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DISSERTATION

Management of socio-economic development of the south-western provinces of China

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The dissertation contains the results of own research. The use of ideas, results and texts of other authors have references to the relevant source

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ABSTRACT

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Coordinated regional development has always been a long-term and urgent issue. President Xi Jinping, the leader of the People's Republic of China, believes that the manifestations of uneven development of China's regions remain a significant problem, which manifests itself in local inconsistencies, the dichotomy between the city and the countryside, economic and social differences, material and spiritual misunderstandings, etc. Given China's large-scale territory, large population, and uneven provision of natural resources in the regions, the historical problem of regional development imbalance remains pronounced.

The primary focus of this dissertation was to identify strategies for implementing coordinated regional development, a long-term endeavor requiring sustained commitment.: adjusting and improving the framework of regional policy based on objective economic principles, using the comparative advantages of each region, promoting the rational course and the effective concentration of various factors, as well as the continuous strengthening of initiatives to promote coordination and development within and outside the provinces.esently, China's economic and social landscape in the new era is chiefly influenced by key principles such as the "Rural Revitalization Strategy," the "One Belt, One Road" Development Strategy, and the "Regional Coordinated and Sustainable Development" National Plan. Drawing inspiration from European strategies for rural development and revitalization, significant advancements have been achieved across various economic and social facets in the ethnic regions of southwest China. However, as interregional economic and social development levels rise, a set of challenges has emerged, particularly concerning the intensification of disparities in

intraregional development. The stark urban-rural divide within the ethnic regions of southwest China has significantly impeded overall developmental progress in these provinces. Therefore, addressing the issue of unbalanced economic and social development within the regional context stands as a top priority for the ethnic regions of southwest China.

The problem is particularly complex due to the fact that the southwestern ethnic regions belong to the national poverty areas, and in combination with their special geographical environmental factors and weak economic base, as well as differences in the implementation of policies in the ethnic regions, the gap in the level of regional development between provinces, autonomous regions and municipalities is relatively large, which is mainly reflected in the differences in the development of cities and villages, as well as in the unbalanced and insufficient development of the economy, society, ecology and livelihoods of people in the areas where ethnic minorities live.

This dissertation research focuses on the study of differences in economic, social, and environmental aspects between urban and rural areas in the ethnic regions of Southwest China through theoretical and empirical analysis. Dissertation research has the following innovative aspects:

- *from the point of view of qualitative research* - combines qualitative and quantitative research on regional development through an in-depth study of the theoretical logic of unbalanced economic and social development of ethnic regions in southwest China; establishes a new theoretical research basis for understanding the imbalances of regional economic and social development, which meets the requirements of the regional strategy of coordinated development.

- *from the point of view of quantitative research* - based on Tsinghua University's unbalanced development index system and includes the results of research by scientists in the academic field; creates a more appropriate methodological basis for calculating the index of measuring the level of economic and social development in the ethnic regions of southwest China, taking into account the actual conditions of these regions.

- *in terms of evaluation methodology* - develops a new evaluation model of regional economic and social development in ethnic regions of Southwest China based on the use of spatio-temporal regression (GTWR) to facilitate horizontal and vertical comparative analysis of measurement results in provinces and cities each year.

Therefore, conducting a comprehensive examination of the existing disparities in economic and social development across different provinces, urban and rural areas within the southwestern region, and elucidating the factors influencing these inequalities in the ethnic regions of the southwest holds immense theoretical and practical significance. It contributes significantly to the formulation of a strategic policy for the holistic development of ethnic territories in the southwestern region.

The objects of the dissertation research are Chongqing Municipality, Sichuan Province, Yunnan Province, Guizhou Province, Tibet Autonomous Region and Guangxi Zhuang Autonomous Region.

The results of the study highlight representative data on the development of urban and rural areas in six provinces (autonomous regions and municipalities) in southwest China over the past 10 years, and also characterize the current state and problems of unbalanced economic and social development of ethnic areas in southwest China through a comprehensive assessment (an empirical study of the imbalance and causes of insufficient economic and social development) and proposals for ways to improve the situation.

The specific content of the study is as follows:

Chapter 1 is dedicated to establishing the conceptual framework and theoretical and methodological underpinnings of unbalanced development. Initially, this chapter delves into the theoretical roots of the concept of unbalanced development in the ethnic regions of southwest China, elucidating its defining characteristics. Subsequently, it explores the theoretical interconnections between the concepts of unbalanced development, polycentric governance, and sustainable development within the context of the ethnic regions of southwest China. Finally, the methodological basis of the dissertation research is introduced - the model of

uneven regional development, which consists in the analysis and comparison of the measurement model and the model for assessing the imbalance of regional development and the construction of a system for measuring unbalanced development in ethnic areas in southwest China. Based on the results of measuring unbalanced development using the spatio-temporal and geographic weighted regression (GTWR) method, an analysis of economic, social, and environmental factors affecting the balanced development of ethnic regions in southwest China was conducted. As a result, a comprehensive system for assessing the level of development of urban and rural areas of southwestern ethnic groups based on the entropy weight method was built.

Chapter 2 builds upon the literature review and theoretical groundwork established in Chapter 1, undertaking an empirical analysis of the disparities in economic and social development within ethnic minority regions in southwest China. This forms the basis for a decade-long empirical investigation into the development trajectories of provinces, despite its inherent challenges and imperfections.

Consequently, this chapter examines the characteristics of unbalanced economic and social development in the ethnic regions of southwestern China. To gauge the general development trends and structural attributes of development across urban and rural areas, the Balanced Development Index from Tsinghua University is employed. Furthermore, the study investigates the factors influencing the imbalances in economic and social development within the ethnic regions of southwest China, conducting an analysis of the heterogeneity of four key factors: economy, society, ecology, and livelihoods, in relation to the development disparities in these regions.

Chapter 3 of the dissertation study was devoted to the search for ways of development and methods of implementing the strategy of achieving balanced economic and social development in the ethnic regions of Southwest China. This chapter first explains the polycentric approach to solving the problem of unbalanced development in the ethnic regions of Southwest China, focusing on

three key aspects: the principles of joint governance, the functions of collective governance, and synergistic ways. As a result, specific measures and recommendations were proposed to promote balanced economic and social development in the ethnic regions of southwest China, taking into account sustainability in four dimensions: economic, social, environmental and livelihood. Finally, based on the assessment of economic imbalances and deficiencies in the ethnic regions of Southwest China, as well as on the basis of the results of measurement and evaluation, an analysis of three-level indicators of balanced development within economic, social, and environmental aspects was conducted, on the basis of which strategies are built to achieve a spatially balanced economic and social development in the ethnic regions of Southwest China, provide theoretical ideas for the study of scientifically coordinated and sustainable development in the social and economic spheres of the ethnic regions of Southwest China, and offer empirical examples for conducting regional research.

From the point of view of the time dimension, the value of the balanced rural development index of the southwestern provinces of China has a fluctuating upward trend in 2010 - 2020. This shows that with the deepening of the strategy of adaptation of the industrial structure, urban areas will gradually adjust their direction of development, move towards the optimization of production capacities to ensure a sustainable ecological civilization and improve people's well-being, which will also increase the level of balanced development. At the same time, thanks to the promotion of the strategy of rural revitalization and comprehensive poverty alleviation, rural areas are gradually solving the shortcomings of agricultural development and gradually moving towards a balanced development model of rural ecological culture civilization.

Regionally, the urban balanced development index is higher for Guangxi Zhuang Autonomous Region, Sichuan Province and Chongqing Municipality of Sichuan Province and lower for Guizhou Province, Yunnan Province and Tibet Autonomous Region, while the rural balanced development index is higher for Guangxi Zhuang Autonomous Region, Sichuan Province and Yunnan Province,

and below for Chongqing Municipality of Sichuan Province, Guizhou Province and Tibet Autonomous Region. In terms of the differences between urban and rural areas, Chongqing and Yunnan in Sichuan Province are the most profound, mainly because Chongqing in Sichuan Province is a traditional industrial city, while Yunnan Province is based on a tourism economy and a significant share of agriculture. These two regions have different development priorities, so there will be a big difference between urban and rural areas.

Therefore, the study of regional disparities in economic and social development has become an urgent issue in the field of economy and society. This study particularly focuses on the issue of socio-economic inequality between urban and rural areas in different provinces of ethnic regions in Southwest China. In particular, it innovates in the field of inequality of economic development. During the dissertation research, the theoretical assets of Chinese scientists regarding disparities in the economic and social development of the southwestern region were collected and analyzed. The results show that existing studies of regional economic and social problems are focused mainly on the economic and social development of individual provinces.

Although Chinese experts and scholars have conducted research on economic and social inequality in most provinces, there is still a lack of research on interprovincial disparities, especially disparities in economic and social development among different provinces in the western region. Thus, this study aims to attract the attention of experts and scholars in related fields and promote further in-depth research in this field.

Keywords: sustainable development, management, rural areas, ethnic regions, southwest China, unbalanced development, provinces, public administration efficiency, innovation, digitalization, clusterization, government support, public management, COVID-19

List of publications:

a. ***Publications that reflect the main scientific results of the dissertation*:**

Articles published in journals indexed in Scopus:

1. Li Zongkeng, Li Zhuoran, Andrii Mykhailov, Wei Shi, Yang Zhuquan, Xia Surong (2021). Evaluation and Analysis of Socio-Economic Development Level and Management in Guangxi province of China. Vol. 39 No. 5: Special Issue: Innovation in the Economy and Society of the Digital Age https://doi.org/10.25115/eea.v39i5.5089

2. Haiyan Yin, Zhiping Huo, Nataliia Klietsova, Zongkeng Li, Yongsheng Zhang (2021). Innovations in Human Resource Management: Willingness and Ability of Long-Term Care Insurance. Marketing and Management of Innovations (MMI), Issue2, p.261-277. http://doi.org/10.21272/mmi.2021.2-22

3. Kuang Yushu, Li Zongkeng, Pan Changliang (2022). The Construction of Conceptual Framework of Enterprise Internal Control Evaluation Report. Journal of Sensors, vol. 2022, Article ID 2753001. https://doi.org/10.1155/2022/2753001.

Articles in journals assigned category "B":

4. Li Z., Li Z., Sokhan I., Zhuquan Y. (2023) “Study on the Features of Balanced Economic and Social Development in Ethnic Regions of Southwest China under the Perspective of Common Prosperity.” Business Inform 4:21–26. https://doi.org/10.32983/2222-4459-2023-4-21-26

5. Сохань, І., & Li, Z. (2023). Контрзаходи подолання соціально-економічної нерівності в районах етнічних меншин південно-західного Китаю. *Економіка та суспільство*, (52). https://doi.org/10.32782/2524-0072/2023-52-94

6. Сохань, І., & Zongkeng, L. (2023). Концепція надання державних послуг у провінціях південно-західного Китаю. *Економічний простір*, (185), 132-135. https://doi.org/10.32782/2224-6282/185-23

***Publications that certify the approbation of the dissertation materials*:**

Number of published conference papers:

7. Li Zongkeng, Li Zhuoran (2020). Domestic waste management in Chinese rural areas. Сучасний менеджмент: тенденції, проблеми та перспективи розвитку: V Міжнародна науково-практична конференція молодих вчених і студентів: тези доповідей, (Дніпро, 23 квітня 2020 р.). [Електронний ресурс]. – Дніпро: Університет імені Альфреда Нобеля, 2020. – р.149-150. ISBN 978-966-434-485-9.
https://ir.duan.edu.ua/bitstream/123456789/3019/3/Макет_Тези%20менеджмент_ГОТОВО_.pdf

8. Li Zongkeng, Li Zhuoran, Xia Surong (2020). Research on the current situation and countermeasures of rural tourism development in China. *International scientific journal "PROGRESS" 2020, №3-4,* ISSN: 1512-0422 https://dspace.nplg.gov.ge/bitstream/1234/326102/1/Progresi_2020_N3-4.pdf

9. Li Zongkeng, Li Zhuoran (2022). Multi-domain Collaborative Path Study of Public Service Supply in the Ethnic Minority Areas of Southwest China, Матеріали Всеукраїнської наукової конференції студентів і аспірантів, присвяченої Міжнародному дню студента – (14-18 листопада 2022 р.). – Суми, 245 с.

10. Li Zongkeng (2023). The economic and social development in the southwest ethnic minority areas in China. Матеріали науково-практичної конференції викладачів, аспірантів та студентів Сумського НАУ (25-28 квітня 2023 р.), Суми, 420 с.

Publications which additionally reflect the scientific results of the dissertation.

11.Pan Changliang, Li Jinfang, Li Zongekeng, Zhuo Qingfeng, Video application analysis platform software V1.0 for all-area intelligent rural governance（Computer Software Copyright: 2022.04.30 #11086048）

АНОТАЦІЯ

Лі Цзонкен (2023). Управління соціально-економічним розвитком південно-західних провінцій Китаю. *Дисертація на здобуття наукового ступеня доктора філософії за спеціальністю 073 Менеджмент*, Суми (Сумський національний аграрний університет), 260 с.

Злагоджений регіональний розвиток завжди був тривалим і актуальним питанням. Президент Сі Цзіньпін, лідер Китайської Народної Республіки, вважає, що прояви нерівномірного розвитку регіонів Китаю залишаються істотною проблемою, яка проявляється в місцевих невідповідностях, дихотомії між містом і селом, економічно-соціальними розбіжностями, матеріально-духовними непорозуміннями тощо. Враховуючи масштабну територію Китаю, велику кількість населення та нерівномірну забезпеченість регіонів природними ресурсами, історична проблема дисбалансу регіонального розвитку залишається яскраво вираженою.

Основним завданням дисертаційної роботи було пошук шляхів здійснення узгодженого регіонального розвитку – це не швидкоплинне досягнення, а довготривала справа, яка вимагає наполегливих зусиль: коригування та вдосконалення рамок регіональної політики на основі об'єктивних економічних принципів, використання порівняльних переваг кожного регіону, сприяння раціональному перебігу та ефективній концентрації різноманітних факторів, а також постійне посилення ініціатив щодо сприяння координації та розвитку всередині та за межами провінцій.

Наразі «Стратегія відродження сільської місцевості», Стратегія розвитку «Один пояс, один шлях» і Національний план «Регіональний скоординований і сталий розвиток» стали ключовими принципами, які формують економічний і соціальний ландшафт Китаю в новітній ері. Під впливом європейських стратегій розвитку та відродження сільської місцевості було досягнуто значного прогресу в різних економічних і соціальних аспектах етнічних

регіонів на південному заході Китаю. Проте із збільшенням рівня міжрегіонального економічного та соціального розвитку виникла низка проблем, насамперед щодо загострення диспропорцій у внутрішньорегіональному розвитку. Разючий розрив між міськими та сільськими районами в етнічних регіонах південно-західного Китаю суттєво перешкоджав загальному покращенню якості розвитку в цих провінціях. Тому вирішення проблеми незбалансованого економічного та соціального розвитку в регіональному контексті є пріоритетом для етнічних регіонів південно-західного Китаю.

