

Research on Environmental Crime in China Based on Bibliometric Measurement

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Abstract. This paper takes 614 core papers on environmental crime research in the general library of China academic journals from 1992-2022, uses bibliometric analysis method and visualization technology, and analyzed and processed the authors, institutions and keywords of the sample data. It was found that: 1) major legislation has increased the number of environmental crime research; 2) the core author group of environmental crime research, but low degree of cooperation among authors, research institutions focus in universities and practical departments; 3) environmental crime research focuses on the ontology research and countermeasures of environmental crime, which is basically consistent with the domestic criminal law research paradigm.

Keywords: Environmental crime; bibliometric measurement; knowledge map.

1. Introduction

Environmental crimes need the punishment of the criminal law, and the ecological civilization construction needs the criminal law. Scholars have launched extensive discussions on the environmental crime governance and its related contents based on different perspectives and research methods. Therefore, it is of great significance to sort out the research status quo and knowledge development context of environmental crime, and to grasp the research focus and future trend of this field. This article is by using Co-Occurrence9.9 (COOC9.9)[1] and VOS viewer to provide reference for environmental crime research in China.

2. Study design

2.1 Data Source

This paper used literature materials published in CSSCI journals as a data source and used "environmental crime" as the theme term. To ensure the accuracy of the data and the rationality of the results, the original data was preprocessed and finally obtained 614 effective literature with a time span from 1992 to 2022.

2.2 Study Methods

This paper presents common analysis, coupling analysis and visualization of environmental crime research results in China. Among them, the common word analysis method is a content analysis method, the main principle is a group of words to count the number of times they appear in the same literature, based on the clustering analysis of these words, so as to reflect the affinity relationship between these words, and then analyze the structural changes of the discipline and theme represented by these words.[2] Coupling refers to the phenomenon that two or more systems affect each other through various interactions. Co-Occurrence9.9 (COOC9.9) is calculated for clustering and visualization with VOS viewer to analyze the similarity of research topics by different authors. VOS viewer is a knowledge atlas visualization tool developed by researchers at Leiden University in the Netherlands.

3. Research status of domestic environmental crimes

3.1 Number of posts over the years

The amount of posts can intuitively reflect the development level of a discipline in a certain field. By analyzing the post time, the number of posts and the post trend distribution chart, it can measure the process and change trend of research in this field, and judge the degree of attention of the research subject in the academic circle. According to the statistical analysis of the number of articles, as of January 2022, there were 614 documents published in CSSCI journals. As shown in Figure 1, China's environmental crime research can be generally divided into three stages.

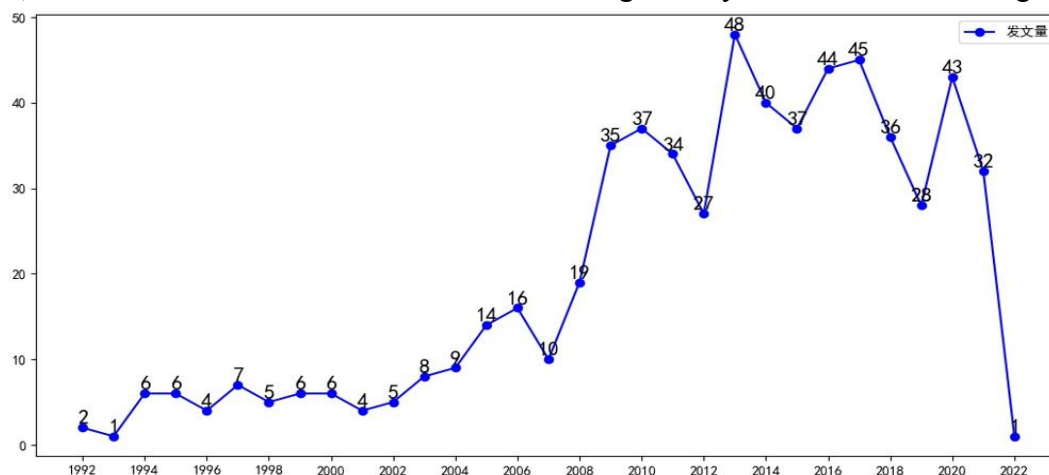


Figure 1: Number of domestic environmental crime research articles published over the years

