Quantitative Classification of Forestry Division in Ceheng County

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Abstract To determine the main functions of regional forest and focus of forestry construction to form the regional forestry economy with characteristics and ecological service system pattern with obvious advantages, we select some indicators on Ceheng County in Guizhou Province, such as natural geography, socio-economic conditions, ecological environment and forests status. Using the quantitative classification method combining factor analysis and system clustering, we conduct quantitative county level forestry division. The results show that first using factor analysis to establish factor analysis model, and then using a handful of factors loading large amounts of information to carry out system clustering, is an effective quantitative classification method of forestry division, which can not only overcome the weakness of previous division mainly focusing on qualitative analysis, but also eliminate the correlation between indicators in the conventional classification methods; through the factor analysis of 30 indicators influencing the forestry development of each township in Ceheng County, the factor analysis model is established, 6 factors loading 89.94 5% of information amount are used to conduct system clustering on 14 townships in Ceheng County, and finally Ceheng County can be divided into five zones. This study not only enriches the theory of forestry division, but also provides reference for the forestry planning in Guizhou and division of related industries.

Key words Forestry division, Factor analysis, System clustering, Ceheng County

From the perspective of sustainable development, the forestry division, is to determine the forestry development direction, functional positioning and distribution of productive forces of unit at all levels, to construct a reasonable space layout for modern forestry development, in accordance with the differences in the natural and geographical conditions and socio-economic conditions of various regions, correlation between forests and environment, basic conditions and development potential of forestry, and the needs of socio-economic conditions for forestry. In 2007, China launched national forestry division, and some scholars conducted researches on the division technology and indicator system[1-4]. These studies are mainly for the provincial or national forestry division, but there are few studies on the forestry division at county level[5]. In order to make the forestry division more in line with the regional reality, there is a need to consider the natural, social and economic factors, which include many indicators. There is correlation between these indicators. The factor analysis having the role of dimensionality reduction[6-7] and system clustering having the role of clustering are good ways to solve this problem. Factor analysis and cluster analysis have been widely applied in the market forecast and analysis of enterprise products[8-9], ecological security evaluation of land use[10], soil moisture estimation[11] and other fields. They are also applied in plant diversity[12-13], ecosystem degradation and vegetation restoration process[14-16], but little in forestry division.

In this study, we take Ceheng County in Guizhou Province as the research object, to explore the quantitative classification method for the county level forestry division. The results can provide a reference for the county level forestry division in Guizhou Province, and also provide the reference for the forestry division of similar areas, forest land protection and use planning, and the division of related industries.

1 Overview of the study area

Ceheng County (105°27′ - 106°12′ E, 24°38′ - 25°19′ N), is located in the southwest of Guizhou Province, with a total area of 259 670 hm^2. It is in the plateau slope between the Yunnan - Guizhou Plateau and Guangxi hilly areas, and the intersection of Nanpanjiang River and Beipanjiang River. The erosion landform accounts for 87.6%, and karst landform accounts for 12.4%, with important ecological location but fragile ecological environment. The average annual temperature is 19.2 ℃, the sunshine hours are 1 514.6 h, and the accumulated temperature ≥ 10 ℃ is 6 219.3 ℃. The frost-free period is 355 d, the precipitation is 1 336.9 mm, and the air relative humidity is 78% - 81%. The soil is mainly the yellow soil (70%); the main vegetation types include coniferous forest, broadleaf forest, shrubs, bushes, grass; the economic trees include tung tree, Camellia oleifera, chestnut, citrus, and walnut. 14 townships, 126 administrative villages, are under the administration of Ceheng County, with a total population of 0.219 7 million. It is a key forestry county in Guizhou, where gross domestic product (GDP) is 1 054.80 million yuan, per capita GDP is 4 803 yuan, and rural per capita net income is 2 245 yuan[17].

2 Research methods

2.1 The basic principles and the basis for division The division sticks the principles of regional differentiation, spatial con-

Received: May 12, 2013 Accepted: June 15, 2013
Supported by Guizhou Agricultural Scientific and Technological Project (2011GZ65518).
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tinuity, integrity of administrative division units, and coordination of forestry ecological construction and forestry industry construction. It is mainly based on the natural conditions of each region, socio-economic conditions, social development needs, the relevant state laws, regulations, standards and regulations, and the statutory departments´outcomes.