Проблема є особливо складною через те, що південно-західні етнічні регіони належать до національних територій бідності, а у поєднанні з їхніми особливими географічними факторами середовища та слабкою економічною основою, а також відмінностями у здійсненні політики в етнічних регіонах, - розрив у рівні регіонального розвитку між провінціями, автономними регіонами і муніципалітетів є відносно великим, що в основному відображається у відмінностях у розвитку міст і сіл, а також у незбалансованому та недостатньому розвитку економіки, суспільства, екології та засобів існування людей у районах проживання етнічних меншин.

Дане дисертаційне дослідження зосереджене на вивченні відмінностей в економічному, соціальному, екологічному аспектах між міськими та сільськими районами в етнічних регіонах Південно-Західного Китаю шляхом теоретичного та емпіричного аналізу. Дисертаційне дослідження має такі інноваційні аспекти:

- з точки зору якісного дослідження - поєднує в собі якісне та кількісне дослідження регіонального розвитку шляхом глибокого вивчення теоретичної логіки незбалансованого економічного та соціального розвитку етнічних регіонів на південному заході Китаю; встановлює нову теоретичну дослідницьку основу для розуміння дисбалансів регіонального економічного та соціального розвитку, яка відповідає вимогам регіональної стратегії скоординованого розвитку.

- з точки зору кількісних досліджень - базується на системі індексу незбалансованого розвитку Університету Цінхуа та включає результати досліджень науковців у академічній сфері; створює більш відповідну методологічну основу розрахунку індексу вимірювання рівня економічного та соціального розвитку в етнічних регіонах південно-західного Китаю, беручи до уваги фактичні умови цих регіонів.

- з точки зору методології оцінки - розробляє нову модель оцінки регіонального економічного та соціального розвитку в етнічних регіонах Південно-Західного Китаю на основі використання просторово-часової регресії (GTWR) для полегшення горизонтального та вертикального порівняльного аналізу результатів вимірювань у провінціях і містах кожного року.

Отже, комплексний аналіз поточної нерівності рівнів економічного та соціального розвитку в різних провінціях, міських і сільських районах південно-західного регіону, а також з'ясування факторів, що впливають на нерівність рівнів економічного та соціального розвитку в південно-західних етнічних регіонах, має дуже важливе теоретичне та практичне значення для формування стратегічної політики комплексного розвитку південно-західних етнічних територій.

Об'єктами дисертаційного дослідження є муніципалітет Чунцин, провінції Сичуань, провінція Юньнань, провінція Гуйчжоу, Тибетський Тибетський автономний район і Гуансі-Чжуанський автономний район.

Результати дослідження висвітлюють репрезентативні дані розвитку міських і сільських територій у шести провінціях (автономних районах і муніципалітетах) на південному заході Китаю за останні 10 років, а також характеризують поточний стан та проблеми незбалансованого економічного і соціального розвитку етнічних територій південно-західного Китаю шляхом комплексної оцінки (емпіричне дослідження дисбалансу та причин недостатнього економічного та соціального розвитку) та пропозиції шляхів покращання ситуації.

Конкретний зміст дослідження полягає в наступному:

Розділ 1 присвячений концептуальному визначенню теоретико-методологічних основ незбалансованого розвитку. По-перше, у цьому розділі простежується теоретичне походження конотації незбалансованого розвитку в етнічних районах на південному заході Китаю та визначаються характеристики незбалансованого розвитку. По-друге, аналізується теоретичний зв'язок між теорією незбалансованого розвитку, теорією поліцентричного управління та теорією сталого розвитку в етнічних регіонах південно-західного Китаю. Насамкінець вводиться методологічна основа дисертаційного дослідження - модель нерівномірного регіонального розвитку, що полягає в аналізі та порівнянні моделі вимірювання та моделі оцінки дисбалансу регіонального розвитку та побудови системи вимірювання незбалансованого розвитку в етнічних районах на південному заході Китаю. На основі результатів вимірювання незбалансованого розвитку методом просторово-часової та географічної зваженої регресії (GTWR) було проведено аналіз економічних, соціальних, екологічних факторів, що впливають на збалансований розвиток етнічних регіонів на південному заході Китаю. Як результат – було побудовано комплексну систему оцінки рівня розвитку міської та сільської місцевості південно-західних етнічних груп на основі методу ентропійної ваги.

У Розділі 2 на основі огляду літератури та теоретичних фундаментальних досліджень у першому розділі, проведено емпіричний аналіз незбалансованого економічного та соціального розвитку районів етнічних меншин у південно-західному Китаї та створено основу для емпіричного дослідження за десять років шляхів розвитку провінцій з усіма проблемами та недосконалостями.

Так, було вивчено характеристики незбалансованого економічного та соціального розвитку в етнічних районах південно-західного Китаю. Для вимірювання загальних характеристик тенденції розвитку та характерної структури розвитку в різних сферах міських і сільських територій було

використано Індекс збалансованого розвитку Університету Цінхуа. Окрім того, було проведено дослідження факторів, що впливають на дисбаланс економічного та соціального розвитку в етнічних районах південно-західного Китаю, та аналіз неоднорідності чотирьох факторів - економіки, суспільства, екології та засобів до існування людей на дисбаланс розвитку в етнічних районах південно-західного Китаю.

Розділ 3 дисертаційного дослідження був присвячений пошуку шляхів розвитку та методів втілення стратегії досягнення збалансованого економічного та соціального розвитку в етнічних регіонах Південно-Західного Китаю. У цьому розділі спочатку пояснюється поліцентричний підхід до вирішення проблеми незбалансованого розвитку в етнічних регіонах Південно-Західного Китаю, зосереджуючись на трьох ключових аспектах: принципах спільного управління, функції колективного управління та синергічні шляхи. Як наслідок, було запропоновано конкретні заходи та рекомендації щодо сприяння збалансованому економічному та соціальному розвитку в етнічних регіонах південно-західного Китаю, беручи до уваги стійкість у чотирьох вимірах: економічному, соціальному, екологічному та джерелах існування. Нарешті, на основі оцінки економічних дисбалансів і недоліків в етнічних регіонах Південно-Західного Китаю, а також на основі результатів вимірювання та оцінки було проведено аналіз трирівневих індикаторів збалансованого розвитку в межах економічного, соціального, екологічного аспектів, на основі якого будуються стратегії для досягнення просторово збалансованого економічного та соціального розвитку в етнічних регіонах Південно-Західного Китаю, надаються теоретичні ідеї для дослідження науково скоординованого та сталого розвитку в соціальних та економічних сферах етнічних регіонів Південно-Західного Китаю та пропонуються емпіричні приклади для проведення регіональних досліджень.

З погляду часового виміру, значення індексу збалансованого розвитку сільської місцевості південно-західних провінцій Китаю має коливальну тенденцію до зростання в 2010 - 2020 роках. Це свідчить, що з поглибленням

стратегії адаптації промислової структури міські території поступово коригуватимуть свій напрямок розвитку, переходитимуть у бік оптимізації виробничих потужностей для забезпечення стійкої екологічної цивілізації та покращення добробуту людей, що також підвищить рівень збалансованого розвитку. У той же час, завдяки просуванню стратегії відродження сільської місцевості та комплексного подолання бідності, сільські території поступово вирішують недоліки розвитку сільського господарства та поступово рухаються до до збалансованої моделі розвитку цивілізації сільської екологічної культури.

У регіональному розрізі індекс збалансованого розвитку міст вищий для Гуансі-Чжуанського автономного району, провінції Сичуань і муніципалітету Чунцін провінції Сичуань і нижчий для провінції Гуйчжоу, провінції Юньнань і Тибетського автономного району, тоді як індекс збалансованого розвитку сільської місцевості вищий для Гуансі-Чжуанського автономного району, провінції Сичуань і провінції Юньнань, і нижче для муніципалітету Чунцин провінції Сичуань, провінції Гуйчжоу і Тибетського автономного району. З точки зору відмінностей між міськими та сільськими районами, найбільш глибокими є Чунцин і Юньнань у провінції Сичуань, головним чином тому, що Чунцін у провінції Сичуань є традиційним промисловим містом, тоді як провінція Юньнань базується на туристичній економіці та істотній частці сільського господарства. Ці два регіони мають різні пріоритети розвитку, тому буде велика різниця в міських і сільських районах.

Отже, дослідження регіональних диспропорцій в економічному та соціальному розвитку стало актуальним питанням у сфері економіки та суспільства. Це дослідження особливо зосереджено на питанні соціально-економічної нерівності між міськими та сільськими районами в різних провінціях етнічних регіонів Південно-Західного Китаю. Зокрема, це вносить інновації у сферу нерівності економічного розвитку. Під час виконання дисертаційного дослідження було зібрано та проаналізовано теоретичні надбання китайських науковців стосовно диспропорцій

економічного та соціального розвитку південно-західного регіону. Результати показують, що існуючі дослідження регіональних економічних і соціальних проблем зосереджені головним чином на економічному і соціальному розвитку окремих провінцій.

Незважаючи на те, що китайські експерти та вчені проводили дослідження економічної та соціальної нерівності в більшості провінцій, все ще бракує досліджень міжпровінційних розбіжностей, особливо розбіжностей в економічному та соціальному розвитку між різними провінціями західного регіону. Таким чином, це дослідження має на меті привернути увагу експертів і науковців у суміжних галузях і сприяти подальшим поглибленим дослідженням у цій галузі.

Ключові слова: сталий розвиток, управління, сільські території, етнічні регіони, південно-західний Китай, незбалансований розвиток, провінції, ефективність публічного адміністрування, інновації, діджиталізація, кластеризація, державна підтримка, публічне управління, COVID-19

Перелік публікацій:

***А) Публікації, що відображають основні результати дослідження*:**

Статті в журналах, що індексуються в Scopus:

1. Li Zongkeng, Li Zhuoran, Andrii Mykhailov, Wei Shi, Yang Zhuquan, Xia Surong (2021). Evaluation and Analysis of Socio-Economic Development Level and Management in Guangxi province of China. Vol. 39 No. 5: Special Issue: Innovation in the Economy and Society of the Digital Age https://doi.org/10.25115/eea.v39i5.5089

2. Haiyan Yin, Zhiping Huo, Nataliia Klietsova, Zongkeng Li, Yongsheng Zhang, (2021). Innovations in Human Resource Management: Willingness and Ability of Long-Term Care Insurance. Marketing and Management of Innovations (MMI), Issue2, p.261-277. http://doi.org/10.21272/mmi.2021.2-22

3. Kuang Yushu, Li Zongkeng, Pan Changliang (2022). The Construction of Conceptual Framework of Enterprise Internal Control Evaluation Report. Journal of Sensors, vol. 2022, Article ID 2753001. https://doi.org/10.1155/2022/2753001.

Статті у фахових виданнях категорії "В":

4. Li Z., Li Z., Sokhan I., Zhuquan Y. (2023) “Study on the Features of Balanced Economic and Social Development in Ethnic Regions of Southwest China under the Perspective of Common Prosperity.” Business Inform 4:21–26. https://doi.org/10.32983/2222-4459-2023-4-21-26

5. Сохань, І., & Li, Z. (2023). Контрзаходи подолання соціально-економічної нерівності в районах етнічних меншин південно-західного Китаю. *Економіка та суспільство*, (52). https://doi.org/10.32782/2524-0072/2023-52-94

6. Сохань, І., & Zongkeng, L. (2023). Концепція надання державних послуг у провінціях південно-західного Китаю. *Економічний простір*, (185), 132-135. https://doi.org/10.32782/2224-6282/185-23

***В) Публікації, що відображають апробацію матеріалів дослідження*:**

Тези конференцій:

7. Li Zongkeng, Li Zhuoran (2020). Domestic waste management in Chinese rural areas. Сучасний менеджмент: тенденції, проблеми та перспективи розвитку: V Міжнародна науково-практична конференція молодих вчених і студентів: тези доповідей, (Дніпро, 23 квітня 2020 р.). [Електронний ресурс]. – Дніпро: Університет імені Альфреда Нобеля, 2020. – р.149-150. ISBN 978-966-434-485-9.
https://ir.duan.edu.ua/bitstream/123456789/3019/3/Макет_Тези%20менеджмент_ГОТОВО_.pdf

8. Li Zongkeng, Li Zhuoran, Xia Surong (2020). Research on the current situation and countermeasures of rural tourism development in China. *International scientific journal “PROGRESS” 2020, №3-4,* ISSN: 1512-0422 https://dspace.nplg.gov.ge/bitstream/1234/326102/1/Progresi_2020_N3-4.pdf

9. Li Zongkeng, Li Zhuoran (2022). Multi-domain Collaborative Path Study

of Public Service Supply in the Ethnic Minority Areas of Southwest China, Матеріали Всеукраїнської наукової конференції студентів і аспірантів, присвяченої Міжнародному дню студента – (14-18 листопада 2022 р.). – Суми, 245 с.

10. Li Zongkeng (2023). The economic and social development in the southwest ethnic minority areas in China. Матеріали науково-практичної конференції викладачів, аспірантів та студентів Сумського НАУ (25-28 квітня 2023 р.), Суми, 420 с.

С) Додаткові висвітлення результатів досліджень:

11. Pan Changliang, Li Jinfang, Li Zongekeng, Zhuo Qingfeng, Video application analysis platform software V1.0 for all-area intelligent rural governance（Computer Software Copyright: 2022.04.30 #11086048）

CONTENTS

INTRODUCTION

Relevance of the topic. Disparities in regional development are a common challenge facing nations around the world. In China, the problem of unbalanced and uncoordinated economic development among different regions is particularly evident. In the current era, comprehensively promoting a regionally coordinated development strategy plays a crucial role in achieving high-quality economic growth and ensuring social stability. In his speech at the 20th National People's Congress of the Communist Party of China, President Xi Jinping stressed the importance of implementing a coordinated regional development strategy, a major regional strategy, a major functional area strategy and a new urbanization strategy. These efforts are aimed at optimizing the distribution of productive forces and building a regional economic and territorial space system with complementary advantages and high-quality development. This strategic framework not only prioritizes economic progress and efficiency improvement, but also emphasizes the principles of collective prosperity and social justice, which has profound implications.

Achieving harmonious regional development is an imperative for the comprehensive building of a modern socialist nation and a fundamental aspect of realizing common prosperity for all. The report of the 20th National People's Congress of the Communist Party of China lays out a clear strategic blueprint for advancing coordinated regional development on a new track, emphasizing the in-depth implementation of a coordinated regional development strategy and the establishment of a regional economic framework characterized by complementary advantages and high-quality growth. President Xi Jinping stressed the ubiquity of imbalances and the need to promote relative balance in development, which is the dialectic of coordinated regional development.

Implementing the strategy of coordinated regional development can enhance regional synergy, open up new avenues for regional progress, facilitate the

formation of a balanced structure and promote the construction of a modernized economic system. It also helps achieve the strategic goal of regional coordinated development, which includes the equitable provision of basic public services, comparably distributed infrastructure accessibility, and a generally equitable level of social welfare. In advancing the cause of coordinated regional development, it is imperative to adopt a dialectical mindset, adhere to the implementation of major regional strategies, regional coordinated development strategies, and key functional area strategies, while strengthening coordination among these strategic initiatives.

The literature review. In recent years, the examination of regional disparities in economic and social development has garnered significant interest within the realms of social and economic research. This literature review specifically centers on the topic of unbalanced economic and social development in the ethnic regions of Southwest China.

