

# Strategic path of constructing advanced manufacturing base of Hanjiang River Basin

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**Abstract.** As an important node city of the Hanjiang River Basin, Xiangyang has a wide range of industrial and basic strength, and has the relevant conditions for the construction of advanced manufacturing base. This paper from the connotation and characteristics of advanced manufacturing base, first analyzes the advantages and disadvantages of the industrial economy of Xiangyang, and compared on the Hanjiang River City industrial development situation, then according to Chenery standard mode in Xiangyang judged the stage of industrialization, and puts forward the construction of the industrial chain, industrial parks, industrial clusters, industrial structure, innovation system advanced manufacturing base construction of multi-level strategic path, accelerate the construction of Xiangyang advanced manufacturing base of the pace of the Hanjiang River basin.

**Key words.** Hanjiang River Basin; advanced manufacturing; industrialization stage; strategic path.

## 1. Introduction

China's manufacturing industry has made rapid progress in the past more than 10 years and has made great progress. In 2016, the industrial added value reached 24 trillion and 780 billion, and it remained the world's largest manufacturing country for 6 consecutive years. But China manufacturing industry big but not strong, there is a big gap between technology and industry development and manufacturing industry in developed countries, because of the raw materials, labor, capital and land costs, improve the comprehensive cost, directly affects the growth of the manufacturing

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industry, import and export products and the sustainable development of industry.

Europe and the United States and other developed countries pay more and more attention to the manufacturing industry, and promote the return of manufacturing industry in various ways. The United States has issued “to revive the U.S. manufacturing sector framework”, “advanced manufacturing partnership”, “advanced manufacturing industry as the national strategic plan” and other measures; the German government has put forward 4 industry in the “2020” high technology strategy, its core lies in the realization of mass customization, personalized and scale in the future perfect production the combination of [1] through intelligent manufacturing, Internet technology.

As an important region in Central China, the level of industrialization of the Hanjiang River Basin determines the level of economic and social development of the region to a large extent. Manufacturing industry is an important part of industrial development, especially for cities in the Hanjiang River Basin, the proportion of industrial output value of manufacturing is more than 90%. Xiangyang is an important city in the Hanjiang River Basin, located in the middle reaches of Hanjiang River, convenient transportation, favorable geographical position, complete industrial categories, the advantages of industrial economic scale prominent, high-tech industry leading level [2] in the city of Hanjiang River basin. In addition, Xiangyang as the Hubei province deputy city center, Hubei province is the “two laps with” in the construction of an important link, is the Hubei Yangtze River economic belt and a tie between the Han River Ecological Economic Zone. Therefore, the high quality and rapid development of Xiangyang manufacturing industry has important practical significance for the development of industrial economy in Hanjiang River Basin [3].

“Made in China 2025” [4] plans to achieve the strategic goal of manufacturing power, through ten years of construction, so that China into a manufacturing power ranks. In order to enhance the competitive ability of Xiangyang’s manufacturing industry, the construction of advanced manufacturing base should be taken as the core to strengthen the innovation drive and consolidate the industrial base, so as to boost the development of the advanced manufacturing industry in the Hanjiang River basin.

## 2. Characteristics of advanced manufacturing base

The development of advanced manufacturing industry at home and abroad city comprehensive analysis, advanced manufacturing base can be defined as to drive technology innovation, the intelligent service and green technology as the main means of production, with high value-added products as the main industry to upgrade and transform the traditional advantages of scale development of new industries as the pillar and the production efficiency has been greatly improved, with strong competitiveness of industrial clusters [5]. Large scale, advanced, innovative and export-oriented are the main external features of advanced manufacturing bases, including two forms of [6]: cutting-edge technological innovation, derivative industries, and traditional industries.

