

## **Break the Resource-Based City's Locked Developmental Dilemma**

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**Abstract:** *China resource-based cities are facing severe economic pressure, whose strong “locked” feature exists in industrial structure, financial structure, and urban system, cultural and ecological structure. To crack the dilemma in the development of resource-based cities, we need to establish the prosperity warning mechanism, timely plan the urban transformation, but not to wait till the depletion of the transition; rely on scientific decision, exert the leading role of the government in urban transition, create an environment for the transaction; build a long-term mechanism, comply a virtuous cycle for the development of urban transaction; smooth start industrial restructuring from reality, avoid the risk of marginalized industrial development; widely open up financial resources, solve the start-up capital of urban economic transformation by diverse channel; for the purpose of social stability, re-built area culture, apply the created driver strategy, finally take a way for innovation and development.*

**Keywords:** *Resource-based City; Locked Dilemma; Innovation and Development.*

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### **1. THE RESOURCE-BASED CITY'S DEVELOPMENTAL DILEMMA MANIFEST OBVIOUS “LOCKED” FEATURE**

Generally speaking , a great gift for natural resource, especially abundant mineral resource, though as the basement of the start of industrialization and the engine of economy development, would lead to a slow growth of economy, or even a kind of economy growth only without development in a long run, if which has been depended excessively. As a special one in China's all kinds of developing regions, the resource-based area, whose industrial structure, financial support, urban system as well as culture ecology also saturated with the gene of resource-based economy and full of the sear of resource-based economy, manifest obvious “locked” feature.

#### **1.1. Industrial Structure is Extremely Unbalanced, Immature and Nonflexible, and Industrial Development is “Locked”**

Most Chinese resource-based cities spring up based on —forest-industry cities are constructed based on forest base—mineral resources exploitation and mining area construction, whose leading industry is mining and mineral processing industry as well as correlative raw material industry in its industry system, which makes their industrial structure turn out to be single variety, mining dominant, extremely unbalanced, immature and nonflexible. There are lots of example, such as these 12 coal-industry cities include Datong, Fuxin, Liaoyuan, Jixi, Hegang, Qitaihe, Huainan, Huabei, Pingxiang, Pengdingshan and Liupanshui whose coal and power sector achieve fifty-percentage of all industrial output as average. Petroleum-industry cities such as Daqing and Dongying, where petroleum-excavate sector production accounts for 73% and 78%, and petroleum-processing sector is 20% and 8%, together to achieve 93% and 86% separately. Woodcutting and processing these two

sectors account for 50% of all industrial output in forest-industry city Yichun<sup>①</sup>. Excavation and its support industry, which belong to secondary industry and as leading industry, form compact industrial chain, which is featured by high correlation in these sectors and highly dependent on the leading one. All of the industries and the whole economy in these cities are rely heavily on resource, which result in industrial disposition being “locked”.

This kind of “heavy at one end” industry structure has a high risk. Due to lots of limit, continuous industry development are lazy and alternative industries’ growth can’t catch up with resource industries’ recession, both of which lead to that cities’ economy and society lack sustainable developmental after-effect. It is difficult for locked cities’ industrial structure to adapt to the recession of resource-based industry because of the weak fundamentals and unshaped patterns for industries to develop collaboratively if the leading industry encounter resource and market risks, then cities’ engine of economy development are abrupt flameout. Otherwise, there will be a large number of unemployed when resource exhaustion because of single employment structure, which correspond to the simplex industrial structure. Actually, mineral resource, which pertains to nonrenewable resource, will certainly be exhausted with mining industry continuous developing. There are 426 resource-based cities in our country now, which cover 154 million people and involve many kind of resource trade. In which, 82 ones’ economy are growing up which account for 19.2%, and the prosperity is 290 and 68.1%, the recession is 54 and 12.7%<sup>②</sup>. A majority of resource-based cities, especially mining-resource-based cities, will be met with resource exhaustion and the problem which brings after many years large scale exploitation. Examples exist everywhere. Daqing Oilfield’s stock has been only left 754 million—as 30% of the initial inventory, which mean that it can product 20 million ton in 2020 at most; Liaohe Oilfield has exploited 77.1% of the discoverable crude petroleum and 82.6% of the natural gas, which result in a obvious decrease of production and a drastically increase of production cost<sup>③</sup>. Even if it is forest resource, which is renewable, the proportion of mature forest that allow being cut is declining conspicuously and most forest region are met with the situation no wood to cut or severe deforestation. Cities development will be impacted heavily if there is no resource anymore.

