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DATA SHARING IN THE PERSPECTIVE OF FORESTRY

ANMOL KUMAR AND RICHA DWIVEDI

Forest Survey of India, Kaulagarh Road, Dehradun (Uttarakhand)

ABSTRACT

In a developing world, data sharing place an important role. In the field of forestry where outcomes are long term, it becomes more important. Government / public sector organizations where lots of tax payers money is used for generating of data should be more sensitive to the data sharing for scientific research with individuals or other organizations. It is necessary that such data is shared with individual organization who intend to use it for scientific purpose. The present paper describes the various steps including legal acts taken by the Government of India to facilitate data sharing. While in the forestry sector sate forest departments, Indian Council of Forestry Research and Education and Forest Survey of India are having large repositories of forestry data and they should be ready to share it for scientific purpose with others. While sharing data it would be very important to comply intellectual property rights. It will promote transparency, harmonious relations among researchers / organizations and will avoid duplication of efforts.

Key words : Data sharing, Forestry data, South asia.

Introduction

Forest ecosystems with their high complexities brings together errors of measurement, methodological changes related to technological progress, and changes in technical, human and financial capacity. Data harmonization, whether by interpolation or extrapolation methods, and recalculation ensures consistency of measurements over time (IPCC, 2006) (Eggleston *et al.,* 2006) but, if not appropriately done, affects measurements accuracy. Despite the earnest efforts of researcher's data collected by measurements campaigns are often lost due to lack of archiving capacities and often leads to work duplication. Fort successful assessment of forest resources and to overcome financial constraints in developing and improving cumbersome allometric equations access to raw data, meta-data and documentation describing the method of data collection by different agencies is crucial. Data is recognized at all levels as a valuable resource that should be made publicly available and maintained over time to ensure that its potential value is realized. There has been an increasing demand by the community, that data should be made more readily available to all, to enable rational debate and better decision making.

"Data" as per the national data sharing and accessibility policy (NDSAP, 2012) United Nations (2012) is a representation of information, numerical compilations and observations, documents, facts, maps, images, charts, tables, and figures, concepts in digital and/or analog form. The most challenging task from the public perspective is to classify a data that should be protected as in one situation a data may be protected and in the other situation it may be non-protected.

Data sharing

The sharing of data is the practice of using data for scholarly research available to other investigators. It involves a reciprocal exchange of data; one or more organizations providing data to a third party or parties; several organizations pooling information and making it available to a third party or parties; exceptional, one-off disclosures of data in unexpected or emergency situations; different parts of the same organisation making data available to each other. It generally involves routine sharing of data sets between organisations for an agreed purpose. It could also involve a group of organisations making an arrangement to 'pool' their data for specific purpose. It is an important way to increase their ability of researchers, scientists and policy makes to analyse and translate data into meaningful reports and knowledge. Sharing data discourages duplications of efforts in data collection and encourages diverse thinking and collaboration. It also encourages accountability and transparency enabling researchers to validate one another's findings. Data from multiple sources can often be combined to allow for comparisons that cross national and departmental lines. In addition, it also reinforces open scientific inquiry, diversity of analysis and opinion and promotes new research.

Data life cycle

There is large quantum of data generated at the cost of public funds by various organizations and

Complying intellectual property rights while sharing data, will promote transparency, harmonious relations among researchers / organizations.

institutions in the country. Most of this data is non-sensitive in nature and can be used by public for scientific, economic and developmental purposes. The data generated by a public entity/organization passes through a selection process wherein the mandate of the entity works as the filter resulting in some data remaining in the files in scattered form while the selected data is compiled into a desired format and mostly released in public domain by the public entity. The data generated may or may not lose its relevance over time depending on the type quality of the data generated.

Data sharing agreements

It is a formal contract that clearly documents what data are being shared and how the data can be used. The data sharing agreement should have three main elements viz strong partnership with clear communication, a clear process by which both the data sharing partners benefit and a well developed content which does not leave any room for ambiguity. In addition, the following points also need to be clearly spelt out

- ✓ Period of agreement
- ✓ How the receiver will use the data
- ✓ Constraint of the views of the data
- ✓ Data confidentiality
- ✓ Data security
- ✓ Methods of data sharing
- ✓ Who will covere the monitoring cost of data sharing

At the national level there is a policy framework for data sharing and accessibility. However, it is important to mention that the public data not otherwise available may have commercial value. Therefore, for data sharing with the private entities should be on commercial lines keeping the interest and investment of the public resources involved. The agreements with the private entities should be made on commercial contract principles.

