

ECOLOGICAL CIVILIZATION WITH CHINESE CHARACTERISTICS – A BIBLIOGRAPHIC ANALYSIS

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Purpose: This study aims to map the development of research on ecological civilization with Chinese characteristics using the VOSviewer bibliometric analysis covering texts published until January 2023. The aim of the article is also to find elements of the economic sciences within the framework of the researched issues.

Design/methodology/approach: The article includes a review of the most popular scientific bibliographic databases of scientific texts, namely Web of Science and Scopus, and a structured literature review of the texts. The bibliographic data has been processed in the VOSviewer program.

Findings and Originality/value: Quantitative results were presented in the form of bibliometric maps, showing among others the relationship maps between watchwords and the existence of six clusters within WoS and five clusters within Scopus, as well as the presence of economic sciences in the studied area of ecological civilization and its Chinese characteristics.

Social implications: The world's environmental problems and the shared resolution regarding the implementation of seventeen Sustainable Development Goals Sustainable indicate the importance of the topic of sustainable development. China's economic development and its aspirations to become the world's leading civilization point to the need to consider the pursuit of sustainability and civilization together.

Keywords: sustainable development, ecological civilization, China, economic culture, literature review, bibliographic analysis.

Category of the paper: Research paper.

1. Introduction

China stands out on the world map as a highly populated country and an exceptionally thriving economy. They are the largest producer of coal and coal energy in the world and its largest net importer. The country is responsible for almost 1/3 of the production of greenhouse gases, mainly carbon dioxide (CO₂). Continuing the count, China is also responsible for the largest anthropogenic coal mine methane (CH₄) emissions (Zhu et al., 2022). China contributes

to marine pollution through plastic waste (Chen, Shinichiro, 2019) and soils with industrial pollution (Yuan et al., 2020). Industry in particular is responsible for the intensive exploitation of resources and the environment. The need for sustainable solutions resulting from human activities degrading the environment was mentioned in China as early as 1992 in connection with the development of an environmental protection strategy developed by the United Nations. In 1994, the environmental protection program as specified in the White Paper was published. Currently, the 14th Five-Year Plan announced in China in 2020 focuses on the need to improve the condition of the natural environment within the context of sustainable development goals. It mainly specifies two goals set for the years 2030 and 2060. The first of them is related to reaching the peak of CO₂ emissions by 2030, while the second assumes the transformation of the economy to a fully carbon-free economy by 2060.

The Chinese ideology of eco-civilization is the result of social dissatisfaction, as well as political discourse. This ideology refers to the term that is related with civilizing/civilization – wenming [文明], which is described in several ways in the literature. The first concerns the civilization policy related to the introduction in 2006 of the 12 main socialist values, the third of which is civilization. The concept of eco-civilization became plan no. 1 of China's national development strategy in 2012. It was officially adopted in 2014, and treated as a future development principle guide (Hamilton et al., 2017). Building an ecological civilization is combined with civilizing, which was also in the aforementioned 14th Five-Year Plan. The concept of wenming is also about counteracting immoral habits in Chinese society, which aims to create good citizens. It is a system of moral, hygienic and pragmatic values closely intertwined with the Confucian doctrine (Romero, 2018). In the area of sustainable transformation of the natural environment, the concept of civilizing focuses on the need to transform industrial civilization into ecological civilization. An ecological civilization with Chinese characteristics is associated with, among others, many challenges regarding the spirit of cooperation, citizen awareness, and joint commitment (Kuhn, 2019) and the implementation process (DeJong, 2019), as well as its perception as a political slogan applying socialism with Chinese characteristics (Gordon, 2018) or ecological socialism (Schönfeld, Chen, 2019). Chinese eco-civilization policy is also described as one that has the potential to become a model for the rest of the world (Hamilton et al., 2017).

To continue research on Chinese economic culture in connection to sustainable development and ecological civilization, the article attempts to conduct a structured literature review (SLR) enabling the conversion of quantitative results into bibliometric maps within the VOSviewer program. The aim of the article is also to find elements of the economic sciences within the framework of the researched issues.

