Protection of Legal Rights and Interests of Scientific Data:

an Examination of Text of Related Regulations

Wei Jingzhu

Sun Yat-sen University

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Introduction

- **Scientific data** refers to the original data aquired in scientific and technological activities or other ways reflecting the nature, features and changes of the objective world, as well as various types of data collected for different scientific and technological activities′ needs.

- Scientific data includes mainly **two types**:
- (1)one kind is generated by researchers of the national scientific projects in course of their experiment, observation, surveys, etc;
- (2)the second kind is collected and produced by governments. Scientific data management is to manage these above both types of data effectively, promoting sharing widely and making maximization of their value.

- **In recent years, the informatization agenda in China was raised to an unprecedented strategic height,the work of scientific data sharing starts to get national attention.**

- **In 1999**, the Ministry of Science and Technology(MOST) carried out the National Science and Technology Infrastructure Projects;
- **In December 2001**, MOST announced the official launch of the pilot project of meteorological data sharing;
- **In November 2002**, the 196th Xiangshan Science Conference in Beijing, as the biggest conference ever held, mainly discussed practical problems in the course of scientific data sharing;
- **In 2009**, MOST assessed these national scientific data sharing projects. Those projects which passed the evaluation would be converted into the formal National Science and Technology Infrastructure Center and received stable and sustained support.

Research methods

- **Text content analysis method** will be mainly used in this research. This paper will choose several main legislation of scientific data sharing to analysis their content from aspects of **legal right and interest subjects**, **right distribution mechanism**, **remedy channels**, **security and quality assurance** and so on to study how Chinese regulations protect legal rights and interest of right holders and how legal interest is shared among subjects.

Analysis of the main regulations

- Some important fields such as meteorological, seismic, geological surveying, hydrology and water resources, forestry, agriculture, and so on.

- **The study samples** include
- Regulation of Scientific Data Sharing of the People's Republic of China;
- Regulation of Meteorological Information Sharing Management;
- Regulation of Seismic Scientific Data Sharing Management;
- Regulation of Geomatics Information of the People's Republic of China;
- Regulation of National Basic Platform Construction of Science and technology and Hydrology and Water Scientific Data Sharing M (Trial);
- Regulation of Forestry Scientific Data Sharing Management (Trial);
- Regulation of Agricultural Scientific Data Sharing Management.

- **Explanations:**
- In this paper, the scientific data is generalized and includes all the scientific data generated in the process from production to use in the fields of meteorology, earthquake, forestry, agriculture and others.
- while in the Scientific Data Sharing Regulations of the People ‘s Republic of China which is still at the stage of expert proposal collecting.

1. The subject of legal rights and interests

- **The subjects of rights and interests** in scientific data management generally refer to institutions and individuals who collect, process, handle, store, service provide and use of scientific data.
- Considering the legal text of related regulations, the right subjects in scientific data area can be roughly divided into **three parts**, namely, **the scientific data producer, provider and user**.

(1) Regulation of Meteorological Data Management

- **Meteorological Data producers:** the meteorological administration departments at different level, including departments under the State Council Administration, local meteorological administration departments, as well as each agencies that are responsible for data collection.

- **Meteorological Data providers:** meteorological agencies which are responsible for providing weather information sharing work under all levels of departments.

- **Meteorological data users:** include the public, institutions, enterprises and so on. Their concrete using ways are classified by using motive--profit or non-profit.

(2) Regulation of Seismic Science Data Sharing Management

- **Subjects of rights and interests:** those institutions and individuals engaged in earthquake science data collection, processing, delivery, storage, service and usage within the territory of the People's Republic of China.

- **Earthquake science data producer** is divided into two parts: general producer and submitter (submission person and submission department).
- After the project of science and technology is completed, the project manager (**data producer**, also called **submission person** in submission step) will submit the data generated in the project to the Earthquake Scientific Data Sharing Agency. Before the submission, the **submission department** will supervise and check the data to ensure the data quality.

- **Earthquake science data provider:** the Earthquake Scientific Data Sharing Agency who is responsible for providing data.

- **Earthquake science data user**: those who use seismological data.