Gerstage (1992-2002).The Criminal Law issued in 1979 has not yet emphasized the punishment of environmental pollution acts. For acts causing major environmental pollution accidents that constitute a crime, the front law of environmental protection is usually applied to realize the investigation of criminal responsibility according to the relevant provisions of the criminal law,[3]However, because these criminal provisions are relatively general, it is not appropriate to convict and sentence the criminals. Therefore, during this period, scholars only paid attention to the necessity of the criminal law for environmental protection and the design of the specific provisions of the environmental pollution crime.[4]It was not until the Criminal Law was issued in 1997 that China's environmental criminal legislation was initially developed.

Stage of rapid development (2003-2013).With the promulgation of the Criminal Law Amendment, the adjustment of legislation reflects that the state's crackdown on environmental pollution is becoming more severe, the state attaches more and more attention to environmental criminal protection, the awareness of environmental protection is constantly improving in the society, the theoretical research on environmental crimes is becoming more and more warm, and the theoretical achievements of environmental crimes research in China continue to increase.

Stable development stage (2014-present).Since the eighteenth congress, the CPC Central Committee attaches great importance to the socialist ecological civilization construction, criminal law as an important guarantee mechanism of ecological civilization construction, need to make more adjustment to adapt to the new demand of ecological environment risk, these for environmental crime research provides a steady stream of new topics and new thinking. Therefore, since 2014, the number of documents published in CSSCI journals has developed steadily.

3.2 Author, institution, and keyword analysis

Based on the number of publications in the field of environmental crime, core authors in the field and research institutions that are highly influential in the field can be found. According to Price's Law, calculate the minimum number of core author, according to statistics, the field of environmental crime is professor Hou Yanfang of Shandong University (18), the highest

organization is Shandong University Law School (26), therefore, 3 belongs to the core authors in the field, meet the total of 51 authors; 4 belongs to the field, 34 institutions.

4. Research focus of environmental crimes in China

To reveal the hot topics in the field of environmental crime research, it still needs to be further explored based on the frequency of the keywords in the literature. Therefore, this paper uses VOS Viewer software to analyze the sample literature in the field of environmental crime research, draw knowledge map, to visualize the research hotspots in the field of environmental crime research.(See Figure 2).

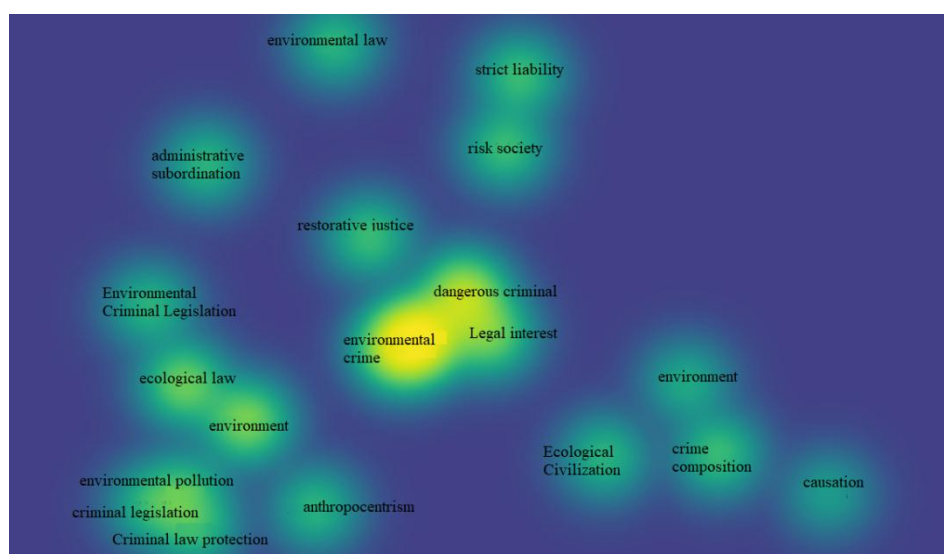


Figure 2: Cluster knowledge map of domestic environmental crime research

Cluster density visualization knowledge map can show the weight of different keywords in the field of environmental crime research. According to the cluster density visualization knowledge map drawn by VOS Viewer software, the values generated by Co-Occurrence9.9 (C O O C 9.9) software (see Table 1), point centrality is environmental crime (19), criminal law (16), "dangerous crime" (14), ecological civilization (10), method (9). Therefore, the research on environmental crime ontology and ecological civilization construction is the focus of environmental crime research in China.