VOSviewer is a program for creating, exploring and visualizing metadata network maps (Hestya Budianto, Tetria Dewi, 2022) It enables the analysis of academic data by working on files from various databases (Arruda et al., 2022) - Web of Science, Scopus, Dimensions, Lens, and PubMed. The program allows the researcher to map the search topic with specific keywords, abstracts and titles in a relatively easy way. It enables the identification of research within clusters, creating maps of relationships between topics and mapping authors' connections (Batubara1 et al., 2022). Map analysis uses the observation of nodes represented by circles, their sizes, and edges indicating the relationship between nodes and the strength of the relationship (Afandi et al., 2022) under three tabs: network visualization, overlay visualization, and density visualization.

2. Material and Methods

The study used a bibliometric analysis based on data obtained from the WoS and Scopus databases. The first contains 3,363 texts devoted to the issues of Chinese civilization and 405,329 texts devoted to sustainable development, while the second contains 2333 and 417,416 texts, respectively. Files in the Tab-delimited format were downloaded from the WoS database, CSV (Excel) files were downloaded from the Scopus database, which was then processed in the VOSviewer program. VOSviewer can only analyze the above files separately.

The selection of texts for the study began with narrowing them down to text published by the date of the study, i. e. until 2023/01/17. Texts were selected according to titles, keywords and abstracts of which the following entries appeared: *wenming AND ecological civilization*, *wenming AND environmental civilization*, *wenming AND eco-civilization*, *ecological civilization AND China*, *eco-civilization AND China*, and *environmental civilization AND China*. The analysis in both databases differed not only in the format of the obtained files but also in the options available within the VOSviewer program. Within WoS, it is possible to analyze the content of titles, and within Scopus also abstracts and keywords. The above may affect the amount of data generating the created maps. In the next stage, duplicates and texts that differed in their content from the selected issue were removed. The above resulted in undertaking the analysis of WoS - 2081 and Scopus - 1572. The selected texts were published in the following languages: English, Chinese, Russian, French, Portuguese, and Slovak. Figure 1 presents the above literature review process and the quantitative results obtained during query generation.

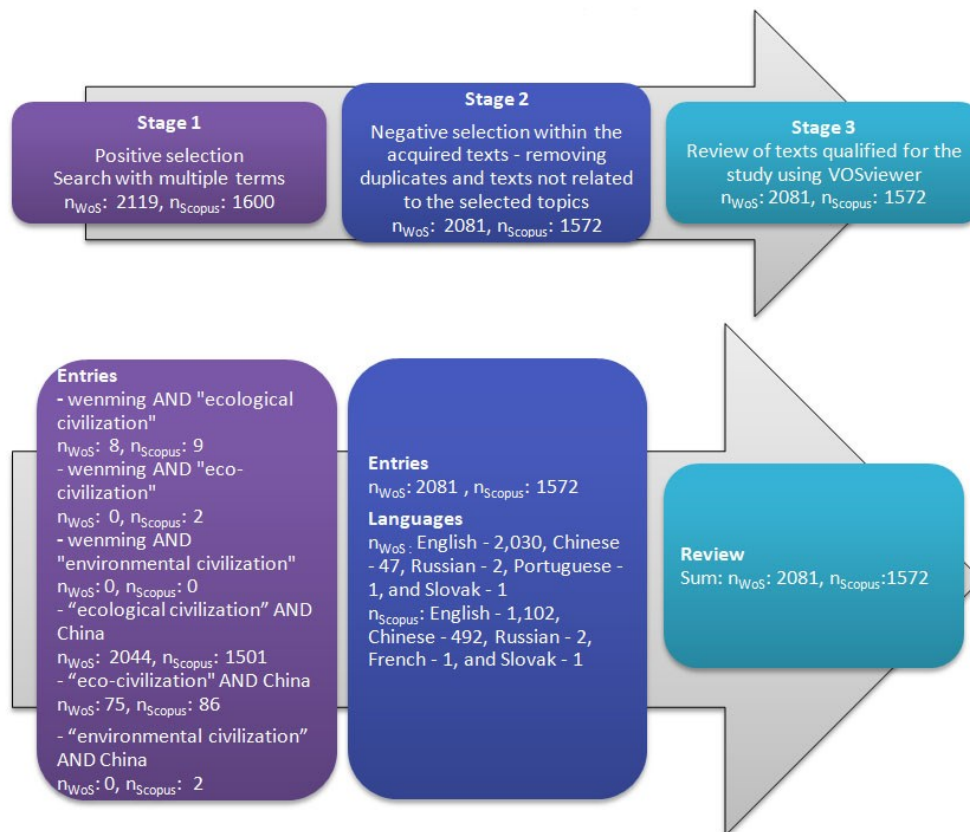


Figure 1. A structured literature review process regarding ecological civilization and China with quantitative SLR results.