(3) Regulation of National Basic Platform Construction of Science and Technology and Hydrology and Water Scientific Data Sharing Management (Trial)

- **Data producer:** not explicit.

- **Data provider:** hydrological agencies and organizations at all levels, including Hydrology Bureau of Ministry of Water Resources, local Hydrology Bureaus. They are also responsible for the construction of a shared platform.

- **Data users:** the public. There are different permissions between anonymous users and registered users.

(4) Regulation of Forestry Scientific Data Sharing Management (Trial)

- **Forestry Data producers:** the forestry departments at different level, including departments under the State Council Administration, local forestry departments, as well as each agencies that are responsible for data collection.

- **Forestry Data providers:** forestry agencies which are responsible for providing weather information sharing work under all levels of departments.

- **Forestry data users:** include the public, institutions, enterprises and so on. Their concrete using ways are classified by using motive--profit or non-profit.

(5) Regulation of Geological Surveying Information Management

- **Geological surveying information producer** is divided into two parts: general producer and submitter.
- **General information producer** is the agency who is responsible for the mapping project.
- If the mapping project invested by government finance, the submitters are the producer; if the project was funded by other funds, submitters are the project investors.

- **Genmatics information provider:** the mapping administrative departments at all levels.

- **Genmatics information users:** legal persons or other organizations who need the geological surveying information.

(6) Regulation of Agricultural Science Data Sharing Management

- **Agricultural date producers:** generally scientific and technical workers.

- **Agricultural data providers:** National Agricultural Science Data Center

- **Agricultural data users:** Depending on the access permission, the users could be divided into the following parts: government administration and national nonprofit institutions like Ministry of Agriculture, Ministry of Science and Technology and so on, public institutions such as scientific research and education institutions and the groups undertaking business activities.

2. Allocation mechanism

- Sustainable sharing of scientific data is inseparable from the effective distribution mechanism of rights and interests. In order to maximize the value of scientific data, China has established mandatory scientific data sharing mechanism. To prevent erosion and loss of state-owned assets manifested as scientific data.

(1) Meteorological Data Sharing Management Regulation

- Meteorological data producers and providers are the same department so that there is no rights allocation contradiction existed in the process — the data transferred from producers to providers.
- **The rights of users:**
- The general public can free download basic data. Institutions engaged in non-profit activities apply for the relevant scientific data from meteorological departments at different level.
- Enterprises and institutions engaged in business activities will be charged the cost of data replication and delivery, as well as compensatory information processing fee.
- Users have limited, non-exclusive rights of using meteorological data. They also have the obligations of protecting intellectual property rights of related meteorological data.

(2) Regulation of Seimtic Scientific Data Sharing Management

- Earthquake scien data **producers** should be forced to submit their data generated in scientific research activities free. This regulation only mentions producers ' obligation, without reference to its possible to get right, so the data may even be submitted unpaid. Producers are responsible to the data quality.
- **Providers** need to process and classify the data which are available to users with different permissions. Regulation also stipulates that providers are only responsible for providing data, and all kinds of loss resulting from the use of data are not connected with providers.
- **Users** can take different approaches to obtain different levels of earthquake science data. They enjoy a limited, non-exclusive right. At the same time, users must follow certain rules and regulations, for example, they have no rights to transfer or use the data in business activities, and in other activities, data sources must be indicated.

(3) Regulation of National Basic Platform Construction of Science and Technology of Hydrology and Water Scientific Data Sharing Management (Trial)

- The data **producer** is not explicit.
- **providers:** Hydrological Bureaus at all levels are responsible for managing the collecting, sharing of data within their respective jurisdictions, and are liable for construction, maintenance, providing service of sharing platform.
- **Anonymous users** can query the shared data at sharing platform, but can not download the shared data. **Registered users** can not only enjoy browsing services, but also enjoy customized services after registration.
- **Users** also should fulfill certain obligations. For example the user should not transfer the data to the domestic and foreign entities or individuals, no matter in paid or unpaid way, pay the cost of data acquisition, feedback the study result to the providers and so on.