## **1.2. Finance Support Structure Fall into Natural Resource Comparative Advantage “Trap”, and Finance Support is “Locked”**

From the process of resource-based cities’ industrial economy developing we can see that quite a few cities appears “company first and city then”, which explains resource-based cities’ evolution, resource-exploitation company come first and then urban construction follow. In the initial stage of resource exploitation, there should be a large-scale resource-exploitation enterprise, and then is the local government serves for corporation’s product and living. Cities depend on and are born out of these companies. There are two kind of institutional structure about the relationship between governments and company in resource-based cities: The first is “government-company joint management”, which is favorable and feasible for accelerating resource exploitation. This kind of management system turned out to be successful, especially in initial and large-scale building period, because it eliminates the interference of highly fragmented and segmentary system and interaction, and may decide, imply and work quickly. But after large-scale company have come into shape while

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<sup>①</sup> The data comes from last five years statistical yearbook.

<sup>②</sup> The data comes from mining industry city database in china mining union.

<sup>③</sup> The data comes from “prompt northeast regional economy strategy and policy”, compiled by Wang Luolin and Wei Houkai, social sciences academic press(china), December 2005, pp189.

lots of other things haven't begun, it is dangerous for cities' development if we continue to apply and maintain this system. The second is "government-company separate management", which is adopted by the overwhelming majority of resource-based cities, or some cities that have experienced "government-company joint management" and then chose the second one. The reason of "government-company separate management" is the different strategic direction and development goal between cities and enterprises. Urban development, which is going on with industrial developing and enslaving urban government, heavily depends on resource-based industry or even one concrete enterprise, even though the government is separated from company. Urban development depends on urban industry, which depends on resource-based enterprise.

For a long time, resource-based cities finance were supported by increasing input and expanding building area, and ensured their growth and speed by competing to sell resource, both of which cause financial structure to fell into natural resource comparative advantage "trap" and financial support to be locked unconsciously. Compared with the average, resource-based cities per-capita revenue and expenditure will be smaller and smaller with the larger and larger resource exploitation scale. Three arguments for this are as follow. Firstly, resource-based cities' leading industry is basic industry in the upriver, whose additional value of products much smaller than processing industry in the downriver. Secondly, because the fluctuation of resource products' price affects the wider, the government intervene the price to protect the downstream industry and stabilize price structure. There are a few kinds of products that have been intervened and controlled by our government immediately, among which most are scarce resource products. Resource products' price can't reflect its value and relation of market supply and demand, which lead most of the profit that should belong to the urban to flow away. Thirdly, state-owned medium and large enterprises are the main part of resource-based cities' economy, which are also the main source of urban revenue. But a majority of these enterprises are under the central government directly, whose tax belongs to central finance and contribute little to local government. All of these make most resource-based cities to be in a dilemma that "affluent resource but poor economy" and lack ability to develop by it. Resource-based cities have no money to invest public products and provide for national large-scale building project because of poor financial revenue and expenditure, which turn out to waste many opportunities.