### 3. Analysis of the conditions of constructing advanced manufacturing base of Hanjiang River Basin in Xiangyang

Xiangyang is the national old industrial base, the national important automobile manufacturing base, the “China weaving city” and the three line military enterprises and institutions gathered, industrial base is better, comparative advantage is reflected in the following aspects:

- A more solid foundation: 2016, Xiangyang total industrial output value of 707 billion 400 million yuan, industrial economies of scale are Hanzhoung, Shangluo, Nanyang, Shiyan, and Suizhou, Jingmen, Xiantao, Tianmen, Qianjiang and Xiaogan 6.12, 6.32, 7.49, 1.78, 3.47, 5.06, 2.09, 6.43, 8.48, 6.17 and 2.72 times. At the same time, Xiangyang has initially formed a relatively complete manufacturing system, developed a “leading, six pillars” industry pattern.
- Is part of the industry to highlight the comparative advantage: Xiangyang automobile and equipment manufacturing industry has a strong competitive strength in the country. Dongfeng Teana and other products in the national market has a considerable share, outstanding performance in the same type of products. The new energy automotive industry started earlier in China, the initial formation of the vehicle, battery, motor, electric control and related parts in line with the national development strategy in the form of industry, has achieved a national new industrialization demonstration base, the country’s new energy vehicle demonstration city and national key components of new energy vehicles innovative industrial clusters “brand in china”.
- The development of high-tech industry leader: Xiangyang existing national innovative pilot enterprises 2, 208, provincial innovative high-tech enterprise pilot enterprises 46. In 2016, the added value of 92 billion 450 million yuan of high-tech industry in Xiangyang, Nanyang, Shiyan, respectively, Xiaogan, Jingmen, Suizhou 6.1 times, 3.9 times, 3.4 times, 4.3 times, 7.7 times, accounting for 36% of the proportion of industrial added value, other city level were higher than that in Hanjiang River basin.
- The industrial innovation foundation is relatively strong: Xiangyang existing 1 national high-tech zones, 1 state-level economic development zones, 13 provincial-level development zones, 20 Industrial Park, is the Hanjiang River Basin has national and provincial development zones and the city characteristic industrial park the largest prefecture level city. From the perspective of innovative resources, Xiangyang has more than 50 national R & D, technology, entrepreneurship, incubation, monitoring, research and production centers, nearly 100 centers at the provincial level.
- The cluster effect is obvious: Xiangyang manufacturing industry agglomeration good momentum of development, has formed a number of enterprises are relatively concentrated, the distinctive characteristics and market share of large industrial clusters. The existing 9 characteristic industrial clusters are listed in

Hubei's key growing industrial clusters. In the key industrial clusters in Hubei Province, the number of enterprises ranked second in the province. Xiangyang, in the development of bearings, automotive parts and other advantages of the industry, further to the motor energy saving control, automotive friction and sealing materials and other emerging industrial cluster extension.

Although the manufacturing industry in Xiangyang has a good foundation and a certain comparative advantage, but compared with the construction of the advanced manufacturing base of Hanjiang River Basin, there is still a big gap, mainly in the following deficiencies:

- The scale is not big enough, the city's above scale industrial added value accounted for the proportion of less than 13%, more than ten billion yuan of industrial enterprises, only 3 companies, well-known brand enterprises under the leading role and the clustering effect is not obvious, the backbone of large enterprises driven by comparative advantage in the Hanjiang River Basin effects appear inadequate.
- The industrial structure is not reasonable: the large proportion of traditional industries, the correlation between industries is not high, the industry chain is not long, not the formation of industrial clusters is relatively concentrated, and the counties of industrial high homogeneity. In the automobile industry, for example, although the vehicle and parts enterprises category is very wide, but the local matching rate is low, most high-end products assembly and parts of the supply chain is outside the region, the core parts of Fengshen Corporation 85% parts, commercial vehicles and 50% from outside the host plant supply, supporting the processing enterprises and the local host the assembly is less than 10%.
- The industry brand low level: in 2013 the output value of agricultural products processing industry reached 163 billion 800 million yuan, but the product quality is not high, new technology, new technology application is not enough, the number of well-known brands are relatively scarce. ;
- The regional innovation system needs to be improved: industrial innovation ability is still weak. Most manufacturing enterprises lack original technology and core intellectual property rights, most of the technology and key equipment rely on imports, and the proportion of invention patent licensing is not high. Many enterprises lack investment in R & D, the channels of R & D investment are not wide, and the elements of investment and financing are not enough. High level innovation and entrepreneurial team and talent are relatively few, industry university research cooperation advances slowly, service quality and efficiency of all kinds of industrial platforms are low, and the transformation rate of scientific and technological achievements is not high. The intermediary service system is not perfect, can not effectively play the role of communication, scientific and technological cooperation, promote knowledge flow, and promote the transformation of the service function.

