

# How Policy Tools Utilized in Open Data Policies in China

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**Abstract.** The aim of this poster is to investigate which policy tools are used in open data policies in China. 98 Chinese national open data policy documents were investigated in this research. We found that Chinese open data policies emphasized on the use of environmental and supply-oriented policy tools, with particular attention to information support, regulations and standards. However, the use of demand-side policy tools was insufficient, and the combination of policy tools remained to be optimized. This poster provides suggestions for the improvement of open data policies in the future.

**Keywords:** Open Data Policy, Policy Tools, Open Data, China

## 1 Introduction

In the era of big data, openness has become a global consensus. In order to enhance the data openness, many countries have developed open data policies (ODP), such as *The Open Government Directive* in America, *the G8 Open Data Charter*, and *UK Digital Strategy*. In 2015, China proposed *the Notice of the State Council on Issuing the Action Outline for Promoting the Development of Big Data* [1] to stimulate data-opening and data-sharing process. It indicates that open data has been highlighted as a national strategy in China. However, the lack of specialized open data policy remains to be a problem, as well as the fragmented content [2].

Policy tools are a series of political actions and behavioral approaches that policy-makers take to achieve policy goals [3, 4]. Their design, selection and application should be emphasized as a fundamental step. This poster intends to examine 98 national ODP documents in China and use content analysis to reveal the application structure of their policy tools. Two research questions (RQ) are addressed below:

RQ1. What policy tools are utilized for Chinese ODP?

RQ2. What are the characteristics and shortcomings of policy tools utilized in China?

## 2 Methodology

### 2.1 Policy Tools

This poster adopted the innovation policy tools proposed by Rothwell and Zegveld [5], which could be mainly grouped as the following three points [6]:

**Supply**-provision of financial and technical assistance, including the establishment of a scientific and technological infrastructure;

**Demand**-central and local government purchases and contracts, notably for innovative products, processes, and services;

**Environmental**-taxation policy, patent policy, and regulations (economic, worker health and safety).

This set of policy tools is not only applicable in theory, but also practical. On the one hand, they effectively reduce the mandatory characteristics of policy tools. During the implementation of the policy, they strengthen the role of the government as an environmental builder, rather than an intervener or controller. Multi-party collaborative efforts are crucial while realizing open data, these tools meet this demand perfectly by highlighting supply-side and demand-side tools. For the reasons mentioned above, these tools have been widely used and promoted in China [7, 8]. On the other hand, compared with other tools, this set of tools provides more specific sub-policy tools, and their operation methods are clearer.

### 2.2 Data Collection

National-level policies related to open data were searched and collected from PKULAW database, which is a professional legal database in China and provides the latest and relatively comprehensive policy documents. Search terms were “开放数据” or “数据开放” and the data collection date was July 5, 2019. Taking validity, relevance and timeliness into account, 98 national ODP documents were chosen as the research objects.

### 2.3 Coding Procedure

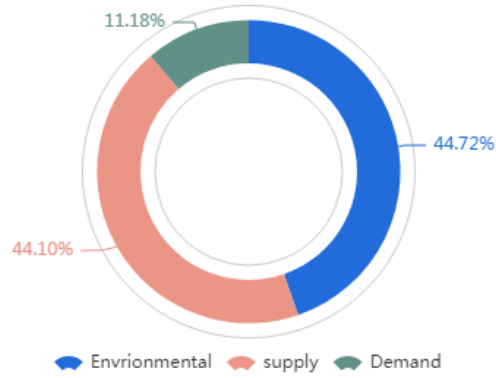
From data collection procedure, we found that there were quite a lot related policies which have mentioned the data open issues, but fewer were ODP focused. Thus, a top-down coding method was not suitable for revealing the application of policy tools in depth. In this poster, we chose a bottom-up coding strategy to code the policy tools which were contained in the open data related policies. According to the rules of *Policy Name-Chapter-Specific Terms*, 161 policy tool codes were obtained by coding and classifying statistics. Table 1 shows a list of content encoding.

**Table 1.** Chinese ODP Documents Content Analysis Unit Code (Partial)

Number	Text name	Content analysis unit	Category	Policy Tool	Coding
1	<i>Notice of the State Council on Issuing the National Informatization Plan of the 13th Five-Year Plan(2015)</i>	Establishing policies, regulations and standards for open data, property rights protection, and privacy protection.	Environmental	Regulations and standards	1-4-3
		Establishing a unified exchange and open platform for national government data	Demand	Public Service	1-5-4-1
		Strengthening the maintenance and update of open data	Demand	Technology support	1-5-4-2
2	<i>Notice of the State Council on Issuing the National Strategic Emerging Industry Development Plan of the 13th Five-Year Plan(2016)</i>	Encouraging the public to open data innovatively	Environmental	Citizen participation	2-2-3
3	<i>Notice of the State Council on Issuing the Action Outline for Promoting the Development of Big Data(2015)</i>	Developing an open data plan for public institutions and clarifying responsibilities in data opening and maintenance	Environmental	Working system	3-3-1-2
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### 3 Preliminary Results

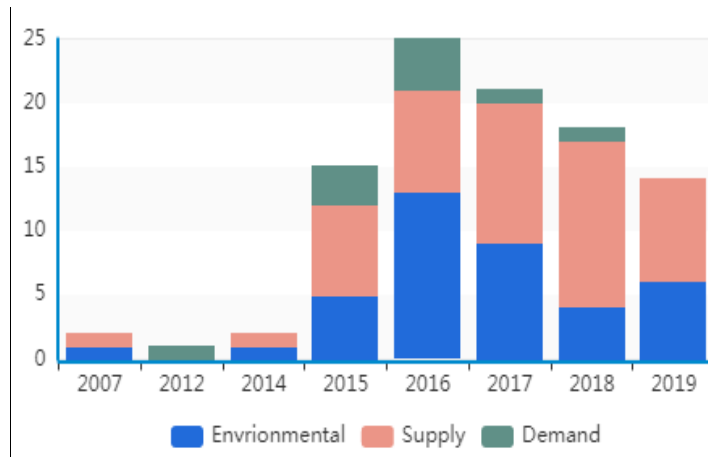
With analysis on the themes of these policy tools in Figure 1, Chinese ODP mainly focus on the environmental and supply-side policy tools, accounting for 44.72% and 44.10% respectively, while the number of demand-side tools is the fewest, only 11.18%.