Source: own elaboration.

3. Results

The analyzed journal articles from the WoS database were published between 2007 and 2023 (January). During this period, the largest number of publications appeared in print in the years 2010, 2020 and 2022. The year 2022 in particular stands out from the rest of the years in terms of research interest in this topic (Figure 2). Within this database, 695 texts were open access. The largest number of indexed texts were published in scientific journals - 1289 texts, then in conference materials - 781 texts, as books - 6, and book series - 5. They concerned mostly the following categories (over one hundred texts): development studies/sciences, water resources, social sciences interdisciplinary, energy fuel, ecology, and education research. 70 texts were classified for management, and 63 texts for economics.

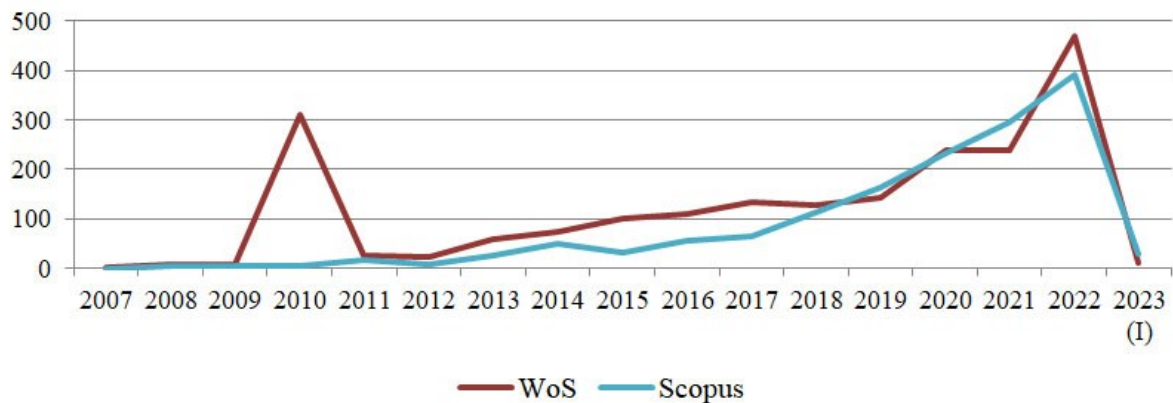


Figure 2. Number of publications related to the researched topics indexed in WoS and Scopus.

Source: Own elaboration.

According to WoS, the topic of Chinese ecological civilization is most often chosen for research by authors from China, the United States, England, Australia, Canada, and the Netherlands (Figure 3).

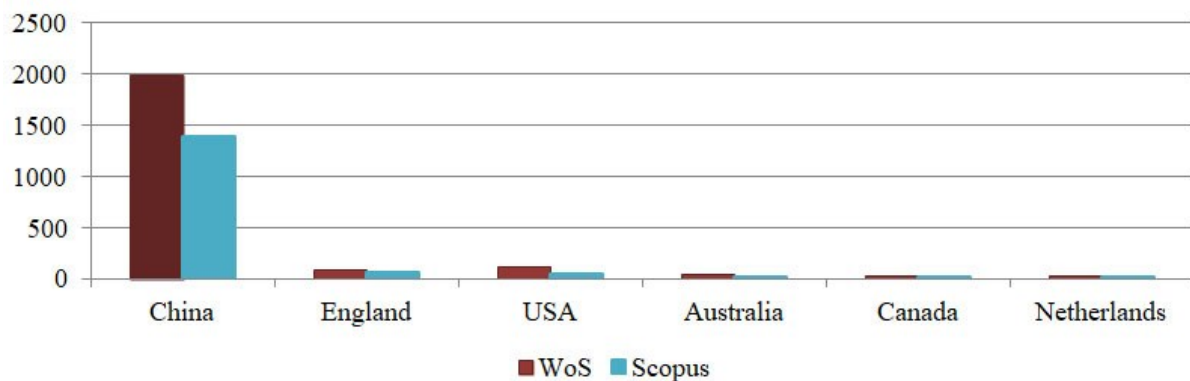


Figure 3. The nationality of the authors' of publications related to the researched topics indexed in WoS and Scopus (results appear most often).