- The carrier of industrial development needs to be further improved: Xiangyang has more than 14 provincial-level development zones and industrial parks, but the infrastructure part of the park is basically still in the extensive stage, transportation, logistics, commerce, education and training, staff apartments, public service facilities are not perfect, it is difficult to meet the needs of enterprise development, at the same time due to various parks to develop the lack of overall planning, and the standard of park construction, industrial park leads to serious homogeneity, agglomeration cluster effect Park did not get to play.

#### **4. Xiangyang industrialization stage judged**

According to the classical theory of industrialization, industrialization stage of Xiangyang judged based on ciannelli standards mode [7], combined with the availability of data, mainly from the angle of economic development level, industrial structure, spatial structure. In addition, the conversion factor of 2015 and 2005 is 1.193, according to the GDP reduction index method reference [8], 2005 per capita GDP data calculated by Chinese economist Professor Chen Jiagui [9].

From the perspective of economic development, Xiangyang city in 2015 according to the resident population per capita GDP is 60 thousand and 240 yuan, the exchange rate of \$9670, higher than the national 7900 and \$8100 in Hubei Province, the city of Xiangyang in the late stage of industrialization judgment.

Table 1. criteria for judging the stages of industrialization

Basic index	Pre industrialization	Industrialization stage			Post Industrialization stage	
		Initial stage of industrialization	Middle stage of industrialization	Later stage of industrialization		
1, per capita GDP (economic development level)	(1) 2005 (US dollars)	745-1490	1490-2980	2980-5960	5960-11170	11170 Above
	(2) 2015 Year (US dollar)	888-1777	1777-3555	3555-7100	7100-13311	13311 Above
2, three industry proportion (industrial structure)	A>I	A>20%, A<I	A<20%, I>S	A<10%, I>S	A<10%, I<S	
3, the urbanization rate of population (spatial structure)	30% Following	30%-50%	50%-60%	60%-75%	75% Above	
4, the proportion of agricultural employment (employment structure)	60% Following	45%-60%	30%-45%	10%-30%	<10%	
5. Manufacturing value added ratio (industrial structure)	20% Following	20%-40%	40%-50%	50%-60%	>60%	

Note: A, I, S represent the proportion of the added value of the first, second and third industries in GDP.

Table 2. 2010, and 2015 national, provincial and municipal per capita

Particular year	2010 year		2015 year		
	currency	RMB	dollar	RMB	dollar
Whole country		30492	4682	49228	7900
Hubei province		27613	4169	50500	8100
Xiangyang		27969	4222	60244	9670

Note: the data sources were collated by the national database and Statistical Communique of national economic and social development of the provinces and cities over the years, with the exchange rates of 6.6227,6.2284 in 2010 and 2015 respectively.

From the point of view of industrial structure, Xiangyang City, the proportion of three industries from “16.7:47.9:35.4 11th Five-Year” last year for the 2015 11.9:56.9:31.2 show in Xiangyang in recent years, the proportion of primary industry decreased year by year, the proportion of secondary industry increased steadily, industrial structure has been further optimized, the judgment of Xiangyang city in the middle of industrialization.