2.2 Division indicator system and data collection According to the natural, social and economic situation in Ceheng County, combined with the characteristics of forestry production, we select some indicators related to the tree growth that can reflect the natural conditions, such as the average altitude, maximum altitude, minimum altitude, rainfall, average temperature, sunshine hours, frost-free period, slope, slope position and soil thickness; some indicators that can reflect the ecological and environmental conditions, such as ecological locality level, ecological sensitivity level, stony desertification area, and the proportion of stony desertification; some indicators that can reflect socio-economic conditions, such as total land area, total population, population density, GDP, per capita GDP, per capita net income of farmers, the total length of highways and road density; some indicators that can reflect the quantity and quality of forest resources, forest land area, arbor forest area, stumpage, stocking volume per unit area of arbor forest, stocking volume per unit area of land and forest coverage. These indicators are collected from the forest resources planning design and survey results and the regional statistical yearbook.

2.3 Analysis methods This research first uses factor analysis (with dimensionality reduction effect, able to clearly explain more original variables)[7], to reduce many observed variables to several unrelated variables-factors, and then uses these factors that can load a large amount of information to conduct system clustering on each observed sample.

2.3.1 Factor Analysis (FA). Assuming there are n samples, and p indicators are observed on each sample:

$$X=\begin{pmatrix} X_1 = X_{11}+X_{12}+X_{13}+\cdots+X_{1P} \\ X_2 = X_{21}+X_{22}+X_{23}+\cdots+X_{2P} \\ \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \\ X_n = X_{n1}+X_{n2}+X_{n3}+\cdots+X_{nP} \end{pmatrix}$$

Assuming there is some correlation between the p indicators, R factor analysis model is established through factor analysis (dimensionality reduction):

$$\begin{aligned} X_1 &= a_{11}F_1+a_{12}F_2+a_{13}F_3+\cdots.+a_{1m}F_m+\varepsilon_1 \\ X_2 &= a_{21}F_1+a_{22}F_2+a_{23}F_3+\cdots.+a_{2m}F_m+\varepsilon_2 \\ &\vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \\ X_p &= a_{p1}F_1+a_{p2}F_2+a_{p3}F_3+\cdots+a_{pm}F_m+\varepsilon_p \end{aligned}$$

2.3.2 System Clustering Method. It is also known as hierarchical clustering analysis[18]. It is a method of cluster analysis which seeks to build a hierarchy of clusters. Hierarchical clustering is a way to investigate grouping in your data, simultaneously over a variety of scales, by creating a cluster tree. The tree is not a single set of clusters, but rather a multi-level hierarchy, where clusters at one level are joined as clusters at the next higher level. This allows you to decide what level or scale of clustering is most appropriate in your application.

3 Results and analysis

3.1 Factor analysis

3.1.1 Establishing the correlation coefficient matrix R between various indicators. We conduct statistical analysis on 14 samples (townships), and 30 indicators, such as average elevation (X_1), the highest elevation (X_2), and forest coverage (X_{30}). The correlation matrix between the indicators is shown in Table 1. Table 1 shows that there is high degree correlation between average elevation and the lowest elevation, average temperature, frost-free period, forest land area, arbor forest area; between the lowest elevation and rainfall, average temperature, precipitation, average temperature; between precipitation and average temperature, the per capita GDP. The correlation coefficients between forest land area and arbor forest area, between growing stock of forest land and growing stock of arbor forest are the largest, 1.00, 0.99, respectively.

3.1.2 R eigenvalues and cumulative contribution rate. We conduct the statistical analysis of eigenvalues and the contribution rate of variance of various components, as shown in Table 2.

It can be seen from Table 2 that the variance contribution rate of the first factor is the largest (41.276%), and the variance contribution rate is gradually reduced subsequently. The variance contribution rate of the first six factors is the biggest, and the cumulative variance contribution rate reaches 89.945%, so the first six factors can load 89.945% of the information through analysis.