Source: Own elaboration.

As part of the WoS database, the only active option was selected for analysis - the title and the full counting method was specified. Also the only active possibility of the number of occurrences was 10, which resulted in 5,481 terms and 69 events meeting the threshold. 6 clusters have been created: 1 (red cluster) that contained 17 items dominated by elements such as: *ecological civilization, research, and perspectives*; 2 (green cluster) with 16 items: *China, effect, evidence, and innovation*; 3 (blue cluster) with 11 items: *study, application, Yellow River, and management*; 4 (yellow cluster) with 10 items: *analysis, development, ecological civilization construction, and energy*; 5 (purple cluster) with 9 items: *evaluation, case study, city, and Yangzi River economic belt*; and 6 (turquoise cluster) with 6 items: *relationship, green development, urbanization, and economic growth*. The best studied areas (items) were *China* and *ecological civilizations*, which had the highest density. The obtained results of bibliographic coupling and density visualization are presented on Figure 4 (a-c).

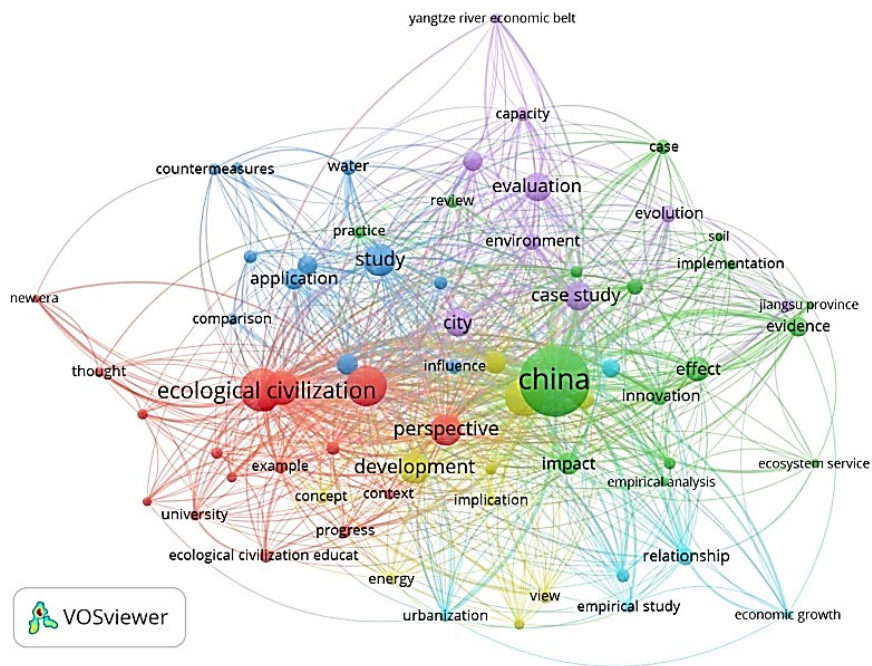


Figure 4a. Visualization Network based on WoS data.

Source: Own elaboration.