1. Literature review on the theory of regional unbalanced development: The research shows that domestic scholars mainly approach the traditional theory of unbalanced development from a philosophical standpoint rooted in historical materialism, as advocated by influential philosophers such as Marx and Engels. Notable discussions have been conducted by domestic scholars, including Wang Peng (2020) and the subject group of the Political Research Office of the Jiang Provincial Committee (2016), who have explored the connotation of Marx's concept of unbalanced development from the perspectives of philosophy, economics, and geographical factors. In contrast, both domestic and international scholars have mainly explored the modern theory of unbalanced development through the lens of dialectical materialist political economy. Key proponents in this area include political economist Henri Lefebvre (1991) and his theory of spatial production, Noel Castree (2006), Noel Wallerstein (1998), Gills, Frank (2014), Frank (2018), and David Harvey's (1982) three stages of capital circulation theory.

2. Empirical and methodological studies of regional development disparities: These studies cover three main aspects: measuring the degree of balanced regional

development, comprehensively evaluating the level of regional development, and identifying the factors influencing regional development imbalances.

(1) Regarding the measurement of the degree of balanced regional development, scholars at home and abroad have shifted from single indicators to comprehensive indicators. Recognizing the limitations of relying solely on single indicators, scholars have increasingly adopted a comprehensive indicator system to examine the issue of unbalanced regional development. Initially, in measuring the degree of balanced regional development, scholars mainly relied on single indicators to evaluate regional development levels, as exemplified by the works of foreign scholars such as Golley (2012) and Chinese scholars Lin Yifu, Cai Fang, and Li Zhou (2001). In comprehensive assessment studies of regional development levels, domestic and international empirical research has mainly used a combination of qualitative and quantitative analysis. Internationally, representative studies that go beyond GDP measures of development include the Human Development Index (UNDP, 2017) compiled by the United Nations Development Program, the Good Life Index (OECD, 2017) compiled by the OECD, and the Social Progress Index (Porter et al., 2017) compiled by the Association for Social Progress. Gender-related development indices, such as the Gender Inequality Index (UNDP, 2017) and the Global Gender Gap Report (World Economic Forum, 2017), and Chinese indices, such as the China Livelihood Index compiled by the Development Research Center of the State Council (2015), the Well-off Index compiled by the National Bureau of Statistics of China (Paneven and Yang Jinying, 2011), and the China People's Livelihood Development Index compiled by the Beijing Normal University's China People's Livelihood Development Report (2011), serve as notable examples of indices that capture unbalanced development within specific domains. In addition, the research conducted by Fan Bernai et al. examines the measurement of China's coordinated economic and social development, moving from qualitative research methods rooted in the historical materialist view to quantitative research methods, and ultimately integrating qualitative and quantitative approaches.

(2) In the comprehensive evaluation of the level of regional development, scholars at home and abroad have focused on the comprehensive evaluation aspect, using empirical methods that combine qualitative and quantitative analysis, such as entropy weighted fuzzy comprehensive evaluation. Notable researchers in this area include Yu Tao (2020), Chen Chi-Bo et al. (2021), Du Yang et al. (2016), Zhang Li and Yao Yuchen (2013). In addition, scholars have mainly used cluster analysis, factor analysis and regression analysis to investigate the influencing factors of regional development imbalances. Major contributions in this area include Li Jianbao et al. (2011), Wei Houkai (2008), Zhu Yong and Zhang Zongyi (2005), Zhu Chengliang (2010), Li Yongning (2016), Su Yongwei (2018), and Robinson DP (2013).

3. Research on the path and countermeasures of regional development imbalance reveals two main focuses of domestic and foreign scholars: polycentric governance and sustainable development. In exploring the trajectory of polycentric governance for regional development imbalance, scholars focus on theoretical connotations, research areas, and representative case studies. In terms of sustainable countermeasures for regional development imbalance, scholars propose approaches from three perspectives: research areas, practical implications, and problem solving related to the concept of sustainable development.

(1) The research on the governance trajectory of regional development imbalance is exemplified by the works of Gao Angang (2020), Lee (2007), Phelps (2010), Meijers (2008), Kauffmann (2016), Bertaud (2004), Burgalassi (2010), Kloosterman (2001), Li (2018), Stefan et al. (2013), Munter and Volgmann (2014), Zhang, Zhipeng (2021), Eleanor Ostrom (2000), and Li, Yanfei (2020).

(2) Countermeasure research on sustainable development with regional balance is represented by Fei-Fei Tang (2015), Hui Tian (2007), Wen Sun (2018), Shu Dian (2018), Ju Jiao-Fei (2019), the United Nations Environment Programme (2012), the Centre for International Studies at the London School of Economics and Political Science (LSE Cities), and the Organization for Economic Cooperation and Development OECD (2013).

In summary, building on the existing research, this study both inherits and extends the literature on the unbalanced economic and social development of ethnic regions in Southwest China, which defines the research focus of this dissertation.

Connection of work with scientific programs, plans, topics. The dissertation was carried out in accordance with the directions of research work of the Department of Management named by prof. Mykhailova of the Sumy National Agrarian University: "Development of management in the context of international integration processes" 2019-2023 (state registration number 0119U001336), within by the author was carried out the topic of Management of Overcoming Socioeconomic Inequality in Ethnic Minority Areas of Southwest China . and there are two relevant research projects was declared during his PhD. The Project of Scientific Research Basic Ability Improvement for Young and Middle-aged Teachers in Guangxi Universities (022KY0682) and Guangxi Education Science "14th Five-Year Plan" Special Project on Innovation and Entrepreneurship Education in Universities (2022ZJY2695).

The purpose of the work. Based on the policy requirements and objectives of China's rural revitalization strategy and the "One Belt, One Road" development strategy, this research undertakes an evaluation of the current economic and social development status within the ethnic regions of southwest China. It assesses the disparities in economic and social development within these regions across two strata: urban and rural, and evaluates these disparities through the lens of four key dimensions: economic, social, ecological, and livelihood. The study is driven by the pursuit of five primary objectives:

1. To elucidate the previous literature and relevant theories on the economic and social development imbalance in the ethnic regions of Southwest China. This will lay the theoretical foundation for empirical analysis and countermeasure research in this study.

2. To use Tsinghua University's balanced development index system to examine the current development status and unbalanced characteristics of the

economy, society, ecology, and people's livelihood in the ethnic regions of Southwest China. This analysis not only provides evidence for development policy research in these regions, but also serves as a reference for measuring the unbalanced characteristics of economic and social development in the region.

3. To use geographical and temporal weighted regression (GTWR) to investigate the factors influencing the unbalanced economic and social development in the ethnic regions of Southwest China. This will enhance the understanding of regional economic and social development imbalance in China and provide empirical cases specific to the ethnic regions in the southwest.

4. To apply the fuzzy comprehensive evaluation method, combining qualitative and quantitative research approaches, to statistically analyze the level and quality of economic and social development in the ethnic regions of southwest China. This analysis will provide a comprehensive evaluation of economic and social development while exploring the causes of urban-rural development disparities in these regions. By exploring the reasons for spatial and temporal heterogeneity, a deeper understanding of urban-rural development disparities can be gained.

5. To explore ways and countermeasures to achieve balanced development in economic, social, ecological and livelihood aspects in the ethnic regions of Southwest China. This involves exploring polycentric governance paths guided by key influencing factors in line with polycentric theory and drawing on empirical research on governance of regional economic unbalanced development at home and abroad. In addition, based on sustainable development theory and urban-rural development differences, the study explores the feasibility and applicability of sustainable development countermeasures in ethnic regions of Southwest China. It also aims to summarize and refine experiences and countermeasures to reduce the urban-rural development gap in these regions, thereby enriching the scope of countermeasure research on economic and social development in ethnic regions of Southwest China.

The object of the study. The purpose of this paper is to study the socio-economic inequality in the ethnic regions of southwest China. Specifically, it

aims to analyze the unbalanced characteristics, make a comprehensive evaluation, and explore the influencing factors in four dimensions: economic development, social construction, ecological civilization, and people's well-being in the ethnic regions of southwest China over time and space. The study mainly focuses on the unbalanced development situation in the southwest ethnic regions from two major perspectives: urban and rural. It also considers the economic, social, environmental and livelihood aspects. Finally, from the perspective of meso-regional development, the paper puts forward research recommendations to facilitate the coordinated regional development of ethnic areas in Southwest China. The intention is to address the theoretical, methodological and practical foundations, laws, principles, causes, trends and contradictions related to the comprehensive management of unbalanced economic and social development in the ethnic regions of Southwest China.

Applicant's personal contribution. The dissertation is an independently performed scientific work. All the results of the study, presented in the paper and presented for defense, are received by the author personally.

Research methods. The dissertation is methodologically grounded in economic and statistical methodology, as well as the scholarly contributions of global and Chinese scholars. This foundation serves as a basis for investigating issues related to the management of economic and social development in the ethnic regions of Southwest China. A comprehensive set of methodological tools was used to achieve the defined objectives and address the assigned tasks, which included various approaches:

1. Literature review method: This involved collecting and analyzing relevant literature on socio-economic development disparities in the western region. It involved clarifying the ideas and logical framework of the study by drawing from existing studies on key aspects such as theoretical reviews, measurement and evaluation, influencing factors, and path countermeasures related to regional development imbalance. This method provided theoretical references and guided the writing process, establishing the theoretical research foundation of the study.

2. Comparative analysis method: This involved examining the overall differences in economic and social development of ethnic regions in Southwest China. It also involved comparing differences in economic, social, environmental, and livelihood dimensions within these regions. The method facilitated a comprehensive analysis of the data and identified differences through a comparative lens.

3. Combining qualitative and quantitative methods: This approach focused primarily on examining the literature on the socioeconomic development of ethnic regions in Southwest China. It included analysis of the research background, relevant literature, and survey and evidence materials. The quantitative analysis component involved the use of statistical analysis methods, such as the Tsinghua University balanced development index, GTWR regression, and fuzzy comprehensive evaluation method, to examine data and information related to the socioeconomic development of ethnic regions in Southwest China. These methods were used to explore the degree of inequality, influencing factors, and overall evaluation of socioeconomic development in these areas.

Overall, this methodological framework ensured a robust and comprehensive exploration of the challenges of managing economic and social development in the ethnic regions of Southwest China.

The information base of the study. The information base of the study was legal acts from official open sources of China, the State Statistics Service of China, National Development and Reform Commission (NDRC), own field research, other types of theoretical, methodical, justice and scientific works from the Internet.

The scientific novelty of the obtained results. It includes the deepening of existing theoretical provisions and the development of scientific-practical and methodological recommendations on the problems of economic and social development of the ethnic regions of Southwest China. The scientific results are reliable and, as far as their scientific essence is concerned, can be expressed as follows:

***First*:**

- Developed a conceptual program for eradicating regional disparities in the economic and social development of the southwestern provinces of China in the context of inequality between urban and rural areas, characterized by reasonable coordination of actions of state and local authorities, orderly competition of all economic entities in the region, environmental sustainability, joint prosperity and mutually beneficial results for all parties involved in the development process – the state, enterprises, and the population.

***Improved*:**

- Methodological construction of a complex system for assessing the level of development of urban and rural areas of southwestern ethnic groups based on the entropy weight method by measuring the results of unbalanced development of ethnic regions in southwestern China by the method of fuzzy comprehensive assessment of development in four dimensions - economy, society, ecology and means of the existence of people.

- A theoretical-practical approach to finding ways of development and methods of implementing the strategy of achieving balanced economic and social development in the ethnic regions of Southwest China by focusing on three key aspects: the principles of joint management, the function of collective management and the synergy of development ways, taking into account sustainability in the four dimensions: economic, social, ecological and sources of livelihood.

***Further development*:**

- The theoretical connection between the theory of unbalanced development, the theory of polycentric management and the theory of sustainable development in the ethnic regions of southwest China through the application of the model of uneven regional development, which consists in the analysis and comparison of the measurement model and the model of assessment of the imbalance of regional development and the construction of a measurement system of unbalanced development in ethnic areas in southwest China.

- Impulses for innovative development and acceleration of building a reliable

system for high-quality development, strengthening the economic and demographic capacity of central cities, urban clusters and other economically developed regions, while strengthening the role of other regions in ensuring food security, ecological integrity and border stability.

The scientific and practical significance of the dissertation. This paper comprehensively examines the spatio-temporal characteristics of unbalanced economic and social development within ethnic regions in Southwest China from a meso perspective. This approach contributes to the continuous promotion of coordinated and sustainable development among China's regions at a practical level.

1. This research facilitates the understanding of the current state of unbalanced economic and social development in the ethnic regions of Southwest China. It conducts a dynamic measurement study covering four dimensions: economic, social, environmental and livelihood, to assess the imbalance between urban and rural areas. It also analyzes the development variability within ethnic regions, providing empirical evidence to support the key strategy of building a new development pattern and promoting high-quality development in these areas.

2. This study promotes the coordinated development of economic and social aspects within the ethnic regions of Southwest China. By combining qualitative and quantitative research, it comprehensively captures the multidimensional and multi-level characteristics of economic and social development in these regions. As a result, it delves deeply into the influencing factors that affect development levels and disparities, and establishes an evaluation framework that encompasses sustainable economic development, harmonious and coordinated social development, enhanced ecological value, and inclusive livelihood development. Through cross-cutting discussions, it effectively identifies the interplay between dimensions and the linkages of influencing factors within each region, shedding light on the relationship between the quantity and quality of economic and social development, as well as inter-regional coordination.

3. This study improves the level of coordination in balanced economic and

social development within and outside the region, including between urban and rural areas in the ethnic regions of Southwest China. It addresses the existing development disparities between urban and rural areas in these regions and identifies significant factors influencing unbalanced development. By quantitatively analyzing the spatio-temporal distribution characteristics in economic, social, environmental and livelihood dimensions, it measures the development factors and root causes affecting ethnic regions in Southwest China. It also focuses on promoting balanced economic and social development while reducing urban-rural disparities among provinces and regions. The paper also examines the experiences of polycentric governance and sustainable development measures in developed regions as explored by domestic and foreign scholars. It delves into the ways and models suitable for achieving balanced economic and social development in the ethnic regions of Southwest China, providing a driving force for comprehensive improvement of economic and social levels and promoting innovative development in these areas.

Personal contribution of the acquirer. Dissertation research is an independent scientific work of the author. Scientific results, conclusions and proposals submitted for defense were received by the author personally.

Approbation of the results of the dissertation. The main provisions and results of the dissertation research were made public by the author are following: International scientific conference “Modern management: tendencies, problems and perspectives of development” (Dnipro, Ukraine: 2020.04; 2020.11; 2022.04) and Problems of Effective Management of State. Materials of Inter. Sc. Conference (Tbilisi,Georgia, 2020.11).

Publication of obtained results. During the period of study, the author have prepared 1 computer software copyright, 10 scientific papers: (6 conference papers, 3 articles published in journals indexed in Scopus, 1 article in journals included in the list of scientific professional publications of Ukraine assigned category "B".

Scope and structure of the dissertation. The work consists of an introduction, three sections, conclusions and suggestions, laid out on 165 pages of

the main text, includes 13 tables, 22 figures. The list of used literary sources contains 175 items on 20 pages.