The data sharing agreements with foreign states and foreign entities or nationals should be guided by the following principles:

- ✓ Indian foreign policy
- ✓ Non-compromising safety, sovereignty and integrity of India
- ✓ Relationship with the country in particular
- ✓ Benefit to India in tangible and non-tangible forms
- ✓ International conventions and treaties

Legal framework for data sharing

National perspective

The Constitution of India begins with 'We the People of India' in its preamble underlining the importance of people in the country. The public offices are funded by public money therefore they are aligned to welfare of the people of the country. The constitution of India has bestowed right to life with dignity as a fundamental right to the people of India that includes privacy and thus advocates for data protection. The private entities, like individuals, are free to decide the fate of the data they hold. However, there are public entities like FSI which are guided by the laws and policies of the country. Presently, India does not have any one law for protecting data. However, the specific provisions related to data protection are present in the Official Secrets Act (GoI, 1923), Information Technology Act (GoI, 2000), Right to Information Act (GoI, 2005) and Copyright Act (GoI, 1957). The latest legal tool in this context is the National Data Sharing and Accessibility Policy (GoI, 2012).

The data sharing at the national level is guided by different acts and rules and policies pertaining to the subject. In order to promote more transparency in the government functioning the government came out with the Right to Information Act (2005). However, even this Act does not prescribe all data to be made accessible to the public. The right to information act in section 2(f) defines "information" as any material in any form, including records, documents, memos, e-mails, opinions, advices, press releases, circulars, orders, logbooks, contracts, reports, papers, samples, models, data material held in any electronic form and information relating to any private body which can be accessed by a public authority under any other law for the time being in force. The Act applies only for the information defined under the section 2 (f) available at the public office; however the private body information does not includes information that breaches privacy of an individual. It is important to further highlight that the Act is limited only for the information related to any private body which can be accessed by a public authority. The section 4(2) defines the obligation of the public offices with respect to the creation, maintenance and dissemination of the 'information' time to time. i.e. “It shall be a constant Endeavour of every public authority to take steps in accordance with the requirements of clause (b) of sub-section (1) to provide as much information suo motu to the public at regular intervals through various means of communication, including internet, so that the public have minimum resort to the use of this Act to obtain information”. However, the Section 8 defines the exemption from disclosure of the information that includes commercial confidential, trade secret, competitive advantage harming or intellectual property related information.

The Information Technology Act (GoI, 2000) and the

Copyright Act (GoI, 1957) are for the protection of electronic data irrespective of its class and for protection of intellectual labour incurred into an original expression of thought into any tangible format.

The public offices are guided by the National Data Sharing and Accessibility Policy (2012). This policy is designed to apply to all non-classified data collected using public funds held by various ministries / departments /subordinate offices. The objective of this policy is to facilitate access to Government of India owned shareable data (along with its usage information) in machine readable form through a wide area network all over the country in a periodically updatable manner, within the framework of various related policies, acts and rules of Government of India, thereby permitting a wider accessibility and usage by public. The NDSAP policy would help data users and data solicitors get access to data through established procedures and defined norms. The Department of Science and Technology is the nodal agency for coordination and monitoring of the policy. The national data sharing and accessibility policy will apply to all data and information created, generated, collected and archived using public funds provided by Government of India directly or through authorized agencies by various ministries/departments/organizations /agencies and autonomous bodies. The principles on which data sharing and accessibility need to be based include: Openness, Flexibility, Transparency, Legal conformity, Protection of intellectual property, Formal responsibility, Professionalism, Interoperability, Quality, Security, Efficiency, Accountability, Sustainability. As per the policy the datasets are to be classified into three categories with different treatment for the three criteria of data. These are as follows:

a) Open access data

Open access to research data from public funding should be easy, timely, user-friendly and internet-based without any registration process.

b) Registered access

Datasets which are accessible through a prescribed process of registration/authorization by the respective departments/organizations will be available to the recognized institutions/organizations/public users through defined procedures.

c) Restricted access

Data declared as restricted by the Government of India policies will be accessible only through and under authorization. The data users who are accessing / using this data for research should clearly acknowledge the ministry / department in all forms of publications.

Data sharing in International framework

India is a signatory to the Rio declaration on environment and development (1992). The Rio Declaration in its Principle 1 says that Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature. Data leads to information that helps in designing and implementing the plans at the national levels for the sustainable development through a healthy and productive life in harmony with nature. The free access to data can help in generating knowledge tools for meeting the objective of the first principle of the Rio Declaration. The Rio declaration in its Principle 4 makes it mandatory to integrate environment protection as an integral part of development. It is imperative to mention at this point that development may be limited to the political boundaries but the environment has its ramifications across the political boundaries. The *Principle 10* of the Rio Declaration on the United Nations Declaration on Environment and Development (Rio de janeiro,1992), stated "…….each individual shall have appropriate access to information concerning the environment that is held by public authorities ……. and the opportunity to participate in the decision making process. States shall facilitate and encourage public awareness and participation by making information widely available." .i.e. it states the requirement of involving individuals across the political borders in sharing the environmental data and their participation in decision making in poverty eradication, sustainable development across the world. The integration of environmental protection with the development envisages data sharing among the united nation (UN) member states. The UN can make declarations but does not have power to enforce its declarations on its member states. This is the reason why most of the UN conventions, treaties and declarations do not find place into the national laws. Therefore, the international landscape of data sharing, though important from climate and environment perspective, depends on bilateral relationship between two countries.