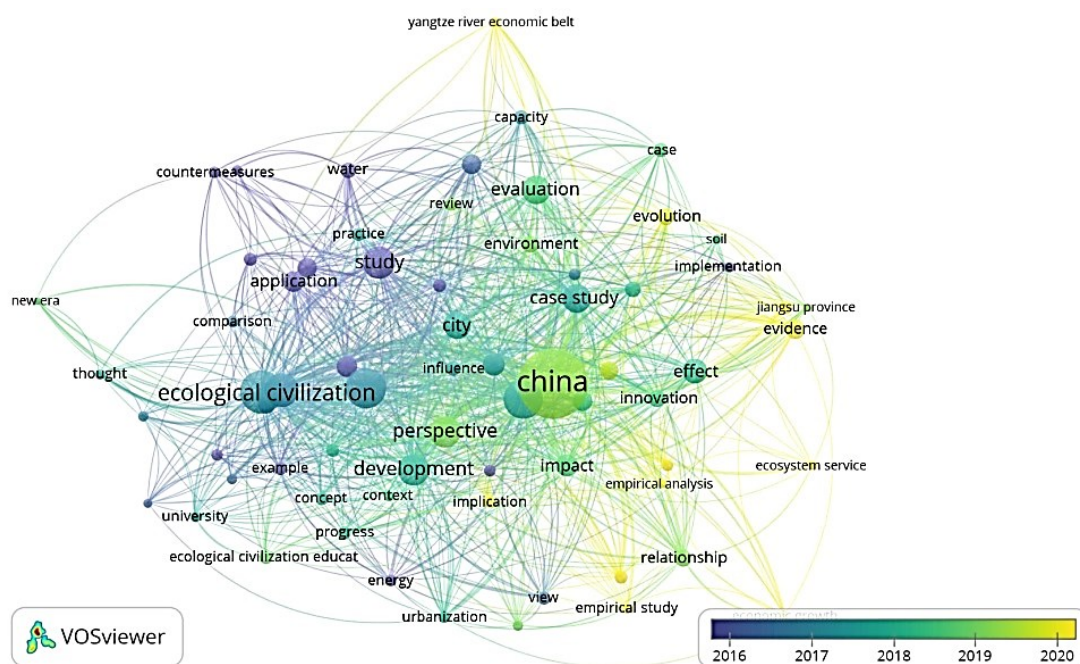


Figure 4b. Overlay visualization based on WoS data.

Source: Own elaboration.

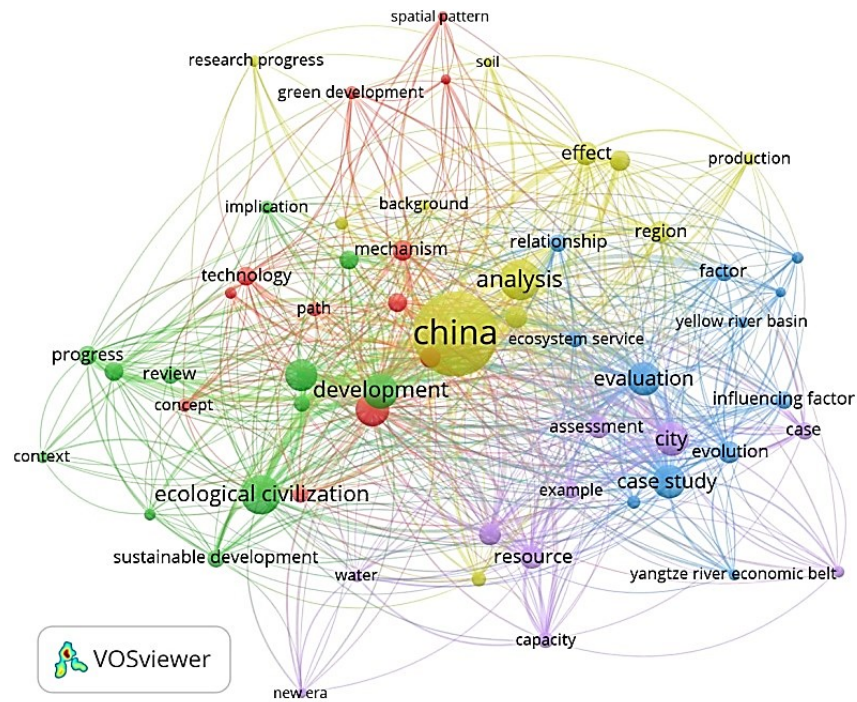


Figure 5a. Visualization Network based on Scopus data.

Source: Own elaboration.