### **1.3. Urban System are Featured with Too Many Poles, Too Long Lines and Too Broad Flats, and Urban Function is "Locked"**

Many resource-based cities should have went through the process that from mine town to county, to small city, to municipal district and to medium city, some of which may develop into metropolis. Resource-based cities were just a "industrial base" when initially constructed whose urban function was so weak. They always spring up with mineral exploitation, which distribute discontinuously, lack aggregation effect that modernize cities should have and bring many troubles to urban public facilities' construction and rational utilization, as a result of facing a common problem —"too many poles, too long lines and too broad flats". In addition, to avoid pressing mine, urban construction has to keep away from the area under which there is mineral resource, which makes resource-based cities' layout more dispersal. With the blossom of mineral and raw material industry, urban function trends to serve for resource industrial development, which is simple, faulty and imperfect.

What it appears in the history of resource-based cities' exploitation is a trajectory of valuing production instead of life, industry instead of city and economy instead of ecology. Many environmental problems appear because of lacking the awareness of ecological and recycling economy in the process of resource exploitation and utilization. According to statistics, 6000 square meters land has collapsed with the exploitation of per ten thousand of raw coal, the subsidence area is

about 1.2 times of exploitation area, and the maximum subsidence accounts to 70%~80% of the extracted thickness<sup>①</sup>. Resource-based cities' environmental concerns include "three wastes" emissions, occupying and destroying plow land, initiating geological disaster and so on. There are 10 medium and large iron producing area which have 119 square kilometers land and destroy 81.67 square kilometers, whose area is 22.84 square kilometers and the area of Waste Dump and gangue is 58.83 square kilometers<sup>②</sup>. It is so hard to treat collapse and recover ecology in these fields.

#### **1.4. Development Potential is Weakened and Innovation Capability is Shackled, Culture Ecology is Locked**

Resource-based regional industrial system which is dominated by mining exploitation and primary processing, characterized by long-term construction and large sum of money and specialized by strong development inertia and super stability, as well as the long-term dependent the state is on natural resource and the local government's blind worship of immediate interest, both of which consolidate the mindset of "resource dependency" and the inertia of development, and make human so cured and conservative that they can't find a better way to develop. People in resource-based urban have a special favor in mining resource instead of these just like talents, technology, capital, market and travel. This kind of situation restrains human's innovation in some degree, make inefficient growth rate does not match natural ecological self-recovery capability, curb the formation of innovative environment as well as culture and the cultivation of innovative talents, all of which lead to serious shortage of innovative capability and vitality. There is no motivation for urban to transit while resource price is high, just like there is no ability when it's low. They are easily addicted by the benefits resource advantage brings. Resource-based economy is characterized by resource dependence, half-assed, and monopolization, which respond to resource-based culture specialized by conformism, lockstep, and easy to satisfy.

### **2. SOME ADVICE TO BREAK THE RESOURCE-BASED CITY'S LOCKED DEVELOPMENTAL DILEMMA**

#### **2.1. Build Condition Warning Mechanism, Make the Programme about Urban Transition Timely, and Never Transform Until the Resource has Been Exhausted**

We have lost the best chance to transform and develop due to the poor understanding of resource-based industrial development cycle and resource's scarcity in the past. Most time we can't realize the severe problem until the resource-based industry has been gradually withering, and in this time, it is hard for industry to transform because the resource-based industry has no base to transform and its economy develop abnormally. Resource-based cities should consider transition as soon as possible and transform timely. It is more difficult to return if the transformation is later, and to which the higher cost is respond, and we have more initiative in hands if we transform sooner. We should replace passivity with initiative, survival with development, transition with alternation. So, it is necessary to plan the transformation as a whole and to look the resource-based cities' transition from a angle of whole state strategy, which means to make scientific developmental plan, to deploy moderate developmental strategy, to accumulate transformation fund when resource's production is stable and high, to develop non-resource-based industries and to boost economy transition timely. Never until it is too late to transform. Efficiency should be considered in the process of transformation, and the lowest cost is imperative. To transform gradually and disperse transform cost, both of which could

<sup>①</sup> The data comes from "research of coal-based cities' transition in our state" by Tianming, Fanjie, Sunwei, mining and metallurgy, 2004(1), pp 12.

