Suitability of Recuperation Industry Development——A Case Study of Sichuan Province, China

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\textbf{Abstract.} As an emerging industry, the development of recuperation industry is quite promising, and it’s becoming an important support to the transformation of resource-oriented cities, the integration of primary, secondary and tertiary industries in rural areas, and the development of new industries and new businesses in China. In this paper, the studies related to recuperation industry are reviewed, after which the theory of “6+1” is adopted into use for building a comprehensive index system to evaluate the suitability of development of recuperation industry. The results show that places including Chengdu, Liangshan, Panzhihua, Mianyang, Nanchong and Guangyuan are appropriate for developing recuperation industry. Among them, the advantages in supporting facilities of Chengdu lay a good foundation for the development of recuperation industry; sunshine-based and forest-based recuperation suites Panzhihua better; and highland-based recuperation suites Yi Autonomous Prefecture of Liangshan. Places including Suining, Neijiang, Zigong, Aba and Garze are not appropriate for developing recuperation industry. The measurement results, with the development reality of Sichuan considered, provides some references for the development of recuperation industry in Sichuan in future.

1. Introduction
Under the background of intensified aged tendency of population, obvious tendency of sub-health, and serious environmental pollution, the recuperation industry comes into being. As an emerging industry combining urban and rural areas and integrating culture, tourism, medical treatment, and ecological agriculture, the recuperation industry attaches more and more attention from the society as well as the party and the government (Liu Tuo, 2017). In 2013, the State Council issued a series of documents, which worked out the top-level design for the development of recuperation industry. In 2016, the State Forestry Bureau issued some supportive policies, for which the nationwide forest-based recuperation industry building activity is started. In 2017, the No.1 Central Document proposed “giving full play to the unique advantage of various material and non-material resources of rural areas, and making use of the patterns of “Tourist +” and “Ecology +” for promoting the deep integration of agriculture and forestry with tourism, education, culture and recuperation” and “raising construction fund by multiple means, and improving the public service facilities of leisure agriculture, village tourism and forest-based recuperation”.
As one of the first provinces for pilot building of forest-based recuperation, Sichuan Province highlights the development of recuperation industry. The recuperation industry is involved in many important plannings of Sichuan Province and Sichuan Forestry Department. Cities in Sichuan, represented by Panzhihua, rely on the development of recuperation industry to realize industrial transformation and upgrade (Ren Wen, 2017). The recuperation industry is becoming an important support to realize transformation of resource-based cities, rural industries integration, and development of new industries and new businesses.

In this paper, 21 cities of Sichuan are studied, and the method of factor analysis is adopted. Then, the suitability of development of recuperation industry of various cities is assessed, for the purpose of providing references for the layout of recuperation industry development in Sichuan Province.

2. Literatures review

2.1. Connotation of recuperation industry
Li Houqiang et al. (2015) defined recuperation as a healthy behavior to enable the best condition of both the body and spirit by means of a series of activities to cultivate the body and mind under the specific external environment. Wu Houjian (2018) defined the forest-based recuperation from both a broad and narrow sense. For the narrow sense, forest-based recuperation is based on the good forest ecology and medical condition, and adopts various activities including convalescence, health care, sightseeing and tourism; while for the broad sense, it indicates all the activities beneficial to physical and mental health, which take place in forest. According to Report on Recuperation Industry Development in China (2017), the recuperation industry aims to “expand the length, richness and freedom of life to the greatest extent”, and the recuperation industry is more important. Cheng Zhenyu (2018) thought, as an industry serving all the people, the recuperation industry covered many aspects and was quite beneficial to the implementation of the strategy of Health China. Zhang Shaoquan (2018) proposed forest-based recuperation solving the problems in industrial development and environmental protection, which should be promoted.

