NARS in PNG. However, more advocacy and training is needed for the NARS members to be fully informed of the initiative. This means more awareness and sensitization is required locally; to-date, NARI may be the only institution from PNG to register with CIARD.

The development of communication strategies at institutional level has been sensitized and efforts are being made to develop such framework to strategize information exchange and sharing initiatives. NARI already has a draft Communication Strategy.

## **Section 2**

### **Case study descriptions**

#### **1. PNG National Agricultural Information System**

The PNG National Agricultural Information System (NAIS) is an information database system of ARD organisations in the country. The NAIS database has over 32, 000 records of information resources in books, journals, papers and other publications. The system is managed using Inmagic DB/TextWorks. The objective is to maintain and exchange library and information resources for the benefit of the individual institutions and the country as a whole. There are seven partner institutions currently contributing to the system. All PNG NAIS partners are committed to identifying, documenting and sharing their information assets, including the libraries and publications. The system is available in all partner organisations and copies distributed to other stakeholders (eg schools) in CD runtime versions.

#### **2. Geographical Information System**

NARI's GIS unit provides technical advice on GIS and produces maps that when retrieved and manipulated can enable one to have a "birds eye view" of natural resources and agricultural practices or crops grown in different parts of the country. There are three (3) major agricultural databases maintained which are available in a GIS format - map-linked databases. They can be presented as maps, tables and graphs. These databases are relevant to researchers, agriculturalists, planners, investors, environmentalists, schools and universities or to anyone involved in planning development and land management in PNG. The GIS databases include:

1. Papua New Guinea Resources Information System (PNGRIS)
  2. Mapping Agricultural Systems of PNG (MASP)
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### 3. Farming Systems of PNG (FARMSYST)

#### **3. National Agricultural Insect Collection (NAIC)**

The National Agricultural Insect Collection (NAIC) is NARI's reference insect collection of a large number of insect specimens (~200,000) collected from all over the country, and maintained in electronic database. The focus is on insects of agricultural importance. The specimen records contain information on distribution, host ranges and pest statuses, which can be used as reference information for identification. The system also contains images of pests, maps of host communities and other related information. NARI owns and maintains this collection however contributions are made from different organisations and individuals especially in the natural resource sector. The collection is accessible to those in research, education and the general public.

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Contact:

Seniorl Anzu

The National Agricultural Research Institute (NARI), Papua New Guinea

Email: [seniorl.anzu@nari.org.pg](mailto:seniorl.anzu@nari.org.pg)

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