(4) Regulation of Forestry Scientific Data Sharing Management (Trial)

- Forestry data producers and providers are the same department so that there is no rights allocation contradiction existed in the process — the data transferred from producers to providers.
- **The rights of users:**
- The general public can free download basic data. Institutions engaged in non-profit activities apply for the relevant scientific data from meteorological departments at different level. Enterprises and institutions engaged in business activities will be charged.
- Users have limited, non-exclusive rights of using forestry data. They also have the obligations of protecting intellectual property rights.

(5) Regulation of Geological Surving Information Management

- **Obligations of producers:** mapping project sponsor or agencies who undertook mapping projects with government finance shall submit a copy or a catalogue of the mapping results to the mapping and surveying administrative department within three months from the date of passing the acceptance check of mapping project.
- **The provider** has the **right** to order the subordinate department to rectify regulation violative behaviour and give a warn. Their **obligation** is to put the copy and catalogue under the storage agency's custody in 10 working days, to compile the directory of mapping results to the public and so on.
- **User** has the **right** to make full use of the results of the open mapping results. But the **obligation** is not allowed to publish GIS data, not allowed to transfer mapping results no matter paid or unpaid, and to use mapping results in a paid way, except the user is national authorities or the public welfare institutions.

(6) Regulation of Agricultural Scientific Data Sharing Management

- The regulation neither gives an explicit definition for agricultural science data **producers**, nor figurs out the rights and obligations.
- As **providers**, the National Agricultural Scientific Data Center only provides certain data services for users on the network sharing platform, classifies and publishes the original data, authenticates the shared data and sets relevant offered principles.
- The regulation emphasizes **the users** most. Users not only could access to the regular data, but also could apply for the push service from the Agricultural Science Data Center. The **obligations** are that the users must obey the items of the regulation. They mustn′ t release the data to the public and prohibit the commercial use of these data.

3. Rights infringement and remedy

- Art. 45 of the Regulations of Scientific Data Sharing of the People's Republic of China indicates that the dispute occurred between the national scientific data sharing center and investors, producers and users of scientific data should be decided by scientific data sharing dispute agency. The parties who refuse to accept the decision can bring a lawsuit to the people's court.

- This means legal rights and interests related disputes between scientific data investors, producers, users and managers can obtain the judicial relief in the ultimate.

(1) Regulation of Meteorological Information Data Management

- When users violate some terms of usage, the regulation will provide penalties **for user**, including ordered rectifications, warnings and a fine within a certain amount.

- Meteorological department will stop providing weather information in serious cases.

- At the same time, this regulation also have certain sanctions **for meteorological data providers** who violate provisions, such as rectification within a prescribed time limit. The responsible shall be given administrative sanctions, if the circumstances are serious.

(2) Regulation of Earthquake Scientific Data Sharing Management

- It has a corresponding punitive measures for **users**, **providers** and **producers** (including submission person and submission department). These penalties generally include ordered rectifications based on duty, circulating a notice of criticism if the circumstances are serious, reprimand. It shall be given administrative sanctions against those responsible, giving criminal sanctions if a crime was constituted. As it relates to criminal responsibility, the punishments of this regulation are much severer than the Regulation of Meteorological Data Management, which reflects different legal punishments in different regulations.

(3) Regulation of National Basic Platform Construction of Science and Technology and Hydrology and Water Scientific Data Sharing Management (Trial)

- This regulation only provides penalties for data users, who violate the provision to use the data, or do not fulfill the obligation to use those. These rule breakers shall accept a warning ordered to correct, charge usage fees according to the national standard data. If the circumstances are serious, relevant departments will stop to provide shared data in certain period of time.

(4) Regulation of Forestry Science Data Sharing Management (Trial)

- This regulation mentioned that when the user violate some terms of usage, it will provide penalties including ordered rectifications, warnings and a fine within a certain amount. Forestry department will stop providing weather information in serious cases. At the same time, this regulation also have certain sanctions for forestry data providers who violate provisions, such as rectification within a prescribed time limit. The responsible shall be given administrative sanctions, if the circumstances are serious.