2.2. Development patterns of recuperation industry
The concept of Recuperation Tourism was presented first by Wang Zhao (2009). In 2016, Standard of National Demonstration Base for Recuperation Tourism was issued, and thus recuperation tourism was formally determined as an emerging industry. Huang Hui (2016) thought, along with the implementation of the Belt and Road Initiative, the coastal cities in east and south China should actively develop the seaside recuperation tourism and optimize the development layout of seaside tourism. Li Houqiang (2015) and Tao Wuxian (2016) came up with the concept of Ecological Recuperation, based on which Wu Houjian (2018) thought forest-based recuperation was one of the important patterns of ecological recuperation. The development of sunshine-based recuperation industry in Panzhihua further enlarges the attraction from recuperation industry. Panzhihua is becoming a recuperation resort with sunshine and mountains (Tang Tian, 2016). Zhang Xiaolin (2019) thought the development of recuperation should focus on not only the external form, but also its extension, in order to create the cultural recuperation from heart.

2.3. Elements of recuperation industry
Cheng Zhenyu (2018) claimed that recuperation industry was also known as the blue ocean of industry, with great development potential. The development of recuperation industry should not only require the improvement of the public’s cognition, but also satisfy the spatial elements including natural resource and location and traffic, as well as carry out proper marketization development and operation. Li Houqiang (2015) thought that the development of recuperation industry should match the theory of “6+1”, i.e., 6 basic dimensions and 1 supporting dimension. Huang Hui (2016) thought that developing seaside recuperation tourism should base on broadening the development space of foreign trade, in order to enhance the infrastructure construction, improve the product innovation, and
optimize the scientific layout of industry. Pan Yangliu (2018) stated that the prerequisites for developing recuperation industry included the climate, landscape, infrastructure, natural and human resource, and so on, which decided the functioning of physiological health, mental adjustment and science popularization of recuperation industry. Li Jiren (2018) thought that the development of forest-based recuperation tourism should consider the regional environment value first, resource value secondly, and development construction value in the end.

2.4. Review
Both the industrial development and academic research of recuperation industry still stay at the initial stage. Even though more and more local governments highlight the importance of recuperation industry in urban transformation and industry upgrade, the promotion of recuperation industry, in condition of lack of thorough theoretical research and practical sample, is quite blind. Thus, the discussion on the suitability of recuperation industry development, based on the existing research results, is quite necessary to the optimization of regional industry layout and the promotion of recuperation industry development.

3. Theory and model

3.1. Theory
The study is worked out based on the theory of “6+1”. In general, the theory of “6+1” indicates the “6+1” Industrial Chain Theory presented by Lang Xianping. In this paper, the theory of “6+1” indicates the 6 basic dimensions and 1 supporting dimension supporting the development of recuperation industry, which is a new concept presented in Ecological Recuperation written by Li Houqiang in 2015. Furthermore, the 6 basic dimensions include the temperature, humidity, height, output, cleanliness, and greenness, and 1 supporting dimension covers medical treatment, traffic, culture and so on.

According to the theory of “6+1”, in the region that is advantageous in developing recuperation industry, the temperature should be 18-24°C; the humidity should be 45-65RH; the altitude should be 800-2500m, among which 1500m is the optimum; the production of economic crops, especially fruit, tea and organic vegetable, is abundant; and the environment and ecology are good. Besides, good supporting facilities, including infrastructures, medical services and spiritual and cultural activities, guarantee the healthy operation of recuperation industry.

3.2. Index selection and data source
Based on the theory of “6+1”, and in view of the availability of data and the inner connection between index and dimension, the indexes are selected as follows.
### Table 1. Assessment indexes of suitability of recuperation industry development in various cities in Sichuan.

| Dimension          | Index                                      | Definition                                      | Unit   |
|--------------------|--------------------------------------------|------------------------------------------------|--------|
| Temperature        | Annual average temperature                | Annual average temperature of main city         | °C     |
|                    | Annual average relative humidity           | Annual average relative humidity of main city   | %      |
| Height             | Average height                             | Average height of the city or prefecture        | m      |
| Output             | Annual output of fruit and tea             | Annual output of fruit and tea of the city or   | Ton    |
|                    |                                            | prefecture                                     |        |
| Cleanliness        | Days with proper AQI in a year             | Days with proper AQI in a year of main city     | Day    |
| Greenness          | Forest coverage                            | Proportion of forest area of a city to its total | %      |
|                    | Green coverage of built-up area            | Ratio of green coverage of main city to its     | %      |
|                    | How many health agency staffs are there?   | Number of health and birth-control personnel of | -      |
|                    |                                            | the city or prefecture                          |        |
|                    | How many literary and artistic activities  | Number of literary and artistic activity held   | -      |
| Supporting         | How many wire broadcasting and television  | Number of wire broadcasting and television user | -      |
| facility           | users are there?                           | of the city or prefecture                       |        |
|                    | How many kilometers of highway are there?  | Length of highway put into use in the city      | km     |
|                    |                                            | or prefecture                                  |        |
|                    | How many star-grade hotels are there?      | Number of star-grade hotel of the city or       | -      |