CHAPTER 1. CONCEPT DEFINITION AND THEORETICAL FOUNDATION OF THE UNBALANCED DEVELOPMENT OF ETHNIC AREAS SOUTHWEST CHINA

This chapter is the theoretical basis for the imbalance of economic and social development in the ethnic areas of southwest China. It mainly involves the following contents: first, the connotation and connection of unbalanced development studies the concept definition, main types and main characteristics of unbalanced development, the theory of regional unbalanced development, the theory of the sustainable development and development; the model of unbalanced regional development mainly includes the measurement system, the comprehensive evaluation model of geography and the weighted regression model of the development index in southwest China.

1.1. Theoretical connotation and basic definition of unbalanced development

The first quarter is the connotation of unbalanced development and contact, mainly contains three points: one is the concept of unbalanced development, from the category of political economy defined the equilibrium and imbalance, from domestic and foreign scholars to define the focus of the regional unbalanced development, from the report of the National Congress of the Communist Party of China on the principal contradictions of China in the interpretation of the concept of unbalanced economic and social development in southwest China(Hu Jian, 2015).

Since the 1960s, development has been a classic proposition of academic research. It is explained from the perspective of development theory that development means the comprehensive progress, coordinated and sustainable development in the fields of economy, society, culture, politics, law, human resources, knowledge, technology, resources and environment. It includes not only

economic growth and economic development, but also improvements in social stability, cultural prosperity, democratic participation, equal rights, women's status, scientific and technological innovation, community building, local conditions and practices, and ecological balance. To sum up, development is in a certain economic base and superstructure on the basis of mutual promotion, realize the economic, social, environmental, people's livelihood change, so that the GDP growth, people's disposable income, social governance stability, the well-being of people's livelihood, and make the national economic structure to improve, ultimately achieve sustainable development.

Development is the eternal theme of life and China’s top priority in the new era. In particular, the new development concept should meet the requirements of the times and the reality of development. The report to the 19th National Congress of the Communist Party of China pointed out that "adhering to the new development concept" has become an important principle and an integral part of the basic strategy for safeguarding and developing socialism with Chinese characteristics in the new era. The report to the 19th CPC National Congress said, “...development is the foundation and the key to solving all of China's problems”.

The report to the 19th National Congress of the Communist Party of China pointed out that the main contradiction facing Chinese society has become the contradiction between unbalanced and inadequate development and the people's ever-increasing demands for a better life. Unbalanced development between urban and rural areas and inadequate regional development is an important factor limiting the people's ever-increasing demands for a better life. The report to the 19th National Congress of the CPC first mentioned the “rural revitalization strategy” as one of the seven strategies to be resolutely implemented to secure a decisive victory in building a moderately prosperous society in all respects, and proposed to establish and improve systems, mechanisms and policies for integrated urban and rural development. Under the strong mission of achieving a decisive victory in building a moderately prosperous society in all respects and building China into a great modern socialist country, rural revitalization has become a new driving force

for urban and rural development in the new era. Driven by the new development concept, the implementation of the rural revitalization strategy through urban-rural integration and coordinated regional development is to achieve the development goals of "thriving industries, livable ecology, civilized local customs, effective governance and rich life" according to the deployment of "accelerating agricultural and rural modernization" at the 19th National Congress.

Regional balanced development and unbalanced development has always been a classic problem in the research of regional economics, development economics and other disciplines, especially since the 19th CPC National Congress, society has extensively discussed the connotation of unbalanced development. Many studies believe that imbalance is a state of development in relative balance, which is distortion, disparity, inequality and even unfair treatment. Imbalance is a norm, and balance is an accidental phenomenon (Zhou Jingxiang, 2012).

Balanced development is not the equal distribution of the economy and population, but the equalization of per capita income levels and quality of life between urban and rural areas and between regions (Lu Ming, 2017). Sun Lijian of Fudan University (2017) believes that the imbalance is a structural problem, and Xin Ming, a professor at the Party School of the CPC Central Committee, believes that "the imbalance of development is mainly reflected in three major aspects: regional imbalance, field imbalance, and group imbalance". Specifically, the regional imbalance mainly refers to the development imbalance between eastern, central and western regions, between urban and rural areas, and between developed and underdeveloped areas, and the development imbalance of economic, political, cultural, social and ecological civilization construction.

Inadequate development is essentially a question of efficiency, and also how the "quality" and "quantity" of economic development can reach a new height in the balance. Hu Angang and Yan Yilong (2017) pointed out that inadequate development refers to the insufficient development of social productive forces, which cannot meet people's needs for various services, or social justice, democracy, rule of law, and ecological environment. Xin Ming, the Party School of the CPC

Central Committee (2017), believes that inadequate development means that the overall development of the whole society is not rich enough, the level of development is not high enough, and the trend of development is not stable enough. Inadequate development is specifically reflected in: the development mode, rule of law, spiritual progress, social programs, ecological environment, and systems and mechanisms all need to be fully improved. Li Wei (2018) from the Development Research Center of the State Council pointed out that development is not fully reflected in six aspects: market competition, efficiency play, potential release, effective supply, power transformation, and institutional innovation.

From the dialectical perspective of materialism, inadequate development is how to improve the efficiency of economic development to achieve regional development level of quantitative and qualitative balance, namely, how to coordinate the development of regional, urban and rural areas, improve overall development to achieve qualitative change, and then on the new requirements of qualitative change through the development of the balance between different areas to achieve a new height of qualitative change, so cycle makes regional balance full development. To sum up, the full development of southwest ethnic areas, must rely on the coordinated development of urban and rural provinces, improve the economy of southwest ethnic region, economic development efficiency, economic structure adjustment, industrial development, achieve economic, social, ecological, balanced development of people's livelihood departments, meet the general requirements of quality improvement of southwest ethnic areas, rich development, improve the level of development situation, stable development trend, to improve the development efficiency.

The structural imbalance is essentially a problem with spatial and temporal heterogeneity in different directions and fields, which is the qualitative change of regional development, such as the quantity of GDP, output, etc., but the quality problem is from output to capacity. From the perspective of materialist dialectical materialism, the relationship between imbalance and insufficiency is the unity of opposites of mutual complement and mutual whole, not a simple juxtaposition

relationship. The essential cause of unbalanced development is inadequate development, and unbalanced development is a prominent problem of inadequate development. How to solve the main contradiction between inadequate development and unbalanced development is the key to achieving sustainable development in southwest ethnic minority areas.

In the 1950s, in the era of balanced development schools dominated, unbalanced development models also emerged. Scholars at home and abroad believe that the resources and capital elements of each region are inconsistent, so that balanced development is only an accidental phenomenon, and unbalanced development is normal. In the following, we will introduce some major models of unbalanced regional economic development patterns.

Muuhdal (1950) believes that the socio-economic system is in the process of development caused by the progress of technological, social, economic, political and cultural factors. In the dynamic process of social and economic development, various factors of social economy influence and cause each other, that is, the change of one factor will cause the change of another factor, and the change of the second level of factors in turn will promote the change of the higher level of factors. It can be seen that the social and economic factors are not simply circulating, but have an accumulating effect.

Western development, for example, prompted the economic base of southwest nationalities, increasing GDP, growing fiscal revenue, therefore, increasing fiscal expenditure to improve fiscal distribution structure, promote social justice, ensure the well-being of people's livelihood construction, the well-being of people's livelihood and through engineering construction, social security system, medical insurance channels to promote economic quality improvement, drive the growth of national income, this is a simple rising cumulative causal cycle.

Based on the theory of circular cumulative causality, Murdal pointed out that due to the existence of agglomeration, the developed regions will continuously and accumulatively achieve accelerated growth through the role of the market, and simultaneously produce industrial diffusion effect and capital return effect.

"Diffusion effect" refers to the investment activities from developed regions to underdeveloped regions, such as industrial transfer; "return effect" refers to the process of capital return from underdeveloped regions to developed regions, such as cross-border capital flow. The imbalance of diffusion effect and return effect will lead to the imbalance of regional development. In the short term, it is the loss of resource capital in underdeveloped areas exchanged for extensive economic development, and developed countries realize the circular accumulation of capital with a small amount of resource capital.

Therefore, in the long run, underdeveloped areas will lead to excessive resource development, industrial structure imbalance, lack of quality of economic development, and so on. Therefore, developed areas will lack the endogenous impetus of economic growth, resource development and economic growth are excessively dependent on external factors, and the economic structure is relatively fragile. However, the balance of diffusion effect and reflux effect is a win-win choice of regional economic development. For example, in the era of globalization, cross-border investment should not only tend to resource development, but also tend to resource construction. New economic factors should be adopted to promote the construction of resources and the environment of capital flowing to underdeveloped areas, and realize the recycling of capital and resources in underdeveloped areas and developed areas.

Hirschmann (2018) believes that in the case of limited investment resources, less developed areas should implement unbalanced development strategy to seek its economic development, namely first concentrate capital in direct production activity department to increase output and input, after these departments obtain investment benefits, reuse part of the income investment in infrastructure sector to promote its development, and noted that there are two effects between regions: "polarization effect" (with the "reflux effect"), with "trickle effect" or "drip effect" (with murder "s" diffusion effect "). He believes that the former will widen the economic development gap between regions, while the latter will narrow the economic development gap between regions, and there will be a turning point

between the two.

Hirschmann also put forward the concept of regional transmission for the first time, which basically refers to the process of economic growth factors in developed areas being gradually transmitted to backward areas, and refers to the process in which some factors of economic development influence and affect each other and change the regional economic structure. The basic elements of regional transmission include the starting area of transmission, the receiving area, the transmission object, the transmission channel, the operation mechanism, and so on. The essence of regional transmission is the complementarity between regions under the action of comparative interest mechanism, forming the internalization of regional externality and regional internality in regional complementarity.

Hirschmann believes that regional unbalanced development is an inevitable companion and prerequisite in the process of economic development. Therefore, the pursuit of regional economic growth must be achieved at the expense of regional equality, and regional development differences are also an important source of economic growth. Since Hirschmann's unbalanced growth theory and policy proposal are very similar to Muerdal's views, and both advocate unbalanced key development strategies, Western theoretical circles call their theoretical model the "Muerdal one-Hirschmann" model.

American economist William Williamson (2020) pointed out that the regional economic growth differences will show an inverted "U" shape change with the development of the national economy. Specifically, in the primary stage of national economic development, the difference between regional economic growth will increase, that is, inclined to unbalanced growth; when the national economic development reaches the mature stage, the difference between regional economic growth will gradually decrease, that is, inclined to balanced growth. In the initial stage of regional economic development, the imbalance of regional economy is relatively small, while in the early stage of economic development, some regions can give priority due to some factor endowment, and the regional development differences also increase due to the unbalanced market adjustment and allocation

of factor endowment.

Therefore, in different stages of regional development, government macro-control is an important means to balance regional development. For example, in the early stage, the government should focus on investment and support the development of areas with superior resource factor endowment to realize the original capital accumulation; after consolidating the regional economic foundation, the government should actively promote regional coordinated development, adjust the industrial structure to promote regional economic structure reform, narrow the gap between regional and urban and rural areas, and realize the balanced development of regional economy.

Williamson's analysis confirmed Herschmann's theory of unbalanced development, but it is only considered as a hypothesis due to the lack of effective evidence in theory and practice. However, this analysis verifies that the role of the market is the root cause of regional development differences, and national macro-control is an important means for regional balanced and complete development.

1.2. Concept manifestations of unbalanced regional development

The spatial unbalanced development concept mainly discusses the views of the three periods of Marxist schools of spatial political science, Lefebvre and American scholar Harvey, For example, the theoretical basis of the spatial unbalanced development concept is the views on unbalanced development in the Marxist political economy, Das Kapital, German Ideology, and Economic Manuscripts from 1857-1858, The enlightening thought of the space unbalanced development concept is an important discussion on the theory of space production, After absorbing the previous views on unbalanced development, American scholar Harvey formally put forward the concept of spatial imbalance, That is, laid the initial framework for unbalanced regional development, The unbalanced development in political economy rises to the spatial dimension(Chen Hongyu,

2017).

The imbalance of regional development exists in various areas of China's economic and social development (Zhang Deyong, 2018). Scholars at home and abroad have extensively discussed the major manifestations of unbalanced regional development. Among them, the views of Hu Angang and Yan Yilong (2017), Jiang Yongmu (2018), Jiang Yongmu and Zhou Yuhan (2018) are certain representative, and the main situation is: material needs, economic and social equity, cultural needs, ecological environment, security and social democracy and legal needs have not been met.

Sichuan University Jiang Yongmu and Zhou Yuhan (2018), in the development of unbalanced inadequate, unbalanced economic development is the most fundamental problem, the imbalance of economic development is mainly reflected in the unbalanced urban and rural development, regional development imbalance and structural imbalance, such as three aspects, its specific performance and connotation is detailed in Table 1.1.

Table 1.1 - Types of unbalanced development of areas in China

Type	Performance
urban-rural imbalance	Although the urbanization level in China is increased year by year, and the urban-rural integrated development is comprehensively promoted, there is still a large economic gap between urban and rural areas and the county economic development is still insufficient; the allocation of elements and resources is unbalanced and the factors converge from rural to urban; the public service development between urban and rural areas is unbalanced, it is urgent to improve the public service capacity; the dual structure between urban and rural areas still exists, and the household registration and land system need to be continuously improved.
Regional development imbalance	With the gradual advancement of various regional development strategies, the development gap between regions in China shows a narrowing trend. However, this has not fundamentally changed the imbalanced, uncoordinated and unsustainable pattern of regional development. There is still a large development gap in different regions, and there is still a large gap in the economic aggregate and per capita indicators between backward regions and developed regions. The mechanism of regional exchange and cooperation and coordinated development is not perfect, and the problems of industrial isomerism, repeated construction and unreasonable division of labor are very prominent; the regional productivity distribution, environmental

Type	Performance
	protection and ecological construction are not integrated. Pressure on resources and the environment has increased, and conflicts between regional development and ecology are prominent.
Structural imbalance	The structural adjustment measures of China's reform and opening up have promoted the optimization and improvement of China's industrial structure, investment and consumption structure and income distribution pattern. However, China's economic structure still has the following problems: (1) the income distribution pattern is still unbalanced and unreasonable. The unreasonable distribution in primary distribution is still prominent, the value creation efficiency of the second distribution is low, and it is difficult to exist surplus to support the sustainable development of the third fiscal and tax distribution, the source structure, distribution structure and use structure of the third fiscal and tax distribution have not formed the basic system; (2) there is a huge gap in production and consumption structure between urban and rural areas, regions and industries. Industrial production structure and consumption structure is the economic root of unreasonable income distribution structure, industrial development is the basis of primary distribution, the development of urban and rural, regional, industry gap is the root of the second fiscal distribution structure imbalance, area of urban and rural and industry coordinated development degree determines the third income distribution system construction.

Source: Jiang Yongmu and Zhou Yuhan (2018)

With the remarkable improvement of social productive forces, the expression of the main social contradiction in the past cannot accurately reflect the current situation of China's development. As socialism with Chinese characteristics has entered a new era, people's aspirations for a better life are no longer limited to their material and cultural needs. The connotation of people's need for a better life has gradually diversified. It has broken through the concept of welfare at the individual or family level and formed a broader, comprehensive concept of social development.

