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## Research on sustainable development of resource-based small industrial and mining cities—A case study of Yangquanqu town, Xiaoyi, Shanxi Province, China

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### Abstract

Among all the 119 counties (cities, districts) in Shanxi province, China, there are 94 counties with coal resources, and 80% are resource-based mining cities. Since 2008, a number of small coal mines have been shut down due to the integration of coal resources in Shanxi Province, as well as merger and reorganization of large state-owned coal mining enterprises are under efficient operations. This series of integrations highlights the issue of channels of employment in industrial mining cities in Shanxi province, followed by issues such as urban labor triage, underdeveloped urban functions, and function transformation lagging behind industrial transformation, shortage of follow-up sustainable development driving force and so on. This paper takes small industrial mining cities in Shanxi province as the research subject, taking their function transformation and various problems during the sustainable development as the main content, to propose relevant strategies for the sustainable development; therefore, this study is with great significance to all-leveled resource-based industrial mining cities, which are in transition period, in Shanxi province.

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### 1. Introduction

Since 2008, a number of small coal mines have been shut down due to the integration of coal resources

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in Shanxi Province. This series of integrations highlights the issue of channels of employment in industrial mining cities in Shanxi province. In this paper, we get rid of the misleading concept of achieving sustainable development by emphasizing industrial transformation but neglecting function transformation, and proposed five strategies to promote the transformation and development of urban functions. It is hoped that the lessons learned from this research can be transferred to similar planning exercises for small industrial mining cities in China and elsewhere that cities are undergoing rapid transformation. Sustainable development of this study is meant to encompass a more balanced consideration of environmental, social, and economic values, as opposed to planning in the past which have tended to favor economic growth at the expense of other values.

## 2. Background

### 2.1. Concept of resource-based small industrial mining cities

Resource-based small industrial mining cities are driven by the exploitation of mineral resources, being characteristic with resource-based leading industries and professionalized production. In these small cities, more than 40% of the workforces are directly or indirectly engaged in the exploitation, production and business operation of certain resources with the same feature. The direct cause of its formation is the limited exploitation of non-renewable resources.

### 2.2. General situation of resource-based small industrial mining cities

Shanxi province is rich in coal and mineral resources, with 62,000 square kilometers coal-bearing area, which accounts for 40% of the total land area. The identified coal resource reserves are 265.2 billion tons, accounting for 26% of coal resources nationwide. Shanxi province is the typically resource-based.

Resource-based industrial mining cities in Shanxi are constructed or developed by relying on resource development. Their leading industries are mining and quarrying industries and primary processing industries, centering on resource development. Among all the 119 counties (cities, districts), 94 are with coal resources, 80% of which are resource-based industrial mining cities.

### 2.3. Development of resource-based small industrial mining cities

After the founding of People's Republic of China, the development resource-based small industrial mining cities in Shanxi can be divided into four phases:

- The first phase: period of rapid development(After the founding of People's Republic of China -1980)  
Features: implementation of heavy industry priority strategy; as the basic material production sector for industrialized development, resource-based industries are with extremely important roles, and resource-based cities are also with prominent positions among the layout of national productivity.
- The second phase: early period of recession(1980 -1990)  
Features: the transition period from planned economy to market economy; the development of Shanxi mining and industrial cities, especially coal-based cities, meets with recession.
- The third phase: the plight of development(after the mid-90s)  
Features: market economy is gradually improved, and the concept of sustainable development is deeply rooted, but the plight of development of resource-based cities has become more prominent. "Four mine-related issues" (mining town, mining industry, mines, miners) and "three-dimensional rural issues" (concerning agriculture, countryside and farmers) are defined as the difficult points in the sustainable development in China.

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