Among them, the data of annual average temperature, annual average relative humidity, annual output of fruit and tea, green coverage of built-up area, number of health agency staff, number of literary and artistic activity held, number of wire broadcasting and television user, length of highway, and number of star-grade hotel are sourced from *Statistical Yearbook of Sichuan Province of 2013–2017*; and the data of days with proper AQI in a year and forest coverage are sourced from *Statistical Bulletin on National Economy, Social Development and Environmental Quality of Each City and Prefecture of Sichuan of 2012–2016*.

### 3.3. Model and calculation

#### 3.3.1. Analysis model

The method of factor analysis is a multiple statistical approach, by which way the common influencing factor is obtained after the various indexes of the research object are withdrawn. Then, the sum of products of each index which is weighted by the variance contribution rate of the common influencing factor is combined with the variance contribution rate of the common influencing factor, so as to obtain the score function (Ni Xiangli, 2018; Shi Zizhong, 2014; Shen Mengkang, 2012). The specific analysis model is shown below:

\[
\hat{X}_i = a_{i1}F_1 + a_{i2}F_2 + a_{i3}F_3 + \cdots + a_{im}F_m + \ell_i
\]

Hereinto, \( \hat{X}_i \) contains \( p \) original variables, and \( F_j (j = 1, 2, 3\cdots m) \) indicates that there are \( m \) common influencing factors; moreover, \( p \geq m \), and \( \ell_i \) indicates another influencing factor which is not contained in the common influencing factors. \( a_{ij} \) is the loading of common influencing factor. The larger \( a_{ij} \) is, the greater influence \( F_j \) has on \( \hat{X}_i \), and they are more dependent on each other.

The model is simplified as:

\[
X = AF + \ell
\]
Hereinto, $A$ is the loading matrix of all the common influencing factors.

3.3.2. Calculation.

(1) Select the index variable, collect related data, and standardize the data.

(2) Build the correlation coefficient matrix $R$ of the original data.

\[
    r_{ij} = \frac{\sum_{a=1}^{m} (x_{ai} - \bar{x}_i)(x_{aj} - \bar{x}_j)}{\sqrt{\sum_{a=1}^{m} (x_{ai} - \bar{x}_i)^2} \cdot \sqrt{\sum_{a=1}^{m} (x_{aj} - \bar{x}_j)^2}}
\]

(3) Solve the characteristic root of $R$ and the characteristic vector of corresponding unit, and withdraw the common influencing factor. The factor with large variance contribution rate is withdrawn in principle of characteristic value larger than 1, and the accumulated contribution rate of the factor withdrawn should be larger than 70%.

(4) Build the factor loading matrix $A$, and practice the maximum orthogonal rotation for the variance.

\[
    A = \begin{bmatrix}
        a_{11} & a_{12} & \cdots & a_{1m} \\
        a_{21} & a_{22} & \cdots & a_{2m} \\
        \vdots & \vdots & \ddots & \vdots \\
        a_{p1} & a_{p2} & \cdots & a_{pm}
    \end{bmatrix} = \begin{bmatrix}
        u_{11}\sqrt{\lambda_1} & u_{12}\sqrt{\lambda_2} & \cdots & u_{1m}\sqrt{\lambda_p} \\
        u_{21}\sqrt{\lambda_1} & u_{22}\sqrt{\lambda_2} & \cdots & u_{2m}\sqrt{\lambda_p} \\
        \vdots & \vdots & \ddots & \vdots \\
        u_{p1}\sqrt{\lambda_1} & u_{p2}\sqrt{\lambda_2} & \cdots & u_{pm}\sqrt{\lambda_p}
    \end{bmatrix}
\]

(5) Calculate the score of the factors, and make comprehensive assessment based on the total score. The evaluation function of a common influencing factor is $F_j = \beta_{j1}x_1 + \beta_{j2}x_2 + \cdots + \beta_{jm}x_m$ ($j = 1, 2, \ldots, m$); and the comprehensive evaluation function is $X = \sum_{j=1}^{m} a_j F_j$.