Table 3. the three industrial structure of Xiangyang in 12th Five-Year

Particular year	2011year	2012year	2013year	2014year	2015year
Production ratio	15.2:51.9:32.9	14.2:57.1:28.7	13.7:57.3:29.0	12.8:57.7:29.5	11.9:56.9:31.2

Note: the data source is the statistical communique of Xiangyang national economic and social development over the years

From the perspective of spatial structure, the urbanization rate of Xiangyang showed a steady growth trend during the period of 12th Five-Year, reaching 57.3% in 2015, and the industrialization stage of Xiangyang was judged to be the middle stage of industrialization.

Table 4. Changes of urbanization rate in Xiangyang in 12th Five-Year

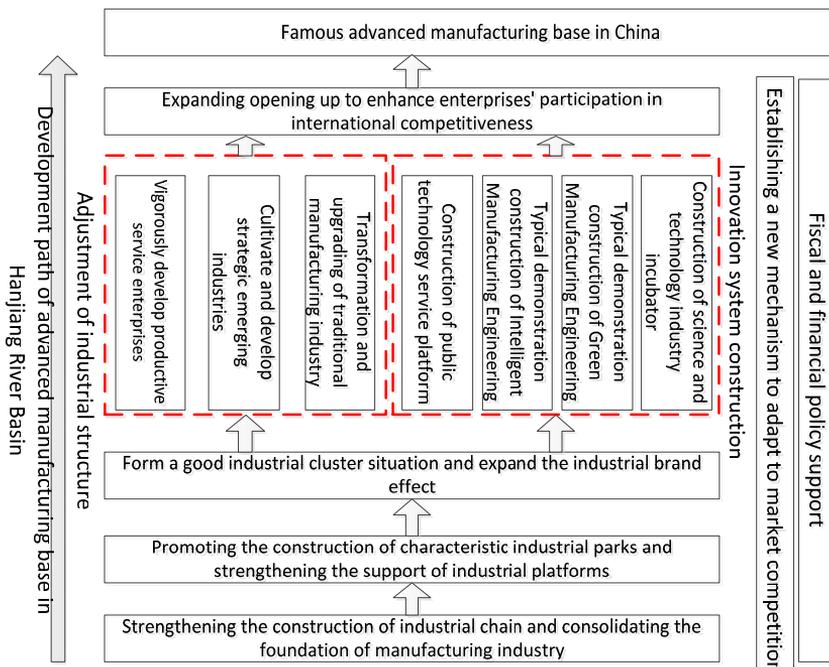
Particular year	2011year	2012year	2013year	2014year	2015year
Urbanization rate	51.99%	53.68%	54.82%	56.01%	57.3%

Note: the data source is the statistical communique of Xiangyang national economic and social development over the years

According to the above three indicators, it can be concluded that Xiangyang is in the middle and late stage of industrialization, but at the same time, the structure adjustment of three production is slowing down. It shows that Xiangyang industry is in the throes of transformation and upgrading.

### 5. Path planning of constructing advanced manufacturing base of Hanjiang River Basin in Xiangyang

Xiangyang to build Hanjiang River advanced manufacturing base to give full play to the three advantages: one is the comparative advantage, and the developed countries and regions, the factor cost is relatively low, and other than the city Hanjiang River Basin, has certain industrial base; two is the location, the Han River is located in the central basin, surrounding the large city, the Han River Ecological Economic Zone has become an important part of the Yangtze River economic belt; three is the advantage, Xiangyang has a certain economic strength, into the late stage of industrialization, from the material basis and human capital accumulation, has entered to better play the advantage of the favorable period. Therefore, can make full use of the new technology, based on independent innovation, play the advantages of existing resources, making Xiangyang Hanjiang River advanced manufacturing base, to achieve leapfrog development of the manufacturing industry, its strategic path planning as shown below:



Strategic path map for Xiangyang to build advanced manufacturing base in Hanjiang River Basin

#### 5.1. strengthen the construction of industrial chain, consolidate the basis of manufacturing

According to the development of Xiangyang advanced manufacturing base, the leading role of the industry, the upstream and downstream related industries and support industries and specialized agencies based aggregation, reduce production

and transaction costs, promote technological innovation, promote specialization, cultivate a good environment for regional innovation.