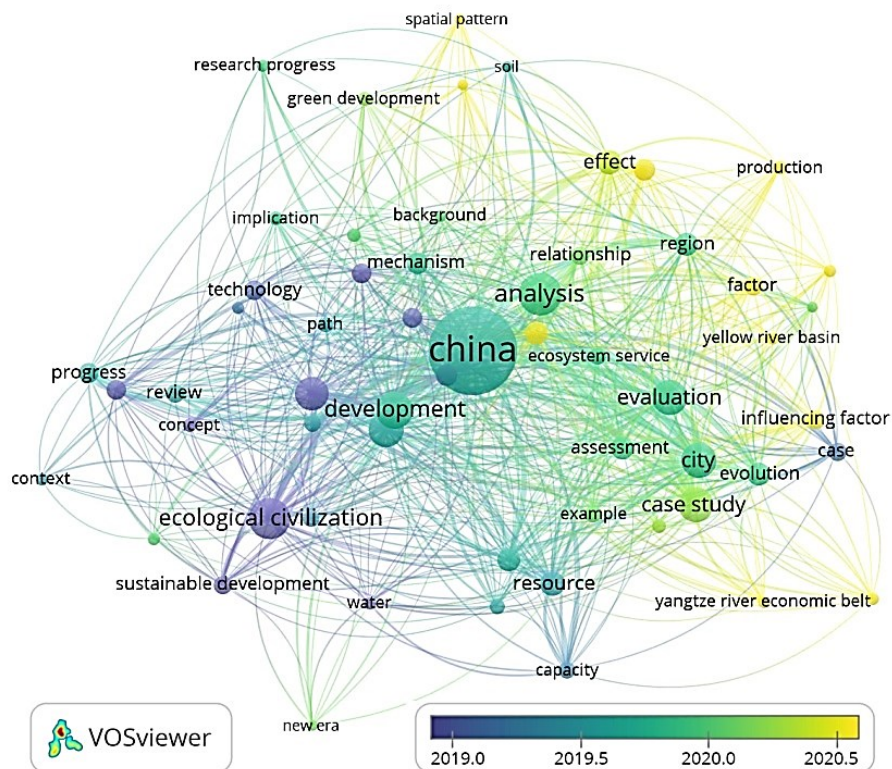


Figure 5b. Overlay visualization based on Scopus data.

Source: Own elaboration.

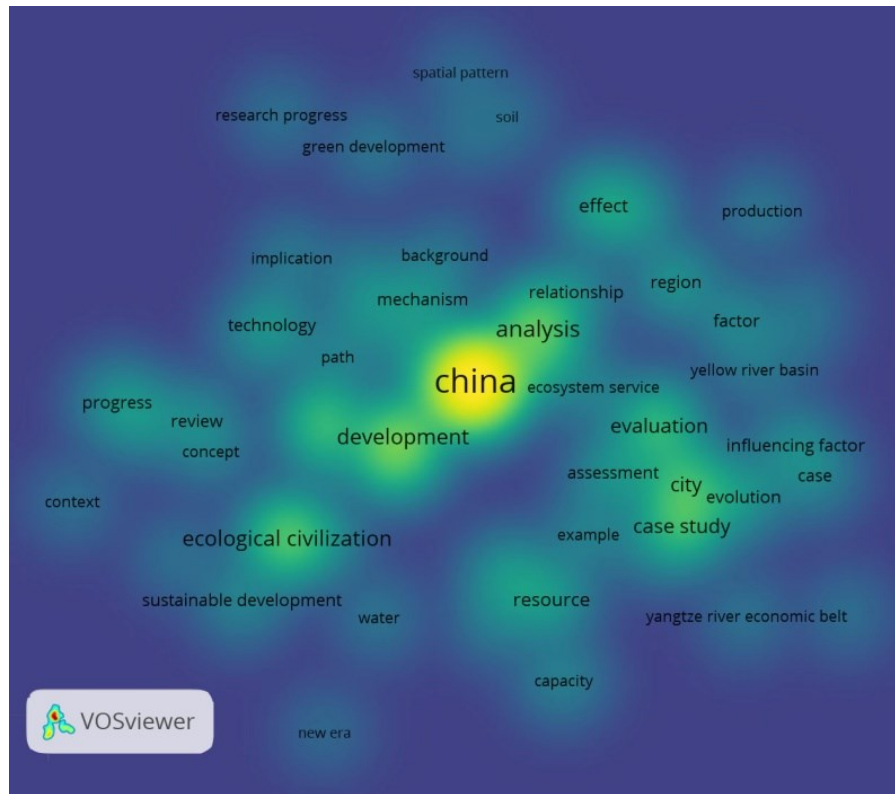


Figure 5c. Density visualization based on Scopus data.