<sup>②</sup> The data comes from "resource saving, environmental renovating and institute innovation——examined by cities' cluster in the middle part of Liao Ning" by china Macro-Economic Management Education Association, economic science press, July 2007, pp 104.

reduce the risk existed in the progress of transformation, and to start urban economy transformation begin the resource has been exhausted. We should build condition warning mechanism and choose moderate transformation chance to make a lowest cost and highest benefit, and construct functions about urban transition cost and resource-based industries' return according to industrial survival cycle theory, which contribute to the resource-based urban's evaluation index system. Also we should take respective macroscopic policy according to the warning level which include green, fellow and red, responded to growth, blossom and recession in the process of resource-based cities' exploitation. Macroscopic policy should include dealing with the relationship of three developmental progress, implementing the theory that compensation combines with exploitation, and prolonging resource-based cities' cycle. It is the time to make the aid programme and aid period when resource exploitation come into its recession. We should build the function of dynamic transition cost through qualitative and quantitative analysis of transition cost, according which and limited conditions to calculate optimal value to build resource-based industry early warning mechanism, and to get more time for resource-based cities' transition and pull down resource-based cities' transition cost.

## **2.2. According Scientific Decision-Making, Give Dominant Play to Government in Urban Transformation, Create Atmosphere for Urban Transition**

The great majority of our resource-based cities are formulated in the planned economic system, and the government is the dominant power to push urban economic development, which can't merely depend on market system. If the state adopt initiative economic transition policy, it is beneficial to avoid "market inefficiencies" and "market failure" in economic transition. There is subject vacancy problem in resource-based especially coal-based cities' transition, namely that there is no specific sector to lead and guide resource-based cities to transform and no acceptable laws and supportive policies to transition so as far. The problem of resource-based cities's transition is still difficult to be resolved by local governments, whose administrative power and fiscal power is not equal due to our institution. Local governments are not enough to transform these resource-based cities without central government's support in policies, technique, fund and so on. It is necessary to Boosting resource-based cities' transition that there are policies and regulations to safeguard resource-based urban economy transition. Accelerating the transition of urban developmental mode is a complicate systematic programme, which need moderate industrial aid policies to give support for the traditional industries' exit and the emerging industries' development. Aid policies are adopted to transfer employment, stop the reginal function shrinking and accelerate community development. Generally, a lot of problems will emerge with the restructuring of industrial structure, which can be solved by the cooperating of the social security system reformation and adoption of market mechanism. In terms of resource-based cities, because the contradictions induced by restructuring industrial structure are concentrated and urban self-adjusting ability is limited, the dependence on market mechanism absolutely will cause severe social problem, so setting out policies to aid industrial restructuring is incomparably necessary. For example, trying to induce industrial activities out of region into resource-based cities selectively and step by step, so as to promote employment and upgrade industrial structure. These progress need three aid policies at least: foreign companies' policy cost when settling in; the expenditure of staff transfer, settlement and training; the enormous cost when separate original large social system builded by enterprises including school, hospital and so on and re-combination.

## **2.3. Construct Long-Term Mechanism, Realize the Virtuous Cycle of Urban Transition And Development**

To break the resource-based city's locked developmental dilemma and to accelerate the transition of resource-based urban development pattern, the basic way is to build the compensation to resource