4. Empirical study

4.1. Factor analysis

(1) Inspect all the evaluation indexes by KMO Test and Bartlett Test based on years. See the results of KMO Test and Bartlett Test of each year on Table 2. Except that the value of KMO Test of 2015 is 0.505, the values of other years are larger than 0.6, which means that factor analysis is applicable. According to the approximate chi-square and Sig of Bartlett Test of each year, factor analysis is also applicable.

| Year | KMO Test | Bartlett Test |
|------|----------|---------------|
|      |          | Approximate chi-square | Sig   |
| 2012 | 0.619    | 258.452        | 0.000 |
| 2013 | 0.669    | 251.003        | 0.000 |
| 2014 | 0.625    | 246.395        | 0.000 |
| 2015 | 0.505    | 260.126        | 0.000 |
| 2016 | 0.698    | 261.767        | 0.000 |

(2) Analyze all the evaluation indexes by means of principal component analysis, so as to achieve the explained total variances of all factors (In (2), (3), (4) and (5), the data of 2016 is taken as an
example.). For the 3 main factors with eigenvalue larger than 1, the explaining rate of variance reaches 82.259%, which means that it can represent all the information of all the evaluation indexes. See the explaining rate of variance of the 3 main factors in Table 3.

Table 3. Explained total variance.

| Factor            | Initial eigenvalue | Withdraw square and loading |
|-------------------|--------------------|------------------------------|
|                   | Total              | % of variance | Accumulated % | Total           | % of variance | Accumulated % |
| 1                 | 4.693              | 39.107        | 39.107        | 4.693           | 39.107        | 39.107        |
| 2                 | 3.607              | 30.057        | 69.163        | 3.607           | 30.057        | 69.163        |
| 3                 | 1.571              | 13.095        | 82.258        | 1.571           | 13.095        | 82.258        |

(3) Rotate the component matrix by means of orthogonal rotation with Kaiser Standardization. The rotation is converged after the fifth iteration, and thus the rotated component matrix is achieved. See Table 4.

Table 4. Rotated component matrix.

| Component                          | 1      | 2      | 3      |
|------------------------------------|--------|--------|--------|
| Temperature                        | -0.003 | 0.956  | -0.163 |
| Humidity                           | 0.046  | 0.138  | -0.903 |
| Average height                     | -0.136 | -0.803 | 0.440  |
| Days with proper AQI in a year     | -0.274 | -0.259 | 0.871  |
| Output of fruit and tea            | 0.752  | 0.189  | 0.070  |
| Forest coverage                    | -0.050 | 0.582  | 0.432  |
| Green coverage of built-up area    | 0.201  | 0.916  | -0.096 |
| Number of literary and artistic activity | 0.866 | -0.384 | -0.118 |
| Number of health and birth-control personnel | 0.965 | 0.064  | -0.202 |
| Length of highway                  | 0.426  | -0.595 | 0.228  |
| Number of star-grade hotel         | 0.937  | 0.038  | -0.079 |
| Number of wire broadcasting and television user | 0.945 | 0.050  | -0.238 |

According to Table 4, for Component 1, the supporting facilities including number of literary and artistic activity, number of health and birth-control personnel, number of star-grade hotel, and number of wire broadcasting and television user have large loading, and the total contribution rate of variance reaches 38.560%, so Component 1 may be named as Service-based Recuperation Factor; for Component 2, humidity, forest coverage and green coverage of built-up area have large loading, and the total contribution rate of variance reaches 28.647%, so Component 2 may be named as Sunshine-based Recuperation Factor; and for Component 3, average height and days with proper AQI have large loading, so Component 3 may be named as Mountain-based Recuperation Factor.