Source: Own elaboration.

According to Scopus, the topic of Chinese ecological civilization is also most often chosen for research by authors from China, the United States, England, Australia, Canada and the Netherlands (Figure 3). As part of this database, it was also possible to obtain a map showing the cooperation between authors from different countries (Figure 6). Most often, this cooperation takes place between authors of Chinese origin. This diagram also shows that China is a kind of bridge between researchers focusing on the subject of ecological civilization and its Chinese characteristics.

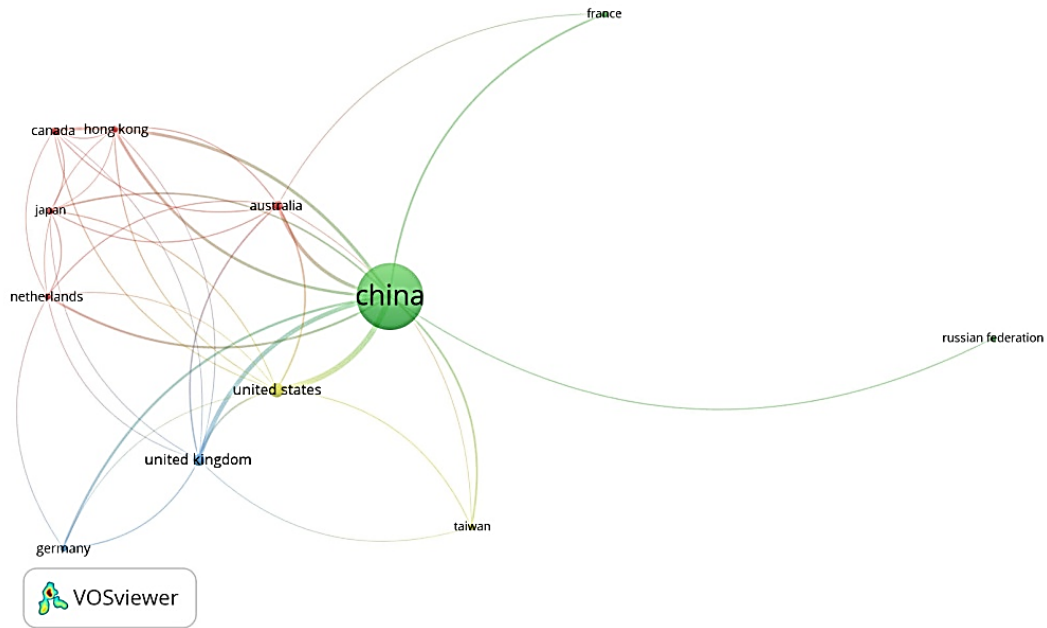


Figure 6. Map of relationships showing cooperation between authors from different countries, based on Scopus data.

Source: Own elaboration.

Within these topics, elements of economic sciences also appeared - issues related to economy (items: *economic growth* and *Yanzi River economic belt*) and management (only *management*). Their main relationships between the elements selected for the study are shown in Figure 7 (a-c) for WoS and Figure 8 (a-b) for Scopus.

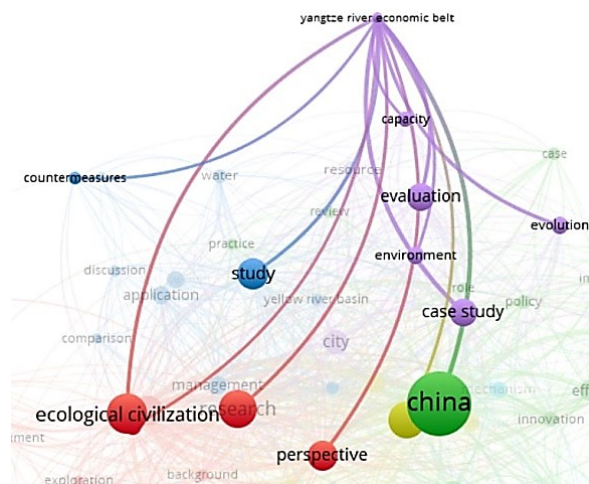


Figure 7a. Relationships between the main elements of economic sciences and other elements selected for the study based on WoS.