exploitation mechanism and the aid to recession industries mechanism. The compensation to resource exploitation mechanism means that, in order to realize resource-based cities' sustainable development, we should build a set of compensation measures and supportive ways in respective period, such as compensation fund to resource exploitation and so on, to support mine exploration and rational exploitation, to protect and recover undermined geologic environment and ecological environment as well as economy transition. The aid to recession industries mechanism means that we should supply direct aids to recession industry due to the decrease of resource by fiscal and tax policy, fund and programme plan and reliving enterprise burden, or supply indirect aids by policy induce and supporting developing alternative industry, so as to advance the transition of resource-based cities' developmental pattern. In terms of resource-based industry in resource-based cities that are growing and maturing, we should set up impeccable compensation to resource exploitation mechanism in case of resource-based industries' recession after few days. In the process of exploiting mine, we also should follow market law and adopt legal, economic and needful administrative measures to induce and regulate all market players to exploit resource rationally, to undertake the responsibilities and obligations of resource compensation, ecological environment protection and recovery, to make it explicit that enterprise is the main responsible role to compensate resource, protect and recover ecological environment. In terms of these resource-based cities whose resource-based industry is recessing or even dead, we should build impeccable aid mechanism to recession industry according its resource exploitation history. Also in terms of cities whose resource is exhausted or will be exhausted, the people's government in various levels should take targeted supportive measures to help solve problems that aroused by resource exhaustion enterprise broke such as economy recession and unemployment. To these resource-based cities and original state-owned mining enterprises and logging enterprises whose resource-based industry is recessing or even dead, the state give necessary fund and supportive policy, help solve problem left over by history, and compensate the debt in social security, ecology, settle environment and infrastructure construction. Moreover, we should complete resource-based products' price formulation mechanism, which means that we should accelerate resource price reformation step, form resource products' price formulation mechanism which can reflect resource scarcity, market supply and demand and the cost of governing environment and recovering ecology. We also should make scientific rules to calculate resource products' cost, which contains the expenditure of getting license, exploiting resource, governing environment, recovering ecology, safety facilities, infrastructure facilities, enterprises' exiting and switching, and consummate compensation to forest ecology benefit institution to avoid the externalization of inner cost and socialization of private cost.

#### **2.4. Start Industry Transition Practically, Avoid the Crisis that Marginalization of Industrial Development**

The point of breaking the resource-based city's locked developmental dilemma lies in cultivating and developing alternative industry vigorously, and the key to start successfully is to choose the transformation direction that can reflect local features, which means that we should choose leading industry in the rules of market orientation, resource orientation, information orientation and talent orientation, give full play to our superiority and reflect ourselves' characteristics. We must set rational exploitation plan with regard to these cities in rising and stable exploitation period, and apply new technology and new skill, improve resource recovery efficiency, develop upstream-downstream industries, prolong industrial chain, improve resource utilization efficiency, turn resource advantage into economic advantage and foster emerging industry. With regard to decreasing exploitation production urban, we should intensify comprehensive assessment of resource, exploit and use associated resource fully, explore local resource capacity, widen resource exploitation field, pay

attention to the exploitation and use of out-region and overseas resource, in attention to look for alternative base for local resource enterprise, and foster potential and competitive alternative industry. In terms of resource exhausted cities, we should choose a right industry transition direction, transform traditional industry with high and new technology as well as advanced and practical skill, adjust measures to local conditions, to formulate new leading industry as soon as possible. These related agencies should give more attention to resource exhausted cities when making major industry programme layout plan, and help them to foster new economic growth point. Developing alternative industry is based on the optimization and up gradation of traditional industry and the development of high and new technology, to realize this kind of replacement. These limited resource should be transferred from low efficiency fields to high ones to realize the optimization of structure by economy, law and administration. These embarrassed industries should shrink, but to cultivate competitive alternative industry, realize the transition from quantity-speed to quality-benefit, from primary commodity to comprehensive utilization. When develop alternative industry, resource-based cities could adopt both portrait and lateral ways to get largest developmental effectiveness. The portrait way may broaden original resource exploitation field and prolong industrial chain, and the lateral way can be realized by fostering and developing industrial cluster. Choosing alternative industry is a complicate, comprehensive multi-goals choosing progress, which need to consider all kind of elements such as economy, social, culture and market, and the most important among which are income elasticity of demand, the growth of total factor productivity rate, industry related degree, ecological environment and labor and so on. Then, choose the right direction by applying qualitative and quantitative method and adopting new cultivated method (which include experts recommendation, all recommendation then experts selection) and screening method.