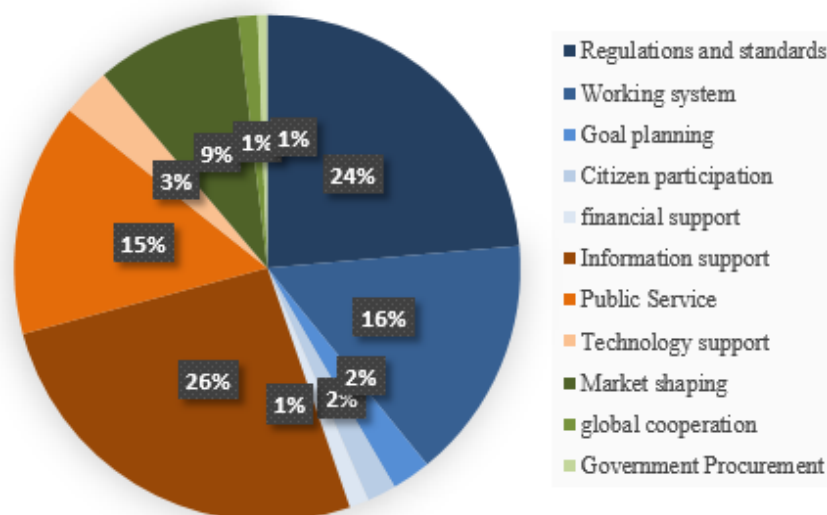
**Fig. 1.** Three Types of Policy Tools

According to release date, as shown in Figure 2, the oldest ODP appeared in 2007, in two national department working paper. The policy tools utilized by this ODP were working system (environmental measures) and information support (supply-side measures). 2016 has witnessed the largest number of released ODP documents (25 items) till now. As the starting year of China's 13<sup>th</sup> Five-Year Plan, the environmental tools, including regulations, standards and working systems were exploded in 2016.

Subsequently, national departments have successively formulated relevant policies. The number of demand-side policy tools, mainly including information support and public services, has soared and reached a peak in 2018.



**Fig. 2.** Chronological Distribution of Policy Tools



**Fig. 3.** Proportional Distribution of Policy Tools

**Table 2.** Distribution Table of Policy Tools

Category	Policy Tool	Quantity	proportion	Total
Environmental	Regulations and standards	38	23.60%	72(44.72%)
	Working system	25	15.53%	
	Goal planning	4	2.48%	
	Citizen participation	3	1.86%	
	Financial support	2	1.24%	
Supply	Information support	42	26.09%	71(44.10%)
	Public service	24	14.91%	
	Technology support	5	3.11%	
Demand	Market shaping	15	9.32%	18(11.18%)
	Global cooperation	2	1.24%	
	Government procurement	1	0.62%	
Total		161	100%	161

### 3.1 Environmental Measures

The environmental aspect accounts for the largest proportion, which is mainly comprised of regulations and standards (23.60%) and working systems (15.53%).

Regulations and standards refer to the establishment of relevant policies, regulations, and standards for open data. In addition to open data policies, Policies related to data

protection and property rights protection are also involved. To develop open data standards, it is necessary to clarify the format of open data, data quality requirements, download and acquisition methods, and query presentation methods.

Working system includes specific policy tools such as organizational leadership, implementation guarantees, program plans, project management, and directory listings. Among them, the number of program plans and directory listings is the largest.

In addition, ODP also select specific policy tools such as goal planning, financial support, and citizen participation. These environmental measures provide a good development environment for open data.

### **3.2 Supply-side Measures**

In the supply-side measures, information support policy tools account for the largest proportion. Most of them are aiming at expanding the scope of open data and promoting the open process of original, machine-readable and socially reusable data sets.

The proportion of public services is 14.91%, including infrastructure construction, basic public service and project demonstration. Among them, the establishment of open data platform or website is the most popular policy tool. Technology support is mainly embodied in data security and cloud platform technology.

### **3.3 Demand-side Measures**

Demand-side measures have the lowest percentage in three types of tools (11.18%). Among them, market shaping, global cooperation and government procurement policy tools are responsible for 9.32%, 1.24% and 0.62%, respectively. The inadequacy of such policy tools may weaken social attention to open data and reduce social impact of ODP.

## **4 Conclusions**

This poster shows that ODP in China mainly use environmental policy tools and supply-side policy tools, and tend to select policy tools such as information support, regulations and standards, working systems, and public services, which has a positive effect on the promotion of open data development in China.

However, there are still some problems in the deployment of policy tools. The selection of demand-side policy tools is insufficient, which may result in few demand for and unsustainable development of open data. Meanwhile, there is a lack of comprehensive implementation of policy tools, such as a combination of tax incentives (environmental measures), capital investment and talent support (supply-side measures) and trade agreements (demand-side measures).

In conclusion, this poster proposes a few suggestions to improve ODP. We recommend to enhance the implementation of environmental policy tools and to improve the usage of demand-side policy. It is also important to have a coordinated development

for ODP and other policies such as data security policies and intellectual property policies.

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