Source: Own elaboration in VOSviewer program.

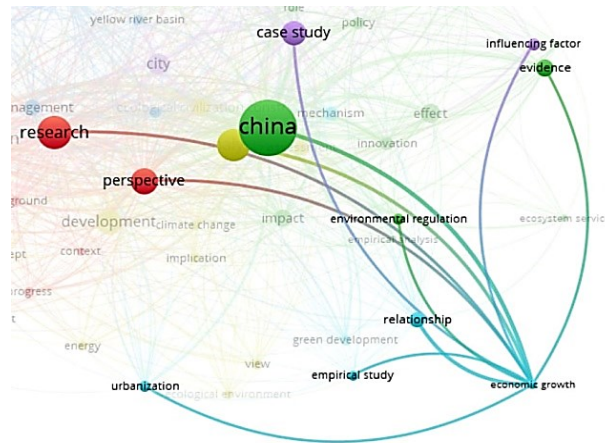


Figure 7b. Relationships between the main elements of economic sciences and other elements selected for the study based on WoS.

Source: Own elaboration in VOSviewer program.

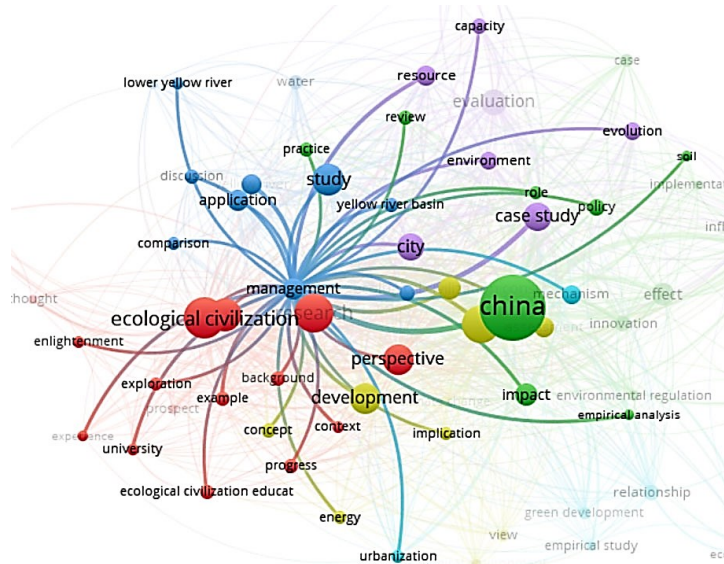


Figure 7c. Relationships between the main elements of economic sciences and other elements selected for the study based on WoS.

Source: Own elaboration in VOSviewer program.

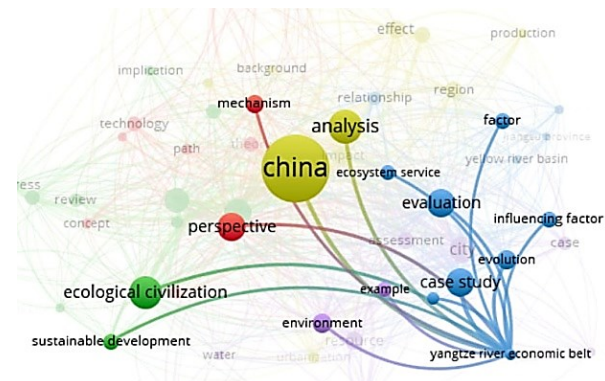


Figure 8a. Relationships between the main elements of economic sciences and other elements selected for the study based on Scopus.

Source: Own elaboration in VOSviewer program.

compared to such a subject area as environmental science. The most researched areas within economic sciences include economic growth, the Yanzi River economic belt, and management. These associations are few, but it is also noticeable that the management item is the bridge to more items than just the economy item.

The trend of the increasing number of publications devoted to the issues of eco-civilization and China indicates not only the reported social and environmental need related to the unsatisfactory situation in the natural environment of the PRC, but also shows the politicization of issues of eco-civilization and changes in the world of science. Changes regarding the focus on sustainable development issues, the need to improve the current situation and the importance of increasing eco-awareness.

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