***5.2. promote the construction of characteristic industrial parks and strengthen the support of industrial platforms***

The characteristic industrial park will build the carrier and platform for the advanced manufacturing base. To actively promote the industrial chain and cluster construction resource agglomeration industry, guide enterprises and various innovative elements to gather in the park and the base, the construction of a number of business friendly environment, a sound institutional mechanism, the main body of the market actively, improve the industrial chain, driven by strong radiation, distinctive characteristics, advanced manufacturing industry with international competitiveness and the emerging industry demonstration base. In accordance with the transverse and longitudinal dislocation coordination, gradient agglomeration principle, to fully tap the Linjiang, port, near the station, advance planning plate of new industrial form, new industrial mode and new potential cohesion to build Hanjiang River Comprehensive Development Industrial Park, further optimization of industrial space layout.

***5.3. form a good industrial cluster situation, expand the industrial brand effect***

To carry out the classification of above scale enterprises in the industry, focusing on cultivating industrial cluster selection determine the need, in accordance with the “leading enterprises, supporting enterprises to follow up, major projects supporting, bearing industrial park” ideas, planning, policy support, strengthening the building of industrial clusters, a group of ten billion yuan, 20 billion yuan, to form a hard support leading pillar industry.

At the same time, in order to enhance the “Xiangyang manufacturing” brand image as the goal, to achieve industrial brand integration, foster regional brand advantage. We should make full use of the existing well-known trademarks and famous brand products, and guide more small and medium-sized enterprises to join the division of labor and cooperation between famous brand enterprises, and enlarge the scale of well-known brands. Support more qualified, potential enterprises and industries, striving for national well-known trademarks and international well-known brands, enhance the “made in Xiangyang” brand image.

***5.4. optimize the industrial structure***

Vigorously develop the productive service enterprises: Based on the current status and features of Xiangyang manufacturing industry, networking, cloud to introduce and foster the development of two brought about the integration of computing, 3D printing, consumer information, e-commerce, big data and other new technologies, new formats and new business models. At the same time through the construc-

tion of the Hubei free trade zone of Xiangyang District, the establishment of a sound institutional mechanism of investment liberalization, trade facilitation, supervision of the rule of law, the rules of international, strive to build “three port (port of railway, highway port, Airport Center (a) bonded logistics Center)” the Hanjiang River Basin as the core of the international logistics center, accelerate the construction of export import and export processing area, production area and import and export commodity trading center.

Foster the development of strategic emerging industries, vigorously develop new energy and new materials, high-end equipment manufacturing, new generation of information technology, new energy vehicles, bio medicine, energy saving and environmental protection, cloud computing and a number of strategic emerging industries, the formation of new competitive advantages as soon as possible.

The transformation and upgrading of traditional industries, increase the technological investment, to improve the equipment, improve products, energy saving and emission reduction, the integration of the two as the key to speed up the implementation of the transformation and upgrading of traditional industries, to the starting point of high-end automobiles and auto parts, textile, metallurgy and building materials, pharmaceutical and chemical industry, food processing and other traditional industries development and breakthrough, support enterprises through technological innovation to achieve manufacturing technology and high-end products, extend the industrial chain to research design, brand marketing, terminal products and other high-end sectors.

### ***5.5. innovation system construction***

Public technology service platform: strengthen technical innovation and achievement transformation service platform construction, set up a number of industrial generic technology service platform, promote generic technology research and application of results. Actively carry out research and production docking, enhance effectiveness, build brand, to provide a solid foundation for the development of regional manufacturing industry.