3.1.3 Establishing the factor loading matrix and rotation. The first six factors are used to establish factor loading matrix. In order to make the characteristics of each factor more prominent, the maximum variance rotation is conducted, and the rotated component matrix (orthogonal factor table) is shown in Table 3. According to the rotated factor matrix, we establish the R factor analysis model for the 30 indicators.

$$X_1 = -0.705F_1+0.558F_2+0.075F_3-0.034F_4-0.105F_5+0.016F_6+\varepsilon_1$$

$$X_2 = -0.352F_1+0.794F_2-0.035F_3+0.071F_4+0.024F_5+0.199F_6+\varepsilon_2$$

$$\vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots$$

$$X_{30} = 0.181F_1-0.878F_2+0.075F_3+0.088F_4-0.179F_5-0.198F_6+\varepsilon_{30}$$

Table 3 shows that for each factor, only a few indicators have great factor loading.

The first factor has great loading in the indicators such as average temperature, per capita GDP, land area, area of land for forestry, frost-free period, the lowest elevation, forest land area, arbor forest land area, average elevation, the population density, rainfall, and unit growing stock of arbor forest (the loading is 0.919, 0.906, 0.883, 0.855, 0.841, −0.814, 0.735, 0.733, −0.705, −0.668, −0.650, −0.594, respectively). In terms of loading, average temperature is the largest (0.919), followed

by per capita GDP (0.906). These indicators mainly reflect the natural conditions and economic conditions, so it can be named as natural economic factor.

Table 1 Correlation matrix

Indicators	Average elevation	The highest elevation	The lowest elevation	Rainfall	Average temperature	Sunshine hours	Frost-free period	Slope position level
Average elevation	1.000							
The highest elevation	0.645	1.000						
The lowest elevation	0.779	0.584	1.000					
Rainfall	0.418	0.478	0.675	1.000				
Average temperature	−0.815	−0.582	−0.758	−0.630	1.000			
Sunshine hours	−0.082	−0.015	−0.269	0.072	−0.137	1.000		
Frost-free period	−0.740	−0.371	−0.698	−0.403	0.854	0.056	1.000	
Slope position level	0.282	−0.103	0.156	−0.251	−0.081	−0.199	−0.468	1.000
Gradient	0.274	0.152	−0.036	−0.237	−0.305	0.056	−0.270	0.318
Soil thickness	−0.400	−0.069	0.033	0.358	0.377	−0.081	0.479	−0.468
Total population	0.327	0.371	0.253	0.444	−0.480	0.359	−0.195	−0.155
GDP	−0.065	0.227	−0.185	0.100	0.025	0.227	0.323	−0.225
Per capita net income of farmers	−0.189	−0.068	−0.044	0.079	0.289	−0.242	0.343	0.027
The per capita GDP	−0.595	−0.426	−0.726	−0.749	0.824	−0.176	0.719	−0.076
The population density	0.588	0.479	0.406	0.355	−0.764	0.366	−0.534	0.000
The total number of kilometers	0.279	0.664	0.046	0.199	−0.288	0.420	−0.021	−0.143
Road density	0.511	0.693	0.248	0.215	−0.566	0.353	−0.343	−0.018
Land area	−0.604	−0.239	−0.567	−0.341	0.878	−0.089	0.861	−0.197
Area of land for forestry	−0.656	−0.372	−0.524	−0.334	0.898	−0.226	0.814	−0.133
Forest land area	−0.848	−0.663	−0.583	−0.374	0.870	−0.189	0.765	−0.160
Arbor forest land area	−0.847	−0.663	−0.582	−0.369	0.866	−0.190	0.764	−0.162
Growing stock of forest land	−0.204	0.010	0.059	0.268	0.293	−0.113	0.378	−0.080
Growing stock of arbor forest	−0.185	0.016	0.073	0.315	0.264	−0.123	0.382	−0.122
Unit growing stock of arbor forest	0.683	0.513	0.503	0.373	−0.747	0.194	−0.629	0.251
Growing stock per unit area of land	0.141	0.073	0.382	0.443	−0.269	−0.015	−0.207	0.136
Stony desertification area	0.461	0.437	0.176	0.124	−0.466	−0.165	−0.598	0.329
The proportion of stony desertification area	0.538	0.441	0.250	0.118	−0.549	−0.177	−0.681	0.382
Ecological locality level	−0.133	−0.310	−0.264	−0.405	−0.131	0.050	−0.342	0.254
Ecological sensitivity level	0.411	0.221	0.199	−0.050	−0.618	−0.005	−0.681	0.248
Forest coverage	−0.584	−0.699	−0.204	−0.113	0.410	−0.329	0.304	−0.114