Through the deep study and understanding of Xi Jinping's (2020) thought on Socialism with Chinese Characteristics for a New Era and the Report of the 19th National Congress of the Communist Party of China, this paper embodies the goals and requirements for the development of southwest ethnic minority areas in the

following four aspects.

(1) Sustained economic growth is a prerequisite for improving people's living standards and a basic guarantee for enriching people's material and spiritual lives. The report to the 19th National Congress of the Communist Party of China stated that China's economy has shifted from a stage of high-speed growth to a stage of high-quality development, and is at a critical stage of transforming the development mode, optimizing the economic structure and transforming the driving forces of growth. Building a modernized economic system is an urgent requirement for crossing the threshold and a strategic goal of China's development. We must put quality first, prioritize efficiency, focus on supply-side structural reform, improve the quality, efficiency and driving forces of economic development, and increase total factor productivity. Therefore, the development of southwest ethnic minority areas should include optimizing economic structure, improving economic quality and efficiency, building a new pattern of opening-up, and promoting economic development potential.

(2) Social stability is an important part of the people's need for a better life and the improvement of their sense of well-being. The report to the 19th CPC National Congress calls for building a country, government and society under the rule of law, constantly promoting social justice and equity, establishing effective social governance and good social order, strengthening the community governance system, and implementing a healthy China strategy. Social justice, as the foundation of stable social development, is the basis of people's demand for a better life and an eternal theme of mankind's pursuit of a better life. Without a high degree of cultural confidence and cultural prosperity, there would be no great rejuvenation of the Chinese nation. Social civilization, as the long-term goal of China's cultural development, is the soul of China's cultural construction.

The report to the 19th National Congress of the Communist Party of China emphasizes the strengthening of the social security system, and clearly states that a multi-level social security system that covers the whole people, integrates urban and rural areas, has clear rights and responsibilities in accordance with the

requirements of ensuring needs, building a close network, and building mechanisms.

(3) The integration of ecological progress in all aspects and the whole process of economic, political, cultural and social development is an important guarantee for achieving balanced economic and social development and meeting people's needs for a better life. The report to the 19th National Congress of the CPC clearly points out that modernization is modernization in which man and nature coexist harmoniously. We should not only create more material and spiritual wealth to meet people's growing demand for a better life, but also provide more ecological quality products to meet people's growing demand for a beautiful ecological environment. In order to monitor the balanced development of the ecological environment, we must not only pay attention to the environmental quality problems of the atmosphere, water and soil, and the monitoring and treatment of environmental pollutants such as solid waste gas and liquid, but also pay attention to environmental risks and ecosystems.

(4) Ensuring and improving people's well-being is the fundamental goal of development. Transforming the main contradiction in Chinese society requires better implementation of the idea of people-centered development. As people's living standards improve, the people's needs of diversified multi-level multi-faceted characteristics, the development of the people facing the macro environment and internal conditions are changing, in the past have food, school, housing is the basic demand, now the people have income steadily rising, high-quality medical services, education fairness, housing improvement and so on more levels of demand. General Secretary Xi Jinping has pointed out that the issues most closely related to people's lives include employment, education and housing. The development of people's livelihood should start with the most direct and practical interests of the people, and coordinate education, income distribution, employment, medical and health care, and housing.

To sum up, the sustainable and balanced development of southwest ethnic minority areas should be based on economic development, social progress and

ecological environment as a guarantee, and ultimately focus on better ensuring and improving people's well-being.

In the current period of China's economic system transition, various contradictions caused by unbalanced regional development are difficult to reconcile, which urgently requires relevant theories to guide and coordinate spatial relations, and promote the balanced development of regional social and economic. In this regard, the Marxist concept of unbalanced spatial development has provided us with new ideas and useful enlightenment in both practice and theory.

At present, the polarization of spatial resource allocation in China is becoming increasingly serious, which has actually become an important cause of unbalanced economic growth. The long-term existence of this situation will seriously restrict the economic efficiency and development prospects of southwestern ethnic areas. According to Harvey's (1987) theory, some cities at the top of the resource endowment system often occupy the more efficient spatial resources in cities. In terms of policy, China allows factors to be allocated according to factor contribution, so in the process of urbanization, some places with good spatial resources will have more opportunities to improve their development level, while underdeveloped cities will have fewer economic growth opportunities due to their poor spatial resources. This phenomenon of unequal opportunities caused by different spatial resources will inevitably widen the regional economic growth gap and eventually lead to serious differentiation of regional development.

Harvey's "space unbalance development theory" on the problem of resource allocation is that the capital pursuit of profit maximization, will first cause area in the space resources ownership and use of uneven configuration, this space distribution will then aggravate the polarization of economic growth, and economic growth gap will further exacerbate the initial space distribution difference, thus forming a vicious circle.

This analytical idea has the same implications for understanding the widening gap between rich and poor in developed and developing countries caused by the

polarization of spatial distribution in the process of globalization. Although some underdeveloped cities have benefited from corporate industries, they are deeply controlled and exploited by capital, which makes them always at the bottom of resource allocation and makes it difficult to achieve coordinated regional development. In this respect, underdeveloped areas should consciously reverse this situation, increase independent innovation, adapt the modern industrial structure, support national enterprises, and strive to improve their own spatial strategic position in global industry and division of labor.

Administrative fragmentation is the source of problems and the logical starting point for regional public governance. Since the mid to late 19th century, the global urbanization process has accelerated significantly along with industrialization. Due to the influence of the local government tradition, "administrative fragmentation" has been present in Western metropolitan areas. The so-called "administrative fragmentation" refers to the existence of a considerable number of local government units in the region, which has two meanings: administrative regional fragmentation and the fragmentation of government functions.

Administrative regional fragmentation is a multi-administrative pattern, in which regionally integrated geographical space is divided into scattered and relatively independent by administrative divisions. Liu Junde and Shu Qing (2020) put forward the concept of "administrative region economy", and to analyze the "administrative regional fragmentation".

Administrative region is an administrative category formed by a country based on the needs of political rule and administrative management. It is the projection of state power on the geographical space. The administrative region mainly contains four basic elements: jurisdiction, administrative center, administrative level and name of the administrative region. The level of administrative division refers to the hierarchy of the vertical structure of administrative division; the scope of administrative division refers to the number of administrative regions under the lower level of administrative jurisdiction. The

scope of administrative management should be dynamically balanced with the level of management.

For example, the political philosophy of local autonomy in the United States became the basis of the broken political philosophy of local government. At the end of the 20th century, "the average metropolitan area had 114 local governments, two counties, 42 cities or towns, 70 districts, equivalent to 10 local governments per 100,000 people in the metropolitan area". Therefore, the overlapping jurisdiction of metropolitan county government, decentralized decision-making power and Balkan have become the obstacle of metropolitan county governance.

In the fragmentation of government functions, with the deepening development of regional integration, regional public demand is gradually derived, such as regional ecological protection, regional infrastructure construction and regional public services. In the regional governance structure of "administrative fragmentation", each local government is responsible for the provision of public goods in administrative areas, which makes it difficult to realize the "economies of scale" in the provision of regional public goods, and cannot effectively solve the problem of negative externalities in the provision of regional public goods.

In the process of regional development, regional integration first faces the fragmented regional multi-government pattern. From the perspective of world urban agglomeration regional or metropolitan governance, it is mainly divided into three modes: single-center governance, new regional governance and multi-center governance.

The one-center government theory emerged in the 1930s and 1970s, and its proponents included Chester Horse, du Dunsky, Victor Jones, and Luther Gullick. These scholars advocated the establishment of a centralized local government based on the criticism of the phenomenon of "administrative fragmentation". According to the single-center governance theory, a single administrative organization is the most efficient. The difficult problem of metropolitan public governance is that the decentralization of local governments leads to uneven allocation of resources, and local governments do not pay attention to the overall

interests of the region.

In order to solve the problem of "administrative fragmentation", single-center administrators believe that a unified centralized government should be established. That is, single-center government is mainly developed in two directions: one is the single centralization of regional administrative divisions; the other is the single centralization of regional administrative departments. The former aims to solve the diversification and fragmentation of city governments in metropolitan areas; the latter aims to solve the fragmentation of multiple governance of various administrative departments in the region.

Pudong New Area through the state-level new area, has realized the unified governance in administrative departments, on this basis, further promote the department single centralization, in order to better realize "put a tube", namely decentralization, regulation, supervision, service, to create a good growth environment for regional enterprises, is a typical single center governance case. In January 2014, Shanghai first tried the "Comprehensive Law Enforcement Reform of Market Supervision Classification" in Pudong New Area, which refers to the merger of multi-center law enforcement subjects into unified law enforcement subjects within the spatial scope of Pudong New Area, to realize the whole process of supervision, so as to solve the fragmented management pattern of regional governance.

From the perspective of policy practice effect, the "classified and centralized and comprehensive law enforcement reform" in Pudong New Area has achieved remarkable results. With the deepening of regional integration practice, regional governance has gradually developed from administrative governance to overall governance and cooperative governance, and a spiral and upward dynamic development trend has been formed in the process of policy practice and policy learning.

New regionalism tries to find a middle way between centralized governance and multicenter competition. Compared with multicentrism, new regionalism emphasizes more centralization, while compared with single-centre governance,

new regionalism is relatively decentralized. The new regionalism forms three evolution of institutional arrangements: the first is multi-level government method, which provides different ranges of public services by governments at different levels; the second is functional link method, which establishes regional functional cooperation or local government cooperation agreements; the third is integrated network method, which creates a more extensive multi-level and multi-subject agreement network to promote regional integration governance.

New regionalism does not try to build a regional government, but a cooperative network that pays more attention to the regional governance of urban agglomerations. This form of governance focuses on process rather than structure, and seeks to build a diverse collaborative network involving both the private and non-profit sectors. The subjects of regional governance come from governments at different levels, business organizations and civic organizations in the region. They have formed cooperative organizations of regional governance and adopted various forms to solve regional public problems.

There is both competition and cooperation among the subjects. Regional governance organically integrates regional resources, avoids administrative segmentation and fragmentation, and can improve the utilization rate of resources. However, whether the new regionalism can become an independent school has been questioned. It has not formed the research paradigm of philosophy of science, and the fragmentation and conceptual ambiguity of the theory of new regionalism have raised many doubts. Although the new regionalism has come under much criticism, in practice, cooperation among governments and between governments and non-governmental organizations continues and deepens, forming the overall trend of regional governance.

New regionalism is also constantly developing and transforming in practice. The research on the formation mechanism of regional cooperative governance has mainly experienced two transformations: the first is the institutional transformation. It emphasizes that regional economic development is influenced by the specific political and administrative system factors, and the spatial nature of economic

control and institutional innovation of regional development are its core issues. The second is the scale of transformation. The focus is on the transfer and restructuring of economic activities at different spatial scales, including the reconfiguration of regional production space under the impact of globalization.

In the traditional regional economic research, the regional development goals simply emphasize the economic goals and economic benefits, the first is the expansion of economic scale, the growth of economic aggregate, and the second is the coordination and balance among regions. On the one hand, regional sustainable development affirms the spatial allocation and flow of economic factors and the resulting economic benefits; on the other hand, it further emphasizes and highlights the goals of society, ecology and livelihood. The coordination of the four goals is an effective way to avoid regional problems and is conducive to the balanced development of the southwest ethnic areas.

1.3 Methodology of managing the unbalanced regional development model

Based on the above about the theory analysis of unbalanced economic and social development in southwest China, this study defines the related concepts of regional unbalanced development, expounds the main types and characteristics of unbalanced development and regional unbalanced development, and proposed the theoretical framework of multicenter governance and sustainable development of time and space, and the economic and social development in southwest China laid the theoretical foundation. Meanwhile, based on the theoretical logic of unbalanced regional development, this study clarifies the model method of the empirical study of unbalanced economic and social development in the minority areas of southwest China in this section. Firstly, the balanced development index system of Tsinghua University measures the unbalanced development degree and development index of southwest China; secondly, the comprehensive development level using the comprehensive evaluation model; finally, the influence factors of unbalanced

economic and social development in southwest China.

1.3.1 The measurement system of the balanced development index in Southwest China.

At present, the limitations of GDP indicators are widely recognized, and the use of a single output indicator to directly assess living standards has been gradually phased out. Due to the complexity of evaluating multiple indicators and the wide range of evaluation starting points, the following measurement systems are more representative measurement systems.

The China Livelihood Index, the Well-off Index, the China Livelihood Development Index and the China Development Index of Renmin University of China are the more representative indicators from the domestic perspective.

First, the Development Research Center of the State Council created the China Livelihood Index, an index to measure livelihood. The subjective index and the objective index are the two components of the China Livelihood Index. The objective index is further divided into two components, the livelihood level index and the livelihood improvement index. Population livelihood, public services, social environment and environmental protection make up these three indices. There are 11 secondary indicators, and the 44 final tertiary indicators include the following: household consumption expenditure, unemployment rate, cost of compulsory education per student, number of doctors per 10,000 people, number of beds per 1,000 people, abnormal death rate, judicial fairness index, transparency of government financial expenditure on people's livelihood, compliance rate of water quality of centralized water sources, and other technical indicators. 30 different indicators are created from 44 different items.

The individual indicators are further divided into 14 subjective and 30 objective indicators. The livelihood index is designed to achieve two goals: first, to evaluate the state of people's basic livelihood and its development; second, to evaluate and guide governments at all levels to carry out work to improve people's livelihood.

Second, the National Bureau of Statistics uses the Well-being Index as an

indicator to measure well-being. Parsons divided society into four facets: political, economic, cultural, and social integration (i.e., social harmony). To adapt the index system to our national circumstances, we have divided it into four broad categories: political, economic, scientific, educational, cultural, and health, and social harmony. The Prosperity Index is a measure of the standard of living of a nation's people.

In addition, Beijing Normal University developed the China Livelihood Development Index, a measure of economic development. China's development and people's livelihoods are measured by 45 secondary indicators and six primary indicators, including economic development, livelihood improvement, social progress, ecological civilization, scientific and technological innovation, and public opinion. The livelihood improvement modules set three secondary indicators each for income distribution, quality of life, and labor and employment, while the social development modules set six: public service expenditure, regional coordination, culture and education, health, social security, and social safety. The China Livelihood Development Index is a numerical reflection of citizens' perceptions of their living conditions and quality of life, derived from data provided by the government and first-hand knowledge of the realization of citizens' rights to survival and development. The creation of the People's Livelihood Index is a fundamental scientific and forward-looking project that serves as a "barometer" of the quality of life of the Chinese people.

Finally, the RCDI is an index created by the China Survey and Evaluation Center of Renmin University of China. It is based on the HDI index system, combined with the regional socio-economic indicators published by the statistical departments of the Chinese government, and based on the principles of qualitative selection of indicators (i.e., clear purpose, comprehensive, practical and stable, and coordinated). The indices are selected in accordance with the principle of qualitative selection (i.e., clear purpose, comprehensive, practical, stable and consistent) and the practical requirement of impartially assessing the overall socio-economic development in a people-oriented manner. The China Development Index consists of four separate indices and fifteen indicators (ten

positive indicators and five negative indicators).