Intelligent manufacturing engineering typical demonstration construction: actively carry out intelligent manufacturing engineering typical demonstration base construction, expand the scale of intelligent manufacturing industry, improve the production equipment, production process, product and service intelligent level. At the same time, promote intelligent equipment manufacturing industry to accelerate the development of high-end direction, foster a number of intelligent equipment and key components of R & D and manufacturing enterprises, and intelligent equipment technical service and system integration enterprise with independent technology and core competence.

The construction of typical model of green manufacturing engineering in Xiangyang manufacturing industry development status, promote green manufacturing engineering demonstration base construction, efficient use and recycling of resources utilization, energy cascade, guide enterprises to reduce energy consumption, use of all kinds of waste and renewable resources to maximize; improve manufacturing waste

comprehensive utilization of resources and key industries a large quantity of recycling level, establish and improve the recycling of waste material utilization system, promote renewable resources recycling.

Science and technology industry incubator Construction: vigorously promote public entrepreneurship, innovation, and strive to build a new engine of industrial transformation across. Establish and improve the public policy platform, entrepreneurship training, entrepreneurship innovation contest, technical services, investment and financing services and other public platforms, improve the entrepreneurial innovation service system. Strengthen support measures to optimize the business environment, encourage entrepreneurship researchers, entrepreneurship, entrepreneurial talent returning from overseas and home business, vigorously develop innovative entrepreneurship, construction science and technology industry incubator, entrepreneurial innovation center built in the Hanjiang River basin.

### ***5.6. Expand opening up, enhance enterprises' ability to participate in international competition***

Support manufacturing enterprises to actively cooperate with research institutions of foreign enterprises, research and development, through the development of patents, Crowdsourcing multi-creation etc. commissioned, the introduction of advanced technology and high-end talent, promote the use of foreign capital by focusing on the introduction of foreign capital, technology and equipment to joint venture development, foreign mergers and acquisitions and bringing in talents. Efforts in promoting enterprises to "go out" breakthrough, support competitive enterprises to carry out mergers and acquisitions, equity investment, venture investment abroad, relying on the Internet to carry out collaborative design, precision marketing, service innovation, media brand promotion, development of international contracting, collection, the establishment of a global industrial chain system, foster a number of internationally competitive the ability of the enterprise.

## **6. institutional innovation, establish a new mechanism to adapt to market competition**

To further improve and optimize business oriented, market-oriented, combining the technology innovation system and mechanism of [10], the main investment in research and development, become the main body of technology innovation subject and innovation achievement application, strengthening the internal driving force of advanced manufacturing base and vitality, autonomy and achieve sustainable development of advanced manufacturing base.

## 7. financial and financial policy support, play the leading role of the government

Fiscal and taxation policy is an important support and capital guarantee for the construction of advanced manufacturing base. In order to encourage R & D expenditure, developed countries adopt the measures of reducing tax on research and development investment. Further improve the macro tax environment, encourage manufacturers to import foreign advanced equipment, tax relief. At the same time, we should improve the export tax rebate policy, simplify the declaration process, reduce the manual operation, make the export tax rebate funds in place in time, speed up the capital turnover of export enterprises, and expand the financial credit service ability. Accelerate the innovation of financial enterprises, the issuance of bonds, short-term financing bonds, medium-term notes and refinancing of listed companies, support financial innovation, exploration, carry out the export tax rebate policy, warehouse and intellectual property loans, the establishment of financial services for small and medium enterprises and guarantee agencies, the government must arrange funds guarantee risk compensation according to the.

## 8. conclusion

For the implementation of advanced manufacturing base of Hanjiang River Basin planning, Yangyang to drive innovation to promote the construction of industrial chain, increasing the investment of innovation resources and related policy support, to promote the depth and width of informationization, industrialization, improve the capability of independent innovation, the innovation service platform, and actively participate in International competition, will create a significant radiation Xiangfan a complete industrial chain, innovation ability, strong manufacturing base.

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