Indicators	Gradient	Soil thickness	Total population	GDP	Per capita net income of farmers	The per capita GDP	The population density
Average elevation							
The highest elevation							
The lowest elevation							
Rainfall							
Average temperature							
Sunshine hours							
Frost-free period							
Slope position level							
Gradient	1.000						
Soil thickness	−0.772	1.000					
Total population	−0.033	−0.154	1.000				
GDP	−0.008	−0.035	0.802	1.000			
Per capita net income of farmers	−0.463	0.333	0.486	0.705	1.000		
The per capita GDP	0.098	0.044	−0.615	−0.114	−0.065	1.000	
The population density	0.261	−0.514	0.827	0.500	0.085	−0.661	1.000
The total number of kilometers	0.116	−0.179	0.697	0.734	0.284	−0.231	0.658
Road density	0.323	−0.443	0.561	0.453	−0.013	−0.336	0.802
Land area	−0.393	0.565	−0.365	0.124	0.320	0.719	−0.717
Area of land for forestry	−0.360	0.567	−0.489	−0.030	0.262	0.742	−0.831
Forest land area	−0.272	0.480	−0.522	−0.123	0.175	0.708	−0.792
Arbor forest land area	−0.267	0.477	−0.520	−0.121	0.173	0.708	−0.789
Growing stock of forest land	−0.382	0.596	−0.020	0.185	0.456	0.231	−0.252
Growing stock of arbor forest	−0.325	0.573	−0.009	0.190	0.419	0.228	−0.243
Unit growing stock of arbor forest	0.325	−0.362	0.416	0.147	−0.074	−0.477	0.688
Growing stock per unit area of land	−0.124	0.229	0.199	0.096	0.284	−0.225	0.212
Stony desertification area	0.417	−0.552	0.240	0.076	−0.140	−0.316	0.347
The proportion of stony desertification area	0.496	−0.604	0.195	−0.006	−0.217	−0.348	0.375
Ecological locality level	0.576	−0.670	−0.255	−0.352	−0.571	0.082	0.071
Ecological sensitivity level	0.601	−0.699	0.198	−0.073	−0.376	−0.390	0.494
Forest coverage	−0.074	0.262	−0.482	−0.365	−0.044	0.296	−0.550

Table 2 Total variance explained

Order number	Initial eigenvalues			Extract and load sum of squares		
	Eigenvalues	Variance//%	Accumulation//%	Eigenvalues	Variance//%	Accumulation//%
1	12.383	41.276	41.276	12.383	41.276	41.276
2	5.790	19.299	60.575	5.790	19.299	60.575
3	3.345	11.150	71.725	3.345	11.150	71.725
4	2.072	6.907	78.633	2.072	6.907	78.633
5	1.809	6.030	84.662	1.809	6.030	84.662
6	1.585	5.283	89.945	1.585	5.283	89.945
7	0.970	3.233	93.178	0.970	3.233	93.178
8	0.756	2.519	95.697	0.756	2.519	95.697
9	0.536	1.786	97.483			
10	0.307	1.023	98.507			
11	0.243	0.808	99.315			
12	0.142	0.474	99.789			
13	0.000	0.000	100.00			

Note: The data in Table 2 are derived using principal component analysis.

The second factor has great loading in the indicators such as forest coverage, the highest elevation, the total number of kilometers and road density (the loading is −0.878, 0.794, 0.750, 0.727, respectively). In terms of loading, forest coverage is the largest (−0.878). These indicators mainly reflect the local forest coverage and traffic conditions, so it is named as the forest coverage and transportation factor.

The third factor has great loading in the indicators such as gradient, soil thickness, ecological locality level, and ecological sensitivity level (the loading is 0.880, −0.787, 0.681, 0.552, respectively). In terms of loading, gradient is the largest (0.880). These indicators mainly reflect local ecological environment, so it is named as ecological environment factor. The fourth factor has great loading in the indicators such as growing stock per unit area of land, growing stock of arbor forest, and growing stock of forest land (the loading is 0.906, 0.891, 0.888, respectively). In terms of loading, growing stock per unit area of land is the largest (0.906). These indicators mainly reflect the growing stock of forest, so it is named as forest growing stock factor.