(5) Regulation of Geologic Surving Information Management

- This regulation has certain sanctions for surveying and mapping administrative departments violating regulations and other relevant departments, storage department for mapping results and the responsible who did not submit the results of surveying and mapping. They need to accept a ordered corrections and a notice of criticism in general, be confiscated illegal income, be liable for compensation and fined.

(6) Regulation of Agricultural Scientific Data Sharing Management

- The punitive measures in Regulation of Agricultural Science Data Sharing Management are relatively lighter than other regulations. It includes ordered rectifications and warnings, stopping to provide agricultural scientific data if the circumstances are serious.

4. Security and quality assurance

- **(1) The Regulation of Meteorological Information Sharing Management** didn′ t mention the matter of data security and quality assurance.

- **(2) The Regulation of National Basic Platform Construction of Science and Technology and Hydrology and Water Scientific Data Sharing Management (Trial)** has no description about the security and quality assurance, but it does has some concrete requirements concerning classified field.

- **(3) The Regulation of Forestry Science Data Sharing Management (Trial)** has no description about the security and quality assurance.

(4) Regulation of Seismic Scientific Data Sharing Management

- Raised a claim of safety and quality for producing, submission and preservation of data. For the producing of earthquake scientific data, article 13 of the regulation claims that "the producers are responsible for data quality and the submitters are responsible for data supervision."
- And there are the **corresponding penalties:** the individual or institution who falsify data, does not submit data or the data submission is incomplete will be ordered to rectify, circulated a notice of criticism and so forth. In serious cases, it may be imposed criminal punishment.
- In the process of **preservation**, the situation goes parallel for the earthquake scientific data sharing service institutions. If there appears a data loss or damage because the individual or institution did not take an effective measure, corresponding penalties would be imposed to the submitters.
- In addition, dependent regulations are existing for the confidential information.

(5) Regulation of Geological Surveying Information Management

- The **Regulation of Geological Surveying Information Management** stipulates that the geological survey administrative departments are uniformly in charge of supervising and administrating the geomatics projects; governments at or above the county level are in charge of supervising and administrating their respective geomatics projects. Both of them are responsible to keep the legitimacy and reasonableness for the data sharing process.
- On the other hand, the government takes the **geomatics results storage** security seriously— "placing the backup data to another place shall be executed." "Facilities and conditions for geomatics information shall conform to the legislation of the protection of state secrets, fire protection and archives management."
- For the **submitters**, the safety requirements are "the funders or the undertakers of the geomatics projects who are asked to take some necessary measures to ensure the geomatics results security. "

(6) Regulation of Agricultural Scientific Data Sharing Management

- Article 7 of **Regulation of Agricultural Science Data Sharing Management** says that "All of the original agricultural scientific data will be published by National Agricultural Science Data Center. Moreover, the Center will classify the data, authenticates the shared data and offer relevant principles." The National Agricultural Scientific Data Center through "**authenticating** the shared data" to ensure the data security and quality.
- In addition, the **confidential data** should be used in accordance with relevant laws even though the regulation does not have given concrete measures.

Evaluation

- 1. With regard to **interests subject**, through the analysis for the six area′ s regulation of scientific data sharing management, we have founded that:

- (1) Generally speaking, the regulations didn′ t give a specific definition for scientific data′ s producers, neither list. Some could infer from the specific scientific data′ s definition of the producers, but the others′ producers were ambiguous. The ambiguous producers would cause a chaos in the subsequent producers′ interests allocation mechanism.

- (2) There exists differences between the regulations:
- **Regulation of Seismic scientific Data Sharing Management** and **Regulation of Geological survey Information of the People's Republic of China vs. other regulations**.

- Due to the particularity of the earthquake and geomatics projects, the research work of these projects are always implemented based on the support provided by government or well-funded groups, which made the collection of data limited, controlled and closed related to the projects.

- (3) The data providers are all **top-down systems**—the highest-level State Council and its inferior departments in charge of the nation-level scientific data, and this works parallel with the local governments. In some of the regulations, the local government and its inferior departments should also perform the obligation of constructing data platform.
- But there are also some **defects** in these regulations—they failed to distinguish the transaction relationship between superior and subordinate.