(4) The component score coefficient matrix is obtained by means of component scores and orthogonal rotation with Kaiser Standardization. See Table 5.
Table 5. Component score coefficient matrix.

| Component                          | 1       | 2       | 3       |
|------------------------------------|---------|---------|---------|
| Temperature                        | 0.003   | 0.292   | 0.034   |
| Humidity                           | -0.079  | -0.071  | -0.473  |
| Average height                     | -0.006  | -0.209  | 0.124   |
| Days with proper AQI in a year     | 0.016   | 0.022   | 0.417   |
| Output of fruit and tea            | 0.199   | 0.087   | 0.141   |
| Forest coverage                    | 0.045   | 0.245   | 0.308   |
| Green coverage of built-up area    | 0.060   | 0.292   | 0.087   |
| Number of literary and artistic activity | 0.196 | -0.122  | -0.025  |
| Number of health and birth-control personnel | 0.222 | 0.016   | -0.003  |
| Length of highway                  | 0.117   | -0.156  | 0.092   |
| Number of star-grade hotel         | 0.227   | 0.023   | -0.058  |
| Number of wire broadcasting and television user | 0.213 | 0.006   | -0.026  |

(5) The score expression of each principle component is achieved as follows according to Table 5.

\[
F_1 = 0.003X_1 - 0.079X_2 - 0.006X_3 + 0.016X_4 + 0.199X_5 + 0.045X_6 \\
+ 0.060X_7 + 0.196X_8 + 0.222X_9 + 0.117X_{10} + 0.227X_{11} + 0.213X_{12} \\
F_2 = 0.292X_1 - 0.071X_2 - 0.209X_3 + 0.022X_4 + 0.087X_5 + 0.245X_6 \\
+ 0.292X_7 - 0.122X_8 + 0.016X_9 - 0.156X_{10} + 0.023X_{11} + 0.006X_{12} \\
F_3 = 0.034X_1 - 0.473X_2 + 0.124X_3 + 0.417X_4 + 0.141X_5 + 0.308X_6 \\
+ 0.087X_7 - 0.025X_8 - 0.003X_9 + 0.092X_{10} - 0.058X_{11} - 0.026X_{12}
\]

The comprehensive evaluation function expression is:

\[
X = 0.39107F_1 + 0.30057F_2 + 0.13095F_3
\]

(6) Substitute the standardized value of evaluation index into each score expression, and thus the suitability of recuperation industry development in each city or prefecture based on the data of 2016 is obtained. Ditto, analyze the data of 2012–2015, and average the analysis result of each year. Then, the scores of each principle component and the comprehensive score based on the data of 2012–2016 are obtained, as shown in Table 6 where only top 10 and last 5 are listed.
### Table 6. Ranking of suitability of recuperation industry development in each city or prefecture of Sichuan Province.