Concept of interoperability and data exchange

National spatial data infrastructure (NSDI) for India is an initiative undertaken by Department of Science and Technology, Govt. of India. It is being monitored by NSDI division of Department of Science and Technology to build consensus on harmonizing the available country-wide spatial data base to a common set of standards, parameters and to minimize the imparity in data themes among various institutions, organizations across the country. NSDI aims at encouraging collection, aggregation and distribution of spatial data on different

themes on a common defined set of standards and formats by different mapping agencies in India. In this context, Forest Survey of India (FSI) has been identified as a partner institutions and a member of working groups (WG) assigned with the important responsibility of creating theme layers pertaining to forest resources and their categories. Data content standard for vegetation theme of FSI, WMS (web map service) was prepared for forest cover and forest type map of the entire country and states of India and has been uploaded on NSDI portal. Metadata creation in version 2.0 has been completed and has been to be submitted to NSDI for uploading. A web server and a data sever has been installed and commissioned for NSDI. The server would be repository for the entire forestry database that would be available to users through internet. There are different government organizations participating and working as nodes of NSDI. Each organization is a part of a working group. Forest Survey of India (FSI) is one of the nodes of the NSDI and is allotted the task of interoperability and data exchange.

The Interoperability is the ability to communicate, execute programmes, or transfer data between various functional units in a manner that requires the user to have little or no knowledge of unique characteristics of those units. The interoperability in geospatial domain is the ability, the cooperation, the compatibility of an information system to run, manipulate, exchange and share the data of different organizations related to spatial information on, above, and below the earth's surface; for any kind of application to serve the society over networks.

FSI and data sharing

the state forest departments (SFD) are the primary custodians of the forestry data related to respective states. This data originates from silviculture wing (preservation plots, ecological plots and sample plots etc.). In addition, organizations like Indian Council of Forestry Research and Education (ICFRE) and Forest Research institute (FRI) have good repositories of forestry research related data sets of the country.

Forest Survey of India started as the pre investment survey of forest resources (PISFR) in 1965 and was rechristened as the Forest Survey of India in 1981. It is the premiere national organization of the Ministry of Environment Forests and Climate Change carrying out forest cover assessment and national forest inventory (NFI) on a regular basis. it is also responsible for the national communication with regard to the change in forest carbon stocks of the country. forest survey of india has being carrying out projects of national importance namely mapping of the forest types of india, mapping of forest cover in tiger reserves of the country, mapping of mangroves, coral reefs etc.

FSI has carried out inventory for Bhutan and Nepal including sharing of technical knowhow, allometric equations developed by FSI for 160 sp. are in public domain and are being used by research organizations and academic institutions. Data pertaining to forest cover in global forest resource assessment (GFRA) published by FAO is provided by FSI. Similarly, the production of TOF (trees outside forest) is used by CSO (Central Statistical Organization) in GDP calculation. In addition to this, FSI has also been monitoring forest fires across the country since 2004 and sending alerts to the concerned SFD's. The FSI data sets in conjunction with other data are also being used for allocation of coal blocks and granting of forest clearances under the Forest Conservation Act. The carbon data has been used for reporting to the UNFCCC in the form of (1st and 2nd National Communications) to United Nations framework convention on climate change (GoI, 2004 a & b). In the coming future, the organization would serve as a nodal agency for collection, compilation, storage and dissemination of spatial database on forest resources of the country. All published data of FSI are placed on the web-site.

Conclusion

Thus, overall the data being generated by public organizations using public money for policy planners, decision makers and scientific and international organizations holds considerable value and should be made publicly available for the larger good of the public and the country. It needs to be widely disseminated within the ambit of the national policy framework. All organizations should work towards generation of spatial data on different themes on a common defined set of standards and formats so that exchange of data between organizations is hassle free. Migrating to open data formats will lead to wider data dissemination and a quicker data processing time by cutting down the red tape. At the same time, the ownership of the data and the Intellectual Property (IP) issues need to be clearly spelt out especially when the data is shared with third parties or other countries.

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