In order to create the "China Development Index" with Chinese characteristics, we use the concept of the United Nations HDI index. We make necessary improvements to the HDI index compilation method and index system to comprehensively measure and evaluate the level and difference of human and social development of China's provincial administrative regions, to scientifically formulate macro-social and economic development policies, and to promote China's coordinated development. Promoting the coordinated and sustainable growth of China's regional social and economic development is crucial to building a peaceful society.

It is ultimately a four-field development issue because people's need for a better life is the result of the cooperative action of many fields, including economic development, social progress, ecological environment and people's well-being. Based on this, Tsinghua University's balanced development indicator system is fully developed to measure the gap between the actual and desired levels of development. Balanced development is also used to measure the development gap between regions and between urban and rural areas.

In the research framework of China's balanced development indicator system, the key areas and realistic aspects that are closely related to people's needs for a better life are first and foremost fully considered. Then, for each secondary indicator, the main signs of unbalanced and inadequate development and the most representative third-level indicators are studied. These four areas of development - economic development, social progress, ecological environment and people's well-being - are then broken down and refined to form the corresponding secondary indicator system. Each tertiary indicator should be the most representative and appropriate indicator for measuring uneven and inadequate development among all relevant indicators in a given area. On the one hand, each tertiary indicator is an important measure of the level of development of the corresponding secondary indicator. The types of imbalances and how they are measured are listed in the table below.

The four main areas of economic development, social progress, environmental protection and human welfare are included in China's balanced development indicator system, which is shown in Figure 1.1, which takes into account people's needs for a better life. and the five factors involved in each area as its basic framework, while the extreme difference standardization method reflects the degree of underdevelopment in each area and factor in each area, and the Gini coefficient method reflects the degree of regional and urban-rural unbalanced development in each area and aspect in each area. After the above adjustments to the degree of underdevelopment and the degree of unbalanced development, China's balanced development index system is actually an index system.

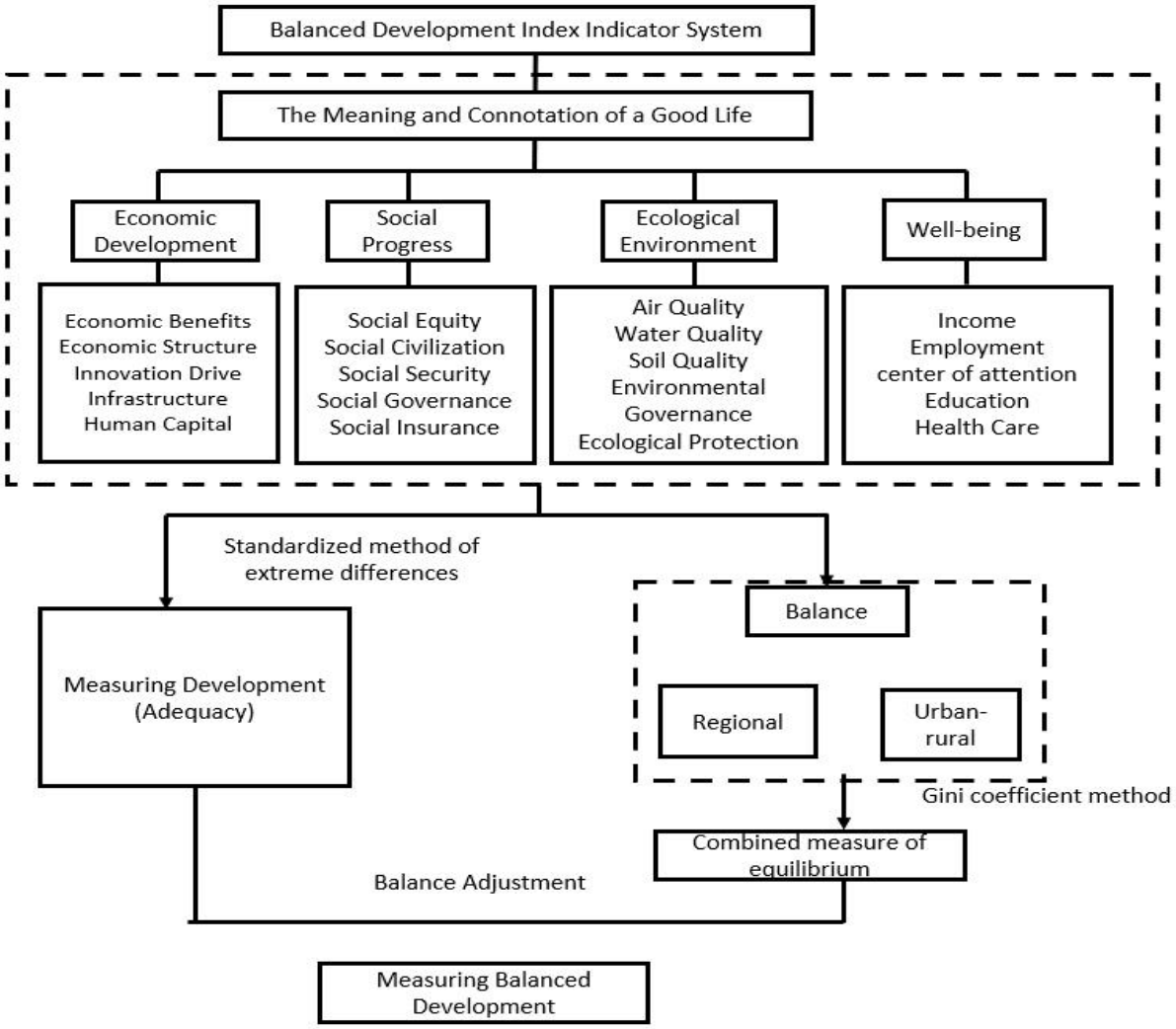

Figure1.1 Balanced Development Index Measurement System

Source: author`s research refers to the Balanced Development Index Report of China 2020 and Liu Taoxiong (2021)

In order to construct China's balanced development indicator system, we first understood the crucial components of people's good life and their inseparable connection with the problem of imbalance and insufficiency. In the second step, we organized the theories and procedures for constructing the indicator systems and studied the experience of constructing the relevant and meaningful indicator systems. Thirdly, we conducted research and seminars in six provinces and cities. Nearly 20 representatives from relevant government departments11 attended the meetings in each province and city to share their thoughts and recommendations on how to build China's balanced development. Fourth, seven expert seminars were held and nearly 100 academics, senior professors, Changjiang scholars and other experts and scholars12 in relevant fields were invited to provide theoretical and practical guidance on building China's balanced development indicator system. After much research and demonstration, China's balanced development indicator system was finally determined to consist of 4 primary indicators, 20 secondary indicators and 49 tertiary indicators, as shown in the following table (Appendices A-C).

The balanced development index provides a thorough assessment of China's overall development level and the extent of uneven and inadequate development. In order to adjust the level of standardization for indicators that reflect regional or urban-rural imbalance, the degree of imbalance is also calculated using the relevant regional or urban-rural data. Specifically, the calculation of the balanced development index follows the process of "data pre-processing → calculation of standardization (development index) and unbalance adjustment coefficient of three-level indicators → three-level balanced development index → two-level index → one-level index → total index", as shown in the specific path.

The terms development index, balanced development index, and development loss due to unbalance adjustment are used in the calculation of the balanced development index. The specific calculation formula and procedure are described below:

First, development index.

Standardization of positive indicators：

$$X_{ijk}^{dvpt} = \frac{x_{ijk} - x_{ijk}^{min}}{x_{ijk}^{max} - x_{ijk}^{min}} \times 100 \quad (1.1)$$

Standardization of negative indicators：

$$X_{ijk}^{dvpt} = \frac{x_{ijk}^{max} - x_{ijk}}{x_{ijk}^{max} - x_{ijk}^{min}} \times 100 \quad (1.2)$$

In the above equation, x_{ijk} is the development level of the three-level indicators, where i, j, k are the corresponding serial numbers of the first, second and third level indicators, respectively, and X_{ijk}^{dvpt} is the standardized development index. and x_{ijk}^{max} and x_{ijk}^{min} are the maximum and minimum values of the highly unbalanced development state, respectively. Among the standardized results of all the three-level indicators, the larger the development index is, the closer it is to 1, the higher the degree of development and the more fully developed; the smaller the development index is, the closer it is to 0, the lower the degree of development and the less fully developed. Of course, the standardization is based on the premise of the reference value, so the development degree or adequacy reflected by the development index is relative to the reference value.

Second, the unbalance adjustment factor (Table 1.2)

Table 1.2 - Unbalance adjustment coefficient measure of Tsinghua University

Type	Measurement method	Calculation formula
Regional imbalance	Based on the data at the inter-provincial level, the Gini coefficient method with geometric weighting is used to measure the adjustment coefficients of regional imbalances in different areas separately.	$ine^{IR} = gini(\chi_{ijk}{}^{1}, \ldots \chi_{ijk}{}^{d}, \ldots \chi_{ijk}{}^{D}; \omega_1, \ldots \omega_d, \ldots \omega_d)$
Urban-rural imbalance	Based on the data of urban and rural areas, the Gini coefficient method with geometric weighting is used to measure the adjustment coefficients of urban and rural areas respectively.	$ine^{U-R} = gini(\chi_{ijk}{}^{U}, \chi_{ijk}{}^{R}; \omega_U, \omega_R)$

Type	Measurement method	Calculation formula
Comprehensive imbalance	The degree of comprehensive balance is the result of the joint action of regions and urban and rural areas, and the total adjustment coefficient is obtained by the product of regional and urban-rural unbalance coefficients.	$\text{adj\_coef} = (1 - \text{ine}^{\text{IR}}) * (1 - \text{ine}^{\text{U-R}})$
Note:d denotes region, D is the total number of regions, $\chi_{ijk}{}^{d}$ denotes the true level of region d, and ω_d denotes the weight of region d. The notation U and R denote urban and rural areas respectively, and ω_U and ω_R denote the weights of urban and rural areas respectively, as gini() is the function for calculating the Gini coefficient.		

Source: author`s research refers to the Balanced Development Index Report of China 2020, Liu Taoxiong (2021)

Third, the balanced development index.

After obtaining the development index and the unbalance adjustment coefficient, the balanced development index (BDI_{ijk}) is further calculated for the three-level indicators, i.e., the development index adjusted by the unbalance coefficient (X_{ijk}^{adj}).

$$BDI_{ijk} = X_{ijk}^{adj} = X_{ijk}^{dvpt} \times \text{adj\_coef}_{ijk} \tag{1.3}$$

Fourth, development loss.

Development loss ($Loss_{ijk}$) is the loss of development index due to unbalanced development, which is calculated by the degree of loss of balanced development index relative to the development index. Development loss is defined and calculated by the formula

$$Loss_{ijk} = 1 - {BDI_{ijk}}/{X_{ijk}^{dvpt}} = ine_{ijk}^{IR} + ine_{ijk}^{U-R} - ine_{ijk}^{IR} \times ine_{ijk}^{U-R} \tag{1.4}$$

Fifth, index aggregation.

In the level-by-level aggregation, the balanced development index is aggregated level-by-level using a simple arithmetic mean, where L is the number of indicators included in the next level. Similarly, the development index, the unbalance adjustment factor, and the development loss are calculated similarly to

the balanced development index. The calculation formula is used as follows.

Summary of secondary indicators:

$$BDI_{ij} = \sum_{k=1}^{L_{ij}} BDI_{ijk}/L_{ij} \quad (1.5)$$

Summary of primary indicators:

$$BDI_{i} = \sum_{j=1}^{L_{i}} BDI_{ij}/L_{i} \quad (1.6)$$

Summary of total indicators:

$$BDI = \sum_{l=1}^{L} BDI_{i}/L \quad (1.7)$$

Based on the design framework of Tsinghua University's balanced index, which is a comprehensive measure of China's overall development level and the degree of unbalanced and insufficient development, this study measures the balanced development index of urban and rural areas of southwestern ethnic groups. In order to adjust the standardized level for indicators that reflect the problem of regional or urban-rural imbalance, the degree of imbalance is also calculated using the relevant regional or urban-rural data. Specifically, the calculation of the balanced development index follows the process of "data pre-processing → calculation of standardization (development index) and unbalance adjustment coefficient of three-level indicators → three-level balanced development index → two-level index → one-level index → total index". As shown in the figure below.

The terms "balanced development index", "development index" and "development loss due to unbalance adjustment" are used in the calculation of the balanced development index for urban and rural areas of Southwest China. The specific calculation formula and procedure are described below:

First, urban development index.

Standardization of positive indicators: $$Q_{nijk}^{dvpt} = \frac{Q_{nijk} - Q_{nijk}^{min}}{Q_{nijk}^{max} - Q_{nijk}^{min}} \times 100 \quad (1.8)$$

Standardization of negative indicators: $$Q_{nijk}^{dvpt} = \frac{Q_{nijk}^{max} - Q_{nijk}}{Q_{nijk}^{max} - Q_{nijk}^{min}} \times 100 \quad (1.9)$$

Second, the rural development index.

Standardization of positive indicators: $q_{nijk}^{dvpt} = \frac{q_{nijk} - q_{nijk}^{min}}{q_{nijk}^{max} - q_{nijk}^{min}} \times 100$ (1.10)

Standardization of negative indicators: $q_{nijk}^{dvpt} = \frac{q_{nijk}^{max} - q_{nijk}}{q_{nijk}^{max} - q_{nijk}^{min}} \times 100$ (1.11)

In the above equation, Q_{nijk} denotes the urban development level of the three-level indicators, where n denotes the six provinces (n=1 refers to Guangxi; n=2 refers to Guizhou; n=3 refers to Sichuan; n=4 refers to Tibet; n=5 refers to Yunnan; n=6 refers to Chongqing), i, j, and k are the serial numbers of the first, second, and third-level indicators, respectively, and Q_{nijk}^{dvpt} is the standardized development indexes. The maximum and minimum values of the six southwestern provinces in the state of highly unbalanced development are Q_{nijk}^{max} and Q_{nijk}^{min} respectively. In the standardized results of all the three-level indicators, the larger the development index is, the closer it is to 1, the higher the degree of development and the fuller the development; the smaller the development index is, the closer it is to 0, the lower the degree of development and the lesser the development, and the same applies to the rural development index. Third, the unbalance adjustment coefficients.