| Ranking | Service-based recuperation City | Score | Sunshine and forest-based recuperation City | Score | Mountain-based recuperation City | Score | Comprehensive City | Score |
|---------|---------------------------------|-------|---------------------------------------------|-------|----------------------------------|-------|---------------------|-------|
| 1       | Chengdu                          | 4.0584| Panzhihua                                   | 1.2707| Liangshan                        | 2.2165| Chengdu             | 1.4774|
| 2       | Liangshan                       | 0.6436| Ya’an                                       | 0.6519| Panzhihua                        | 1.9514| Liangshan           | 0.6250|
| 3       | Nanchong                        | 0.4862| Meishan                                     | 0.5363| Guangyuan                        | 1.2409| Panzhihua           | 0.4553|
| 4       | Mianyang                        | 0.3746| Bazhong                                     | 0.4535| Garze                            | 0.6133| Mianyang            | 0.2962|
| 5       | Yibin                           | 0.0175| Leshan                                      | 0.4276| Aba                              | 0.5848| Nanchong            | 0.2136|
| 6       | Guanyuan                        | -     | Liangshan                                   | 0.3775| Ya’an                            | 0.5441| Guanyuan            | 0.1984|
| 7       | Ziyang                          | 0.0872| Luzhou                                      | 0.3493| Mianyang                        | 0.4343| Meishan             | 0.0753|
| 8       | Dazhou                          | 0.1071| Mianyang                                   | 0.3275| Bazhong                         | 0.3931| Ya’an               | 0.0686|
| 9       | Garze                           | 0.1102| Yibin                                       | 0.2917| Dazhou                           | 0.1908| Yibin               | 0.0603|
| 10      | Meishan                         | 0.1116| Guanyuan                                   | 0.2864| Yibin                           | 0.1459| Bazhong             | 0.0122|
| ……      | ……                              | ……    | ……                                          | ……    | ……                              | ……    | ……                 | ……    |
| 17      | Neijiang                        | 0.4721| Suining                                     | 0.0412| Deyang                          | 0.7778| Suining             | 0.3271|
| 18      | Suining                         | 0.5205| Dazhou                                      | 0.0499| Suining                         | 0.9125| Neijiang            | 0.3277|
| 19      | Guang’an                        | 0.5857| Chengdu                                     | 0.2410| Luzhou                          | 0.9399| Zigong              | 0.3754|
| 20      | Zigong                          | 0.6136| Aba                                         | 2.2637| Neijiang                        | 1.1872| Aba                 | 0.8649|
| 21      | Aba                             | 0.6915| Garze                                       | 3.3327| Zigong                          | 1.4577| Garze               | 0.9421|

### 4.2. Result analysis

(1) The development of recuperation industry should be supported by good natural and ecological environment; moreover, supporting services play a decisive role in the development of recuperation industry. That is to say, the development of recuperation industry not only demands the endowment from nature, but also benefits from services from people. Thus, promoting the development of recuperation industry should not place undue emphasis on quantity and speed. Both the software and hardware strength, especially the hardware strength, should be taken into consideration, which is crucial to the long-run development of recuperation industry.

(2) For Component 1 “Service-based Recuperation”, Chengdu, Liangshan Yi Autonomous Prefecture, Nanchong, Mianyang, Yibin, Guangyuan, Ziyang, Dazhou, Garze Tibetan Autonomous Prefecture, and Meishan rank top 10. Chengdu, as the capital city of Sichuan, with 3/8 of GDP of the whole province in 2018, has great economic strength and superior infrastructure. As the key industrial function zones of Chengdu including Chongzhou Recuperation Tourism Service Industry Gathering Area, Chengdu Medical City of Wenjiang, and Chengdu Health Service Industry Gathering Area have been constructed, Chengdu will further promote high-quality health care service and high-class recuperation industry. Thus, Chengdu takes the first place in Service-based Recuperation, and Liangshan Yi Autonomous Prefecture takes the second place. For Yibin, taking the 5th place, and all
other cities following, their scores are negative, which means that the supporting conditions of the cities in developing recuperation industry are still deficient.

(3) For Component 2 “Sunshine and Forest-based Recuperation”, Panzhihua, Ya’an, Meishan, Bazhong, Leshan, Liangshan Yi Autonomous Prefecture, Luzhou, Mianyang, Yibin, and Guangyuan rank top 10, among which Panzhihua takes the first place. Due to the good natural resource endowment and great economic strength, Panzhihua takes the lead in proposing the concept of Sunshine-based Recuperation, and now the sunshine-based recuperation destination emerges. Relying on the good green condition, Ya’an, Meishan, Bazhong, and Leshan are involving the recuperation industry into the key regional industries.

(4) For Component 3 “Mountain-based Recuperation”, Liangshan Yi Autonomous Prefecture, Panzhihua, Guangyuan, Aba Tibetan Autonomous Prefecture, Garze Tibetan Autonomous Prefecture, Ya’an, Mianyang, Bazhong, Dazhou, and Yibin rank top 10. The average altitudes of Liangshan Yi Autonomous Prefecture, Panzhihua and Guangyuan are 1500 meters, which is the most ideal height for recuperation industry development. Both Panzhihua and Liangshan Yi Autonomous Prefecture are located in the basin of Anning River Valley, with similar natural environment. Thus, their cooperation in developing recuperation industry will greatly promote the development of the region. Aba Tibetan Autonomous Prefecture, Garze Tibetan Autonomous Prefecture, and Ya’an have high altitude. Theoretically, the higher the altitude is, the better air quality there will be. In fact, the altitudes of Aba Tibetan Autonomous Prefecture and Garze Tibetan Autonomous Prefecture are too high to develop recuperation industry.