The fifth factor has great loading in the indicators such as GDP, per capita net income of farmers, and total population (the loading is 0.927, 0.810, 0.801, respectively). In terms of loading, GDP is the largest (0.927). These indicators mainly reflect the local economic conditions, so it is named as local economic factor.

Table 3 Rotated component matrix

Indicators	Factor (component)					
	F_1	F_2	F_3	F_4	F_5	F_6
Average temperature	0.919	−0.277	−0.194	−0.025	0.027	−0.146
The per capita GDP	0.906	−0.056	0.244	0.056	−0.204	−0.148
Land area	0.883	0.046	−0.403	0.144	−0.008	−0.116
Area of land for forestry	0.855	−0.169	−0.358	0.185	−0.103	−0.094
Frost-free period	0.841	−0.102	−0.167	0.047	0.216	−0.321
The lowest elevation	−0.814	0.210	−0.178	0.196	−0.134	−0.061
Forest land area	0.735	−0.570	−0.138	0.192	−0.087	−0.189
Arbor forest land area	0.733	−0.572	−0.132	0.197	−0.086	−0.187
Average elevation	−0.705	0.558	0.075	−0.034	−0.105	0.016
The population density	−0.668	0.370	0.303	−0.050	0.502	−0.044
Rainfall	−0.650	0.070	−0.384	0.384	0.059	0.189
Unit growing stock of arbor forest	−0.594	0.483	0.304	0.432	0.063	0.100
Forest coverage	0.181	−0.878	0.075	0.088	−0.179	−0.198
The highest elevation	−0.352	0.794	−0.035	0.071	0.024	0.199
The total number of kilometers	−0.057	0.750	0.082	0.126	0.536	0.117
Road density	−0.333	0.727	0.348	0.121	0.299	0.011
Gradient	−0.058	0.158	0.880	−0.070	−0.108	0.160
Soil thickness	0.207	−0.178	−0.787	0.332	−0.073	−0.125
Ecological locality level	−0.085	−0.387	0.681	−0.392	−0.239	0.251
Ecological sensitivity level	−0.498	0.035	0.552	−0.392	−0.005	0.443
Growing stock per unit area of land	−0.319	−0.039	−0.005	0.906	0.104	−0.070
Growing stock of arbor forest	0.250	0.024	−0.261	0.891	0.086	−0.165
Growing stock of forest land	0.263	0.045	−0.304	0.888	0.091	−0.166
GDP	0.120	0.268	0.029	0.086	0.927	0.018
Per capita net income of farmers	0.154	−0.070	−0.381	0.237	0.810	−0.042
Total population	−0.440	0.253	−0.043	0.013	0.801	0.048
Stony desertification area	−0.262	0.294	0.241	−0.244	0.069	0.819
The proportion of stony desertification area	−0.349	0.292	0.318	−0.222	−0.006	0.764
Sunshine hours	−0.061	0.206	0.019	−0.065	0.078	−0.163
Slope position level	−0.110	−0.019	0.184	0.066	−0.107	0.198

Note: (i) Extraction method: principal component analysis; (ii) Rotation method: Kaiser standardized orthogonal rotation method; (iii) "a" indicates that rotation converges after 10 iterations.

The sixth factor has great loading in the indicators such as stony desertification area, and the proportion of stony desertification area (the loading is 0.819, 0.764, respectively). In terms of loading, stony desertification area is the largest (0.819). These indicators mainly reflect the stony desertification conditions, so it is named as stony desertification factor.

Using the first, second and third factors (components) rotated, we conduct three-dimensional drawing of the 30 indicators. Average temperature, the per capita GDP, land area, area of land for forestry, frost-free period, forest land area, and arbor forest land area are mainly manifested in the positive direction of transverse axis; the lowest elevation, average elevation, the population density, rainfall, and unit growing stock of arbor forest are mainly manifested in the negative direction of horizontal axis; the highest elevation, the total number of kilometers, and road density are mainly manifested in the positive direction of longitudinal axis; forest coverage is mainly manifested in the positive direction of horizontal axis; gradient, ecological locality level, and ecological sensitivity are mainly manifested in the positive direction of Z axis; soil thickness is mainly manifested in the negative direction of Z axis (Fig. 1).