Table 1: Key word point degree centrality (part)

Label	point degree centrality	normalized point degree centrality
environmental crime	19	0.842105263
criminal law	16	0.736842105
dangerous criminal	14	0.526315789
Ecological Civilization	10	0.473684211
Legal interest	9	0.473684211
ecological law	9	0.315789474
strict liability	6	0.315789474
restorative justice	6	0.315789474
crime composition	6	0.315789474
risk society	6	0.315789474

Secondly, in order to further present the correlation between different keywords, this paper draws a co-occurrence cluster map based on the co-word analysis method (see Figure 3), so as to reveal the focus of domestic environmental crime research more comprehensively. In the cluster plot of co-word co-occurrence analysis, lines represent the connection between keywords, the same

color represents the same theme, the thickness of the lines represents the close relationship between keywords, the thicker the lines indicate that the theme is the focus in the field of environmental crime research. According to Figure 3, the domestic research on environmental crime focuses on two aspects: the ontological research of environmental crime and the governance study of environmental crime under the background of ecological civilization construction. From the perspective of line thickness, the research of environmental crime ontology is a hot issue in the key research.

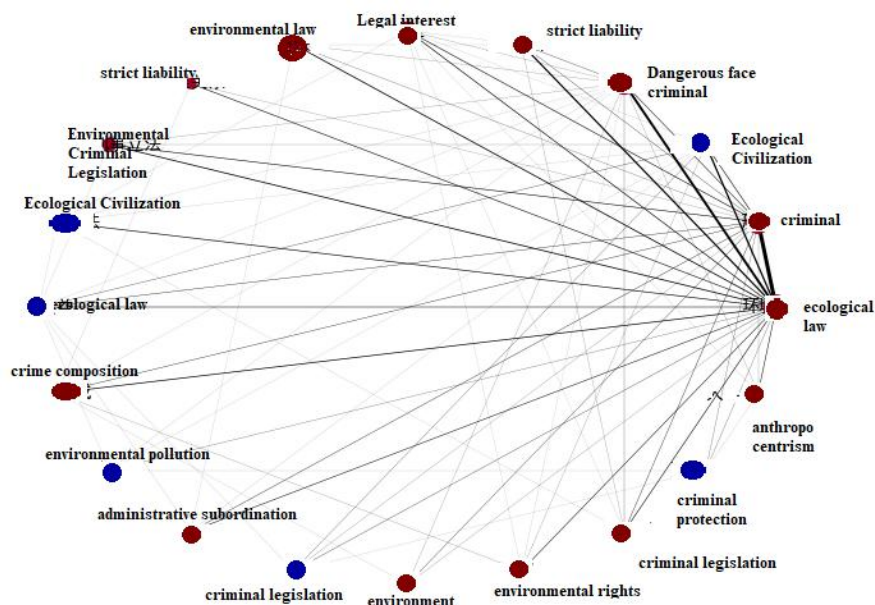


Figure 3: Community cluster diagram of the keywords of domestic environmental crime research

5. Summary

Based on bibliometric analysis, the important achievements of environmental crime research in China since the 1990s and draw the following conclusions:

In terms of the trend dimension of publishing documents, the promulgation and implementation of the Amendment to the Criminal Law (VIII) in 2011 has significantly increased the achievements of papers on environmental crime research, indicating that the theoretical research heat of environmental crime is affected by major legislation.

In terms of authors and institutions, scholars and research institutions of environmental crime research continue to emerge, and the theme of environmental crime research is gradually concentrated. However, the academic cooperation between authors and institutions is not ideal, institutions and universities are the head force of environmental crime research and their position is difficult to shake, and the matching degree of degree between theory and practice needs to be considered.

The hot spots and key themes of environmental crime research focus on the ontology research and countermeasures research of environmental crime. analyzing the core literature with the above themes is helpful to form the regularity understanding of the environmental crime research content.

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