(5) As a whole, Chengdu, Liangshan Yi Autonomous Prefecture, Panzhihua, Mianyang, Nanchong, Guangyuan, Meishan, Ya’an, Yibin, and Bazhong rank top 10, which means that the 10 cities of Sichuan are proper to develop recuperation industry. It’s consistent with the development status of recuperation industry in Sichuan, as the region of Panzhihua and Xichang is featured by Sunshine-based Recuperation, Chengdu and Panzhihua have been selected in top 50 cities for recuperation in China, Mianyang and Guangyuan have issued relevant documents, Nanchong is promoting the construction of Jialing River Recuperation Industrial Belt, Ya’an has successfully built one of the first pilot cities for health-recuperation combination in China, and Meishan, Yibin and Bazhong have regarded recuperation as one of the keys to new industries and new businesses development. Suining, Neijiang, Zigong, Aba Tibetan Autonomous Prefecture, and Garze Tibetan Autonomous Prefecture, which are the last 5 cities, are not proper to develop recuperation industry. Thus, the regional characteristics should be considered, in order to develop a more competitive industry.

5. Suggestions and discussions

5.1. Suggestions

Sichuan enjoys exceptional natural advantages in developing recuperation industry. Nevertheless, it’s still weak in supporting facilities. The development of recuperation industry should be promoted from the aspects of policy making, infrastructure construction, talent support, and product service development.

First, top-level design should be worked out. Industrial planning should be made in the regions suitting recuperation industry development, and industrial layout should be optimized; and differentiated development strategy should be implemented. The government should enhance the political support on recuperation industry development, so as to break the barrier in system and mechanism of development as well as the dilemma in capital shortage, and to create a good institutional environment for recuperation industry development.

Secondly, infrastructure construction should be enhanced. It’s suitable to develop recuperation industry in the region with superior ecological conditions, which are always unknown places with poor infrastructure condition. Thus, the communication network including railroad, expressway and national and provincial highway should be constructed at first, in order to lay a good foundation for the development of recuperation industry. Then, the upgrading of rural power grid should be further
promoted, with the information infrastructure construction enhanced and the urban and rural communication network facilities improved. The strengthening and improvement of drinking water safety should be implemented, with the promotion of “Toilet Reform” accelerated and the overall development and upgrading of infrastructure in the suitable regions promoted.

Thirdly, the cultivation of talent of recuperation industry should be accelerated. Aiming at serving the recuperation industry, agricultural production and management personnel including practical talents and operating management talents, service application personnel including health technology talents, old-aged service professionals, social affair talents and recuperation tourism talents, and management supporting personnel including university and college faculties, R&D talents and Civil Administration Department employees should be cultivated, for the purpose of providing talent support to the development of recuperation industry.

Fourthly, the product service development should be innovated. The industrial chain of “Recuperation +” should be created. The deep integration of recuperation industry with basic industries including agriculture, tourism and health care should be optimized. Distinct projects with local characteristics, like “recuperation + industry” and “recuperation + sport”, should be developed, in order to further expand the additional value of recuperation industry. Ba-Shu Culture, Three-line Culture and Red Army Culture should be taken into consideration in the development of “recuperation + culture”. The local advantageous brands and regional public brands should be strengthened. Both tourist cooperatives and recuperation cooperatives should be developed.

5.2. Discussions
In this paper, the studies related to recuperation industry are reviewed, after which the theory of “6+1” is adopted into use for building a comprehensive index system to evaluate the suitability of development of recuperation industry. The evaluation results, highly consistent with the actual development situation of recuperation industry in Sichuan, are of great significance. However, the index selection is quite subjective. Some indexes, which may not represent the corresponding dimension, may be further optimized.

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