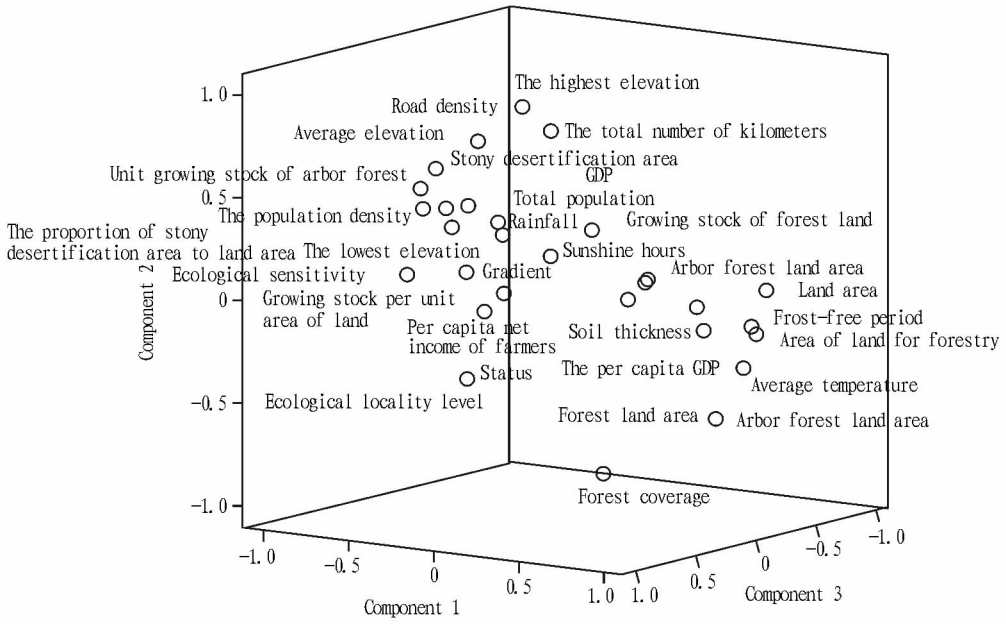

Fig. 1 The component figure in the rotating space

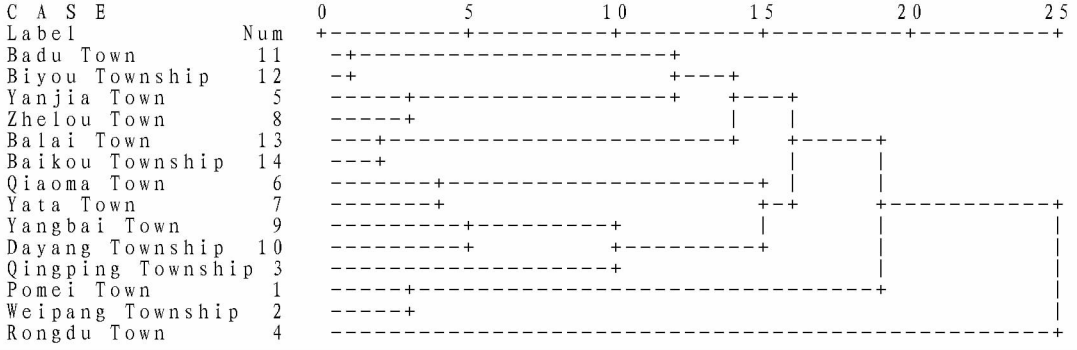

Fig. 2 Dendrogram

3.2 Clustering Based on the first six factors (load 89.945% of the amount of information), we conduct system clustering on 14 townships (towns) in Ceheng County using the shortest distance method, and the results are shown in Fig. 2.