Table 1.3 - Southwest Ethnic Region Development Imbalance Adjustment Factor Measure

Type	Measurement method	Calculation formula
Regional imbalance	Based on the development indexes of urban and rural areas, the Gini coefficient method with geometric weighting is used to measure the adjustment coefficients of regional balance of different provinces respectively.	$ine^{IR} = gini\left(Q_{ijk}{}^{1}, \ldots Q_{ijk}{}^{n}, \ldots Q_{ijk}{}^{N}; \omega_1, \ldots \omega_n\right.$
Time imbalance	Based on the development indexes of urban and rural areas, the Gini coefficient method with geometric weighting is used to measure the adjustment coefficients of urban and rural balances in different years.	$ine^{IT} = gini\left(Q_{ijk}{}^{I}, Q_{ijk}{}^{T}; \omega_I, \omega_T\right)$

Type	Measurement method	Calculation formula
Comprehensive imbalance	The degree of comprehensive balance is the result of the joint action of region and time, and the total adjustment coefficient is obtained by the product of temporal and spatial unbalance coefficients.	$\text{adj\_coef} = (1 - ine^{IR}) * (1 - ine^{IT})$
Note: n denotes the region, N is the total number of regions, $Q_{ijk}{}^{n}$ denotes the true level of region n, and ω_n denotes the weight of region n. The symbols I and T denote different indicators and different years, respectively, and ω_U and ω_U are the weights of urban and rural areas, respectively. gini() is the function for calculating the Gini coefficient. The imbalance adjustment coefficient for rural areas is calculated on the same principle as that for urban areas, and it is only necessary to replace the urban development index with the rural development index.		

Source: author`s research refers to the Balanced Development Index Report of China 2020 Liu Taoxiong (2021)

Fourth, balanced development index.

After obtaining the development index and the unbalance adjustment coefficient, the balanced development index (BDI_{nijk}) of the three-level index is further calculated, that is, the urban development index (Q_{nijk}^{adj}) adjusted by the unbalance coefficient, and the principle of calculating the balanced development index for rural areas is the same as that for urban areas as follows.

$$BDI_{nijk} = Q_{nijk}^{adj} = Q_{nijk}^{dvpt} \times \text{adj\_coef}_{nijk} \quad (1.12)$$

Fifth, development loss.

Development loss ($Loss_{nijk}$) is the loss of development index due to unbalanced development and is calculated by the degree of loss of the balanced development index relative to the development index. The definition and calculation formula of development loss in urban areas are shown below, and the principle of calculation of development loss in rural areas can be the same as shown below.

$$Loss_{nijk} = 1 - {BDI_{nijk}}/{Q_{nijk}^{dvpt}} = ine_{nijk}^{IR} + ine_{nijk}^{IT} - ine_{nijk}^{IR} \times ine_{nijk}^{IT} \quad (1.13)$$

Sixth, index aggregation.

Aggregation of secondary indicators: $BDI_{nij} = \sum_{k=1}^{L_{nij}} BDI_{nijk}/L_{nij}$ (1.14)

Aggregation of primary indicators: $BDI_{ni} = \sum_{j=1}^{L_{ni}} BDI_{nij}/L_{ni}$ (1.15)

Aggregation of total indicators: $BDI_n = \sum_{l=1}^{L_n} BDI_{ni}/L_n$ (1.16)

1.3.2 An empirical model for examining the spatial and temporal heterogeneity of unbalanced development in southwest ethnic areas.

To study the relationship between factors influencing the level of regional development, traditional spatial econometric local models can make the assumption that the observations have spatial homogeneity based on regression. They can also assume that the observations have spatial and temporal heterogeneity to study the spatial and temporal factors of regional unbalanced development. Geographically weighted regression (GWR) models are often used by academics to address the issue of uneven spatial development. To perform OLS regression analysis on factors with spatial heterogeneity, which reflects the characteristics of different parameters in different spaces, GWR is based on the notion of local smoothness and combines spatial information (Table 1.4).

Table 1.4 - Comparison of Urban and Rural GTWR model

Urban GTWR model		**Rural GTWR model**
Dependent variable	Urban gross equilibrium development index	Urban general equilibrium development index
Independent variables	Economic development index, social development index, ecological development index, livelihood development index, p=4	Economic development index, social development index, ecological development index, livelihood development index, p=4
Space	Guangxi, Guizhou, Sichuan, Tibet, Yunnan, Chongqing, k=66	Guangxi, Guizhou, Sichuan, Tibet, Yunnan, Chongqing, k=66
Time	2010 to 2020, t=11	2010 to 2020, t=11
Equation	$Total\ index_i = \beta_0(u_i, v_i, t_i) + \sum_{k=1}^{p} \beta_k(u_i, v_i, t_i) Q_{ik} + \varepsilon_i$	$total\ index_i = \beta_0(u_i, v_i, t_i) + \sum_{k=1}^{p} \beta_k(u_i, v_i, t_i) q_{ik} + \varepsilon_i$

Urban GTWR model		Rural GTWR model
Notes:	$Total\ index_i\left(u_i,\ v_i,\ t_i\right)\beta_0\left(u_i,\ v_i,\ t_i\right)Q_{ik}\varepsilon_i$Where, is the dependent variable, is the coordinate of target region i, is the intercept term, is the development index of region i, is the random error	$total\ index_i\left(u_i,\ v_i,\ t_i\right)\beta_0\left(u_i,\ v_i,\ t_i\right)q_{ik}\varepsilon_i$where, is the dependent variable, is the coordinate of target region i, is the intercept term, is the development index of region i, is the random error

Source: author`s research refers to the Balanced Development Index Report of China 2020 Liu Taoxiong (2021)

However, the degree of unbalanced development in the southwest ethnic regions has qualitatively changed over time, and the cross-sectional regression data of the GWR can hardly reflect the characteristics of the weighting matrix in the time dimension. Therefore, it is difficult to accurately examine the degree of parameter estimation under the assumption of non-smoothness in the time dimension. Under the assumption of non-smoothness in space-time, the GTWR, which is an improved version of the GWR with the addition of temporal information, can accurately estimate the development of southwestern ethnic regions.

The GTWR is an enhanced version of the GWR that incorporates spatiotemporal data. Based on the spatio-temporal panel data of the development of the southwest ethnic region and the assumption of spatio-temporal non-stationarity, the GTWR can efficiently estimate and predict the equilibrium development index. The first-level measurement system of southwest ethnic regions is used in this paper to construct an empirical framework for analyzing the spatio-temporal heterogeneity of unbalanced development in these regions. The spatio-temporal geographically weighted regression models for urban and rural areas are presented in the following tables.

1.3.3 Comprehensive evaluation model of balance development in Southwest China.

The following table compares the advantages and disadvantages of the six methods, including the fuzzy comprehensive evaluation method, the object element analysis method, the gray cluster analysis method, the cosine decision method, the TOPSIS model method, and the mutation level method (Table 1.5).

Table 1.5 - Qualitative and quantitative evaluation methods

Name	Description	Features
Qualitative evaluation methods		
Fuzzy comprehensive evaluation method	Establishing the set of factors and the set of comments, applying the fuzzy mathematics affiliation theory, and performing a thorough evaluation of the evaluation object in accordance with the evaluation matrix.	It is capable of making a sound quantitative assessment and accurately quantifying fuzzy information.
Mutation level method	The normalization formula performs the index quantification operation using the mutation affiliation function, and the final total affiliation function calculation is the value of the comprehensive evaluation.	Reduce the interference of irrational and subjective factors without sacrificing accuracy and simplicity.
Material element analysis method	The material element model is established based on the qualities of quality and quantity to ascertain the degree of the object's belonging to a particular set based on the quantitative value of the pertinent characteristics of the object.	It can successfully address the issue of system indicator variability and compatibility.
Gray clustering analysis method	The whitening number of the clustered objects for different clustering indexes is grouped by several gray classes, in order to determine which class the clustered objects belong to.	It does not require the data being analyzed to have a special distribution, and the calculation process is straightforward.
TOPSIS model method	The best and worst solutions are found in the original data matrix after normalization, and the evaluation is based on the evaluation object's proximity to the best solution.	The sample is not strictly constrained, and it is more appropriate to use the original data.

Name	Description	Features
Cosine decision method	Calculate the cosine of the angle between the index line segment and the ideal index line segment using the cosine formula, and then compare the magnitude of the angle to make a decision.	Overcomes the drawbacks of many decision optimization models, including lengthy processes and complex calculations.
Quantitative evaluation methods		
Hierarchical analysis method	The indicators are compared to one another using the hierarchical structure system to determine the judgment matrix, and the eigenvectors corresponding to the distinctive roots of the matrix are used as weights.	Simple calculations, precise results, subjectivity, and increased decision validity.
Entropy value method	Calculate the index weight based on the amount of information the decision-maker has access to. The greater the difference between the indexes, the lower the entropy value, and the greater the weight.	Effectively omit subjective interference and accurately reflect the data from the evaluation object.
Rough set multi-attribute decision theory	To reduce the number of attributes, establish a rough set, eliminate redundant attributes from the decision table, produce decision rules from the reduced decision table, and decide on new objects.	No necessity to create mathematical models or offer any a priori knowledge about the subject of study.

Source: author`s research refers to the Balanced Development Index Report of China 2020 Liu Taoxiong (2021)

Based on the first and second level index systems of the uneven development of southwest ethnic groups, this study develops a comprehensive evaluation index system of the development level of southwest ethnic regions. In addition, the economic, social, ecological, and livelihood aspects of urban and rural Southwest ethnic areas are evaluated using the first and second level development indexes.

The fuzzy comprehensive evaluation method based on the entropy weight method can standardize the affiliation degree and make the comprehensive evaluation of the development level of southwest ethnic regions more objective. Development indicators are ambiguous and challenging to quantify.

Table 1.6 - Comprehensive evaluation index system of the development of southwest ethnic regions

Evaluation Objectives	Primary indicators	Secondary indicators
Comprehensive development level of southwestern ethnic regions (urban/rural)	Economy	Economic Benefit
		Economic Structure
		Innovation-driven
		Level of Urban Infrastructure
		Human Capital
	Social	Civility
		Fairness
		Social Security
		Social Governance
		Social Insurance
	Ecology	Energy Resources
		Water Resources
		Land Resources
		Environmental Governance Improvement
		Ecological Protection
	People's Livelihood	Income
		Employment
		Residence
		Education
		Medical Health

Source: author`s research refers to the Balanced Development Index Report of China 2020 Liu Taoxiong (2021)

First, in this paper, the development weights of the first and second level indicators are calculated using the entropy weight method, which primarily relies on the extreme difference method and the degree of dispersion to objectively quantify the standardized development level results. The calculation formula is as follows:

First, development weights:

Standardization of urban positive indicators: $Q_{ij}^{dvpt} = \frac{Q_{ij} - Q_{ij}^{min}}{Q_{ij}^{max} - Q_{ij}^{min}} \times 100$ (1.17)

Standardization of urban inverse indicators: $Q_{ij}^{dvpt} = \frac{Q_{nijk}^{max} - Q_{nijk}}{Q_{ij}^{max} - Q_{ij}^{min}} \times 100$ (1.18)

Standardization of rural positive indicators: $q_{ij}^{dvpt} = \frac{q_{ij} - q_{ij}^{min}}{q_{ij}^{max} - q_{ij}^{min}} \times 100$ (1.19)

Standardized rural inverse indicators: $q_{ij}^{dvpt} = \frac{q_{nijk}^{max} - q_{nijk}}{q_{ij}^{max} - q_{ij}^{min}} \times 100$ (1.20)

In the above equation, the urban development level of the three levels of indicators, where i and j are the serial numbers of the first, second and third level indicators, respectively, and Q_{ij}^{dvpt} is the standardized urban development weights. And Q_{ij}^{max} and Q_{ij}^{min} are the maximum and minimum values of Southwest China in the state of very unbalanced development, respectively. In the standardized results of all the three-level indicators, the larger the development index is, the closer to 1, the higher the degree of development and the fuller the development; the smaller the development index is, the closer to 0, the lower the degree of development and the lesser the development, and the same is true for the rural development index.

Second, information entropy:

$$E_j = -\ln(n)^{-1} \sum_{i=1}^{n} Q_{ij}^{dvpt} \ln Q_{ij}^{dvpt} \ (j = 1,2,\ldots,m) \quad (1.21)$$

Third, determine the weights of each indicator, the formula is as follows:

$$w_j = \frac{1 - E_j}{n - \sum_{j=1}^{m} E_j} (j = 1,2,\ldots,m) \quad (1.22)$$

Fourth, the set of fuzzy comprehensive evaluation factors:

$$\mathrm{U} = \{\mathrm{U}_1, \mathrm{U}_2, \ldots, \mathrm{U}_\mathrm{m}\} \quad (1.23)$$

Fifth, the set of fuzzy comprehensive evaluation rubrics:

$$\mathrm{V} = \{\mathrm{V}_1, \mathrm{V}_2, \ldots, \mathrm{V}_\mathrm{m}\} \quad (1.24)$$

Sixth, fuzzy evaluation matrix R:

$$R = \begin{pmatrix} r_{11} & \cdots & r_{1n} \\ \vdots & \ddots & \vdots \\ r_{m1} & \cdots & r_{mn} \end{pmatrix} \tag{1.25}$$

Seventh, the weight vector W:

$$W = (W_1, W_2, \ldots, W_n) \tag{1.26}$$

Eighth, the comprehensive evaluation matrix B:

$$B = W \times R = (W_1, W_2, \ldots, W_n) \times \begin{pmatrix} r_{11} & \cdots & r_{1n} \\ \vdots & \ddots & \vdots \\ r_{m1} & \cdots & r_{mn} \end{pmatrix} = (B_1, B_2, \ldots, B_n) \tag{1.27}$$

In conclusion, this study uses the fuzzy comprehensive evaluation matrix of the entropy weight method to determine the degree of development in southwest ethnic regions. It then combines the corresponding scores from the rubric set to determine the degree of development in terms of the economic factor, social factor, ecological factor, and livelihood factor.

Conclusion to Chapter 1

In summary, based on the theoretical research on the unbalanced development of southwest ethnic areas, the following conclusions are obtained, which lay the theoretical foundation for the empirical research in Chapter 2 and the research on the path countermeasures in Chapter 3. The conclusions are as follows:

In the first section, the author traced the theoretical source of the connotation of unbalanced development in southwest ethnic areas, and found that the proportional equilibrium of Marx and other scholars and the balanced analysis of Vallas explain the nature of unbalanced regional development. Therefore, this paper makes the materialist dialectical analysis based on the ideological connotation of balance and imbalance and obtains the theoretical connection of unbalanced development in southwest ethnic areas. In the process, this study defines the connotation of the new era of new development and the characteristics of inadequate and unbalanced development, and connects and distinguishes the relationship between inadequate and unbalanced development in southwest ethnic

areas.

In the second section, the author deeply analyzes the unbalanced development theory, multi-center governance theory, sustainable development theory and the theory of unbalanced development of southwest ethnic areas, found the southwest ethnic development unbalanced theory analysis of time and space, for the regional perspective of southwest ethnic areas of unbalanced development status, influencing factors, comprehensive development level provides the theoretical basis.

In the third section, first of all, the measurement model and evaluation model of unbalanced regional development are analyzed and compared, and based on the unbalanced development system of Tsinghua University, the measurement system of unbalanced development in southwest ethnic areas is constructed. Then, based on the measurement results of unbalanced development, the spatio-temporal geographical weighted regression method (GTWR) analyzes the economic, social, ecological and livelihood factors affecting the balanced development of southwest ethnic areas, which provides a systematic basis for the comprehensive evaluation of the development level of southwest ethnic areas. Finally, based on the fuzzy comprehensive evaluation system of the entropy right method, the comprehensive evaluation system of the development level of ethnic minority urban and rural areas of southwest China is constructed, which provides an empirical framework for the empirical comprehensive evaluation of Chapter II.