## **2.5. Widen the Road to Get Money as Possible, Solve Urban Economy Transition Start Fund Problem in Many Ways**

The direct economy transition cost of resource-based cities includes five aspects, which are: formulation cost of alternative industry, developmental cost of the related and supporting industries of alternative industry, quit cost of resource-based industry, governance cost of ecological environment, constructure cost of urban infrastructure. The author's view is that, the solution to transition fund problem is "establish and complete multiple investment system", diversify the way to get money, give a full play of government fund and non-government fund, take a combination of measures, to solve the problem that lacking money to transform resource-based cities. On one hand, we should take collecting and using government fund as a key to increase transition fund supply and improve its effect. The state and local governments must pay more attention to solve these special ecological problems such as surface collapse, solid wastes discharge, water resource pollution and destruction, and take more effective actions to solve as soon as possible. This is a so heavy and hard work that it is not enough if merely depend on local government without the state's support. First, the state must set up policies to support governing pollution in resource-based cities so as to stimulate local governments' initiative and enthusiasm. Second, state also should establish special fund to support the reclamation of mining-collapse field, comprehensive utilization of gangue dump, disposal of water pollution and destruction, all of which must be sure enough investment to promote resource-based urban environmental improvement completely. On the other hand, it is also important to broaden the way to get non-government fund. First, take foreign capital as a main part to get money. Foreign capital will be "the leading actor" among economic transition funds under the lacking of inner capital and state capital in local districts, which mean that the investment subject of many significant transition projects are foreign enterprise, so we should use all kinds of way to attract external capital to break through the transition fund problem. Second, take trying to get the support from financial

institutions as a important insurance to relief transition capital supply-demand contradiction. We should trying to supply more financial services to all kinds of enterprise especially middle and small-sized enterprises in resource-based cities by seting special purpose loan to prompt resource-based urban sustainable development under the limitation of financial risks. Last, we can't ignore capital market as an important way to increase transition fund supply. Try to establish transition fund, governing urban collapse company, project financing and so on to insure the resource of capital are stable and reliable.

## **2.6. Take Social Stability as a Goal, Reshape the Region Culture, Adopt Innovation-Driven Strategy, Select Developmental Method Depends on Innovation**

Resource-based region must change its economic growth power from resource driven to human capital and technique innovation driven if it want to realize endogenous development. Among which, the key is to create atmosphere in favor of regional innovation, to foster innovative enterprises and to enhance regional innovative capacity. We should look increasing employment, eliminating poverty, improving settle condition, improving social security system, stabilize society as our fundamental objects, if we want to prompt resource-based cities' sustainable development. No stability means no transition, public feeling stable means classes stable, classes stable means society stable, which can guarantee the economic transition. Insist on spending more time on improving unemployed people's employability skills, and carry out multi-levels and diverse skill-training program according to their conditions and desire. Continuously perfect social security system, broaden security coverage successfully. And establish supporting system of subsistence allowance such as classified aids, fixed period and quota aids, medical aids to major disease, survey institute of subsistence allowance. Accelerate the cultivation of high-level talents and skilled practical person which are imperative to resource-based fields' transition in various methods, to increase the talents' capacity, and try to foster and organize a team characterized by reasonable arrangement, high quality, continuous ages, sufficient quantity and innovative spirit. Activate local cultural resource by bringing in new factors and matrix, and change culture structure, making it is tolerant of failure and favor of innovation.

Above all, breaking the resource-based city's locked developmental dilemma must be combined with industrial structure upgrading, employment and reemployment, developmental strategy transformation, governance upgrading, environmental changing, technical transition and talents' structure escalation. In brief, if we implement scientific outlook on development in the progress of breaking the resource-based city's locked developmental dilemma and keep to the Chinese-style path of carrying out industrialization in a new way, urban economy will start a new developmental trajectory and our country will open up a new vision of resource-based cities' economy transition.

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