Fig. 2 shows that 14 townships (towns) in Ceheng County are clustered into 2 – 13 classes. In order to make the same area geographically connected but not repeated, combined with the actual situation of Ceheng County, the forestry development zone of Ceheng County is divided into five areas: Rongdu Town, Pomei Town, Weipang Township and Qingping Township; Qiaoma Town and Yata Town; Yanjia Town and Zhelou Town; Yangbai Town and Dayang Township; Badu Town, Biyou Township, Balai Town and Baikou Township. Regional characteristics, forestry development direction and forestry construction focus are as follows:

(1) The northwest karst peak cluster soil and water conservation forest and fruit forest area (Rongdu Town, Pomei Town,

Weipang Township and Qingping Township). It is the area with great population density in the county, located in the northwest of the county, where the karst landforms are widespread, ecological environment is fragile and the forest coverage is low. It is the key area for ecological control. The dominant feature of forestry development in this area is keeping water and soil, and the forest industry development direction is to create water conservation forest, general timber forests and fruit forests.

(2) The western fast-growing timber forests, energy forests and fruit forests area in the north bank of Nanpanjiang River (Qiaoma Town and Yata Town). It is located in the western county, with high mountains and steep slopes. Its water and heat conditions are good, suitable for the growth of eucalyptus, Burma pine, Jatropha curcas and other trees. It is the major producing area of eucalyptus, Camellia oleifera and Jatropha curcas. The area is the area focusing on ecological control and forestry development. The dominant feature of forestry development is keeping soil and water, and providing energy industrial raw materials. The forestry development direction is to create fast-growing timber forests, energy industrial raw material forests and fruit forests.

(3) The east central general timber forests, fruit forests and environmental protection forests area (Yanjia Town and Zhelou Town). It is in the eastern part of the county, the economic and cultural center of the county, with good water and heat conditions, suitable for the growth of fir, chestnut, tung tree and other trees. It is also one of populous regions in the county. The dominant feature of forestry development is providing timber and woody raw materials and protecting the environment. The forestry development direction is to create general timber forests, soil and water conservation forests, environmental protection forests, chestnut and tung tree forests.

(4) The central fast-growing timber forests and edible raw material forests area (Yangbai Town and Dayang Township). It is located in the middle of the county, with deep soil. It is the area with great rainfall in the county. Its water and heat conditions are good, suitable for the growth of fir, chestnut, Camellia oleifera and other trees. The dominant feature of forestry development is providing timber and economic forest products. The forestry development direction is to create fast-growing timber forests, industrial raw material forests and edible raw materials.

(5) The southern and eastern Hongsuihe River valley fast-growing timber forests, energy forests and fruit forests area (Badu Town, Biyou Township, Balai Town and Baikou Township). It is the major producing area of eucalyptus, Camellia oleifera, Jatropha curcas and lychee. It has high mountains and steep slopes, which is the area focusing on ecological control and forestry development. The dominant feature of forestry development is maintaining soil and water, providing timber and energy industrial raw materials. The forestry development direction is to create water conservation forests, energy industrial raw material forests and fruit forests.

4 Discussions

Forestry is a systematic project[19], and the main body of forestry development – forest, is a complex adaptive system[20-22]. Forests not only provide the timber and forest products needed by human production and life, but also have many functions, such as water conservation, air purification and environment beautification[23]. Its growth is not only related to climate, soil, topography and other natural factors, but also subject to local economy and ecological locality. Therefore, the forestry division should be guided by system science to implement ecological systematic management of forest[24-25]. From the factor analysis, in the mountainous areas of Guizhou Province (such as Ceheng County), some indicators have great loading, such as average temperature, area of land for forestry, forest coverage, road density, gradient, soil thickness, ecological locality level, growing stock per unit area, growing stock of arbor forest, GDP, the per capita GDP, per capita net income of farmers, and stony desertification area, so we should pay attention to these indicators when conducting forestry development planning in the similar areas. The forestry development zone of Ceheng County is quantitatively divided into five areas, and Rongdu Town, Pomei Town, Weipang Township and Qingping Township are designated as an area, making up for the deficiency that in the course of provincial division, there is a need to break county boundaries but it lacks basis. Forestry is an important part of the national economy, and forestry division should be consistent with regional main function division, land use planning and economic development planning, connected to "protection of natural forests", "returning land for farming to forestry", "ecological welfare forest division" and other forestry division plans.

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