- (4) **The users** are always divided into two parts—profit and non-profic—by their motive.
- In conclusion, the definition of producer and provider is ambiguous while the user′ s definition is relatively explicit under the present system.

- 2. According to the analysis in the aspect of **allocation mechanism**, we can conclude that:
- (1) The producer′ s rights and interests are undetermined because of the uncertainty of scientific data producer. While the obligations for the submitter are rather straightforward.
- (2) Regulations don′ t protect the data producer′ s economical rights, while they provide spiritual protection to some extent.
- (3) All of the regulations put their emphasis on the data users, include users′ categories of identity, usage of data, punishment for violation of the regulations and so forth.

- 3. **In remedy**, apparently, there are four parts: ordered to rectify；stop providing data; criminal punishment or administrative punishment; impose a fine.
- The relief measures of these regulations are similar to each other in some ways, however, there are still **some problems**:
- (1) No law of scientific data sharing has been made so far to help normalize the regulations of different areas;
- (2) Different areas have different relief measures—some involve criminal responsibility, while the others are only given a halt for data supplying as a punishment. Undoubtedly, such kind of punishment standards are far from unanimous.

- 4. When it comes to safety and quality of scientific data, we could find that whoever—producer, provider or user—of scientific data are all responsible for the data security to a certain extent.
- **The main features are:**
- (1) Almost clauses regard parts of the scientific data as **confidential information**, and there are specific laws and regulations to protect them.
- (2) Among the regulations, the Regulation of Seismic Scientific Data Sharing Management and Regulation of Geologic Surveying Information of the People ′s Republic of China are special. The two regulations stipulate that the **submitters** have the obligations to supervise the data security and quality. In addition, the later regulation has put **strict standards on** the geological surveying Information′ s **custody regulations and equipment**.
- (3) Regulations all above **prohibit the transfer** (no matter paid or free) and commercial use of these data. Compared with the data quality, the government has paid more attention on the data security. On the other hand, the supervision for data quality seems more difficult than data security.

Proposals

- **1. The government perform as a coordinator in process of scientific data sharing**

- On the basis of the analysis, we know that the most significant and fundamental contradiction in the existing laws and regulations is about equity allocation. In the area of scientific data sharing, the contradiction always emerges in the form of disputes on intellectual property rights (IPR), namely, the controversy between the exclusive of IPR and data sharing.
- Via the analysis on rights subject, we infer that owners of IPR will not share the IPR—the owners′ research data—with others. On the other hand, some people have needs to use these scientific data, and then, they can avoid insignificant repeated work. Thus, the data has become more valuable through this way, which could promote the progress of science and technology. Therefore, we need the third-party to coordinate the interests of both sides—government performs as the data collector and provider. In addition, the government should favor the data sharing, and this is what the government is doing now.

- Therefore, regulations stipulates that governments at all levels should perform as coordinators dutifully. Related research shows that the operation of sharing system need coordinators—as long as there are coordinators who held somewhat power (coordinate, impose a punishment and so on), a stable solution for the contradiction.

- **2. Further perfet the regulations of scientific data sharing in individual trial of pilot area**

- In China, there are still no complete and comprehensive regulation of scientific data sharing, let alone comprehensive laws, which has led a failure of forming a unified standard and great difference while impose punishments.
- Theory of Public Policy Diffusion—a policy activity diffuse from one district or department to another counterparts, and then adopted and implemented by new public policy subject. We can figure the theory out from three dimensions: time, space and administrative subject. From the perspective of the specific administrative subject, the models of China′ s public policy diffusion are divided into: the top-down levels diffusion; the top-down absorption and radiation diffusion; the diffusion among peer regions or departments; the follow-up diffusion among areas with uneven developmental level.

- **3. A grasp of confidentiality and publicity of scientific data**

- Among all of the regulations, there is a consensus: the confidential information security is extremely important. Therefore, it is significant for us to figure out the relationships between the confidentiality and publicity of scientific data. In addition to the necessary security clearance to prevent national data leakage, It is important to focus on the information disclosure which could safeguard civil rights of accessing to information, and assure the free flow of information.

Thank you!