CHAPTER 2. AN EMPIRICAL STUDY ON THE UNBALANCED DEVELOPMENT OF ETHNIC AREAS SOUTHWEST CHINA

First, this chapter revealed that the characteristics of the unbalanced socioeconomic development in the ethnic areas of southwest China are studied. The balanced development index of Tsinghua University is used to measure the overall development trend characteristics and the characteristic structure of the development in different fields of urban and rural areas.

Second, this chapter2.2 is to study the influencing factors of the socioeconomic development imbalance in the ethnic areas of southwest China, and analyze the heterogeneity of the four factors of economy, society, ecology and people's livelihood on the development imbalance in the ethnic areas of southwest China through the spatio-temporal weighted regression;

Third, this chapter2.3 is the comprehensive evaluation of the development of southwest China's ethnic minority areas, the overall analysis of the overall level of development of southwest China's ethnic minority areas, development gaps in different fields, for the third chapter of the path and countermeasures to provide empirical basis.

2.1. Characteristics of the Unbalanced Development in Southwest China

This section mainly adopts the measurement method of unbalanced development adopted by Tsinghua University, measures the overall development trend, characteristics and sub-domain characteristics of ethnic minority areas in southwest China from both urban and rural perspectives, and deeply analyzes the characteristic structure of socioeconomic development in ethnic minority areas in southwest China, laying the foundation for the path study in Chapter 3.

2.1.1 Characteristics analysis of unbalanced development of ethnic urban areas in Southwest China.

This part mainly includes two aspects: one is the study on the overall development trend and characteristics of the ethnic urban areas in the southwest; the other is the study on the characteristic structure of the development of the ethnic urban areas in the southwest.

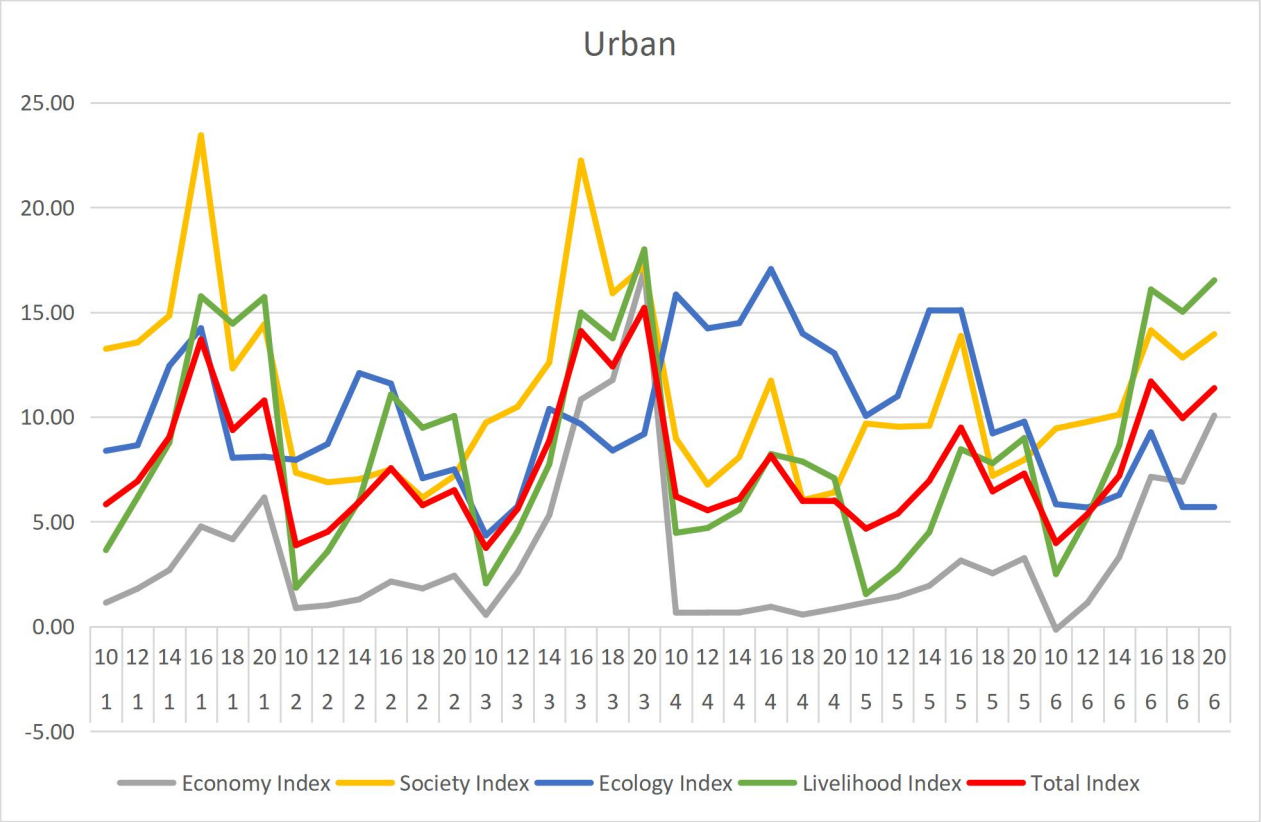

Figure 2.1 - Balanced development index of ethnic urban areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020

Description: In the figure, the vertical coordinate is the development index, the interval is 5 units, the upper half of the horizontal coordinate refers to the year, the interval is 2 years, such as 10 represents 2010, and the lower half of the horizontal coordinate refers to a specific city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Tibet, 5 represents Yunnan, and 6 represents Chongqing. By analogy, all the data of balanced development index of ethnic urban areas in Southwest China from 2010 to 2020 are shown in the appendix.

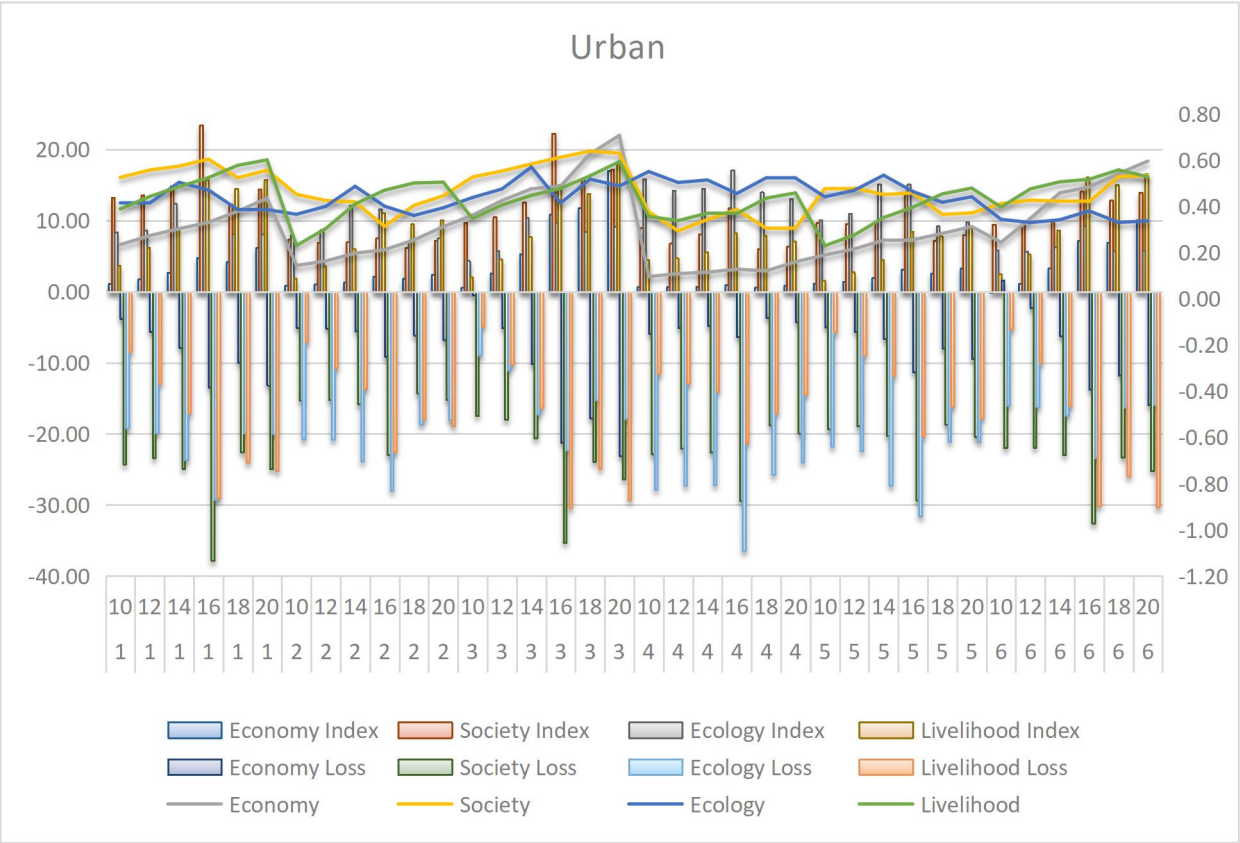

Figure 2.2 - Map of unbalanced development of ethnic urban areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020

Description see on Figure 2.1

The values on the left vertical axis of the figure represent the specific situation of development index and development loss, and the interval is 10 units. A negative development loss indicates that the development situation is improving, while a positive development loss indicates that the development situation is declining and improving. The value on the right side of the graph shows the fluctuation of the absolute value of the difference between development index and development loss. The upper half of the horizontal coordinate refers to the year, the interval of 2 years, for example, 10 represents 2010, and the lower half of the horizontal coordinate refers to a specific city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Tibet, and 5 represents Yunnan. 6 stands for Chongqing. By analogy, the full data on the unbalanced

development of ethnic urban areas in Southwest China from 2010 to 2020 are in the appendix.

As shown in Figure 2.1 and Figure 2.2, the following conclusions can be drawn:

First, the overall development index of ethnic urban areas in southwest China was higher than 15, and maintained an upward trend from 2010 to 2019, and slightly decreased under the epidemic in 2020. However, compared with rural areas, the balanced development index was 10. The balanced development index gradually increased from 2010 to 2016, and gradually decreased from 2016 to 2020 due to the upward pressure of the international economy. Among the six provinces, autonomous regions and municipalities in southwest China, Guangxi Zhuang Autonomous Region, Sichuan Province and Chongqing Municipality have relatively high and balanced development indexes of 18 or more and nearly 15, while Guizhou Province, Tibet Autonomous Region and Yunnan Province have relatively low and balanced development indexes of about 12 and 8.

Among them, according to the statistics of the National Bureau of Statistics of China compiled by this paper, see the appendix data in Figure 2.1 and Figure 2.2: Among the four major fields, the average development index (25) and the degree of balanced development (15) in the social field are the highest, followed by the average development index (15) and the degree of balanced development (12) in the ecological field, the average development index (12) and the degree of balanced development (8) in the people's livelihood field are lower, and the average development index (8) and the degree of balanced development (5) in the economic field are the lowest.

Second, the development loss of ethnic urban areas in Southwest China is -30, and even reaches -40 in some provinces and cities. The development loss fluctuates greatly from 2016 to 2020, and increases to -20 from 2016 to 2018, indicating that the development level of ethnic areas in southwest China has improved and the development speed is gradually accelerating. In the social field, the development loss of Guangxi Zhuang Autonomous Region, Sichuan Province, Chongqing

Municipality, Yunnan Province and Tibet exceeded -20, indicating that from 2010 to 2020, the social field of these five regions showed positive development and fast speed (Notes: From 2010 to 2020, the development loss of Guangxi was -26.29, that of Guizhou was -16.42, that of Sichuan was -23.60, that of Tibet was -22.59, that of Yunnan was -21.15 and that of Chongqing was -24.65); In the ecological field, the development loss of Tibet Autonomous Region, Yunnan Province, Guangxi and Guizhou exceeded -20, indicating that from 2010 to 2020, the ecological field of these four regions maintained sustainable development and developed at a fast speed. From 2010 to 2020, the development loss is -21.99 in Guangxi, -21.68 in Guizhou, -15.44 in Sichuan, -28.07 in Tibet, -24.21 in Yunnan and -17. 53 in Chongqing).

In the field of people's livelihood, the development loss of Guangxi Zhuang Autonomous Region, Sichuan Province and Chongqing Municipality is nearly -20, which means that from 2010 to 2020, the infrastructure coverage in the field of people's livelihood in these three regions is relatively fast, and people's living standards are gradually improved (Notes: From 2010 to 2020, the development loss is -19.45 in Guangxi, -15.16 in Guizhou, -19.34 in Sichuan, -15.23 in Tibet, -13.46 in Yunnan and -19.64 in Chongqing); In the economic field, the development loss of Sichuan province is more than -10.

The comprehensive economic development of Sichuan Province is good and there is a large space for development, indicating that from 2010 to 2020, the economic development speed of Sichuan Province is fast (Notes: From 2010 to 2020, the development loss of Guangxi was -8.99, that of Guizhou was -6.30, that of Sichuan was -12.97, that of Tibet was -5.00, that of Yunnan was -7.68, and that of Chongqing was -8.05).

In short, since 2010, especially since the report of the 19th National Congress of the Communist Party of China, based on the political and economic environment in the new era and the comprehensive deepening of reform, the report of the 20th National Congress of the Communist Party of China pointed out that the economic layout and territorial space system of the southwest ethnic regions

should be built with complementary advantages and high-quality development.

Under the strong leadership of the Communist Party of China and the joint efforts of the government and people of the ethnic minority areas in Southwest China, great achievements have been made in the economic and social development of the ethnic minority areas in Southwest China, with sustained and steady growth of the regional economy and remarkable improvement in the strength of the ethnic minority areas in Southwest China.

The material and cultural living standards of the people in the ethnic minority areas of Southwest China have been greatly improved, and remarkable achievements have been made in the social development of the area. Ecological progress has reached a new level, and the quality of the environment in the ethnic minority areas of southwest China has been continuously improved.

The livelihood and well-being of the people in the southwest ethnic minority areas have been greatly improved, and the sense of fulfillment of the people in the southwest ethnic minority areas has been greatly enhanced. The economies of Tibet Autonomous Region, Yunnan Province and Guizhou Province are gradually developing, and environmental protection and ecological construction in the ecological field have achieved remarkable results. Sichuan Province, Chongqing Municipality and Guangxi Zhuang Autonomous Region have gradually improved their economic development level, enhanced the quality and efficiency of their economic development and achieved comprehensive poverty alleviation. In addition, the livelihood security system in these three regions has gradually improved, and the people in these three regions have a strong sense of life fulfillment. At the same time, the social security system in the ethnic minority areas of southwest China has fully covered all aspects of social civilization and security management.

In recent years, the degree of imbalance in China's economic and social development has improved slightly overall, but the problem of unbalanced development is still serious. The report of the 20th National Congress of the Communist Party of China has further deepened the reform of the ecological

civilization system and opened up a new situation in ecological civilization construction and environmental protection. However, there is still a big gap between the speed of ecological civilization construction and the speed of economic development, and the quality of economic development cannot support the sustainable development of ecological civilization. Securing and improving people's livelihood is the basic goal of the development of ethnic minority areas in southwest China. The problems most closely related to people's lives have been gradually solved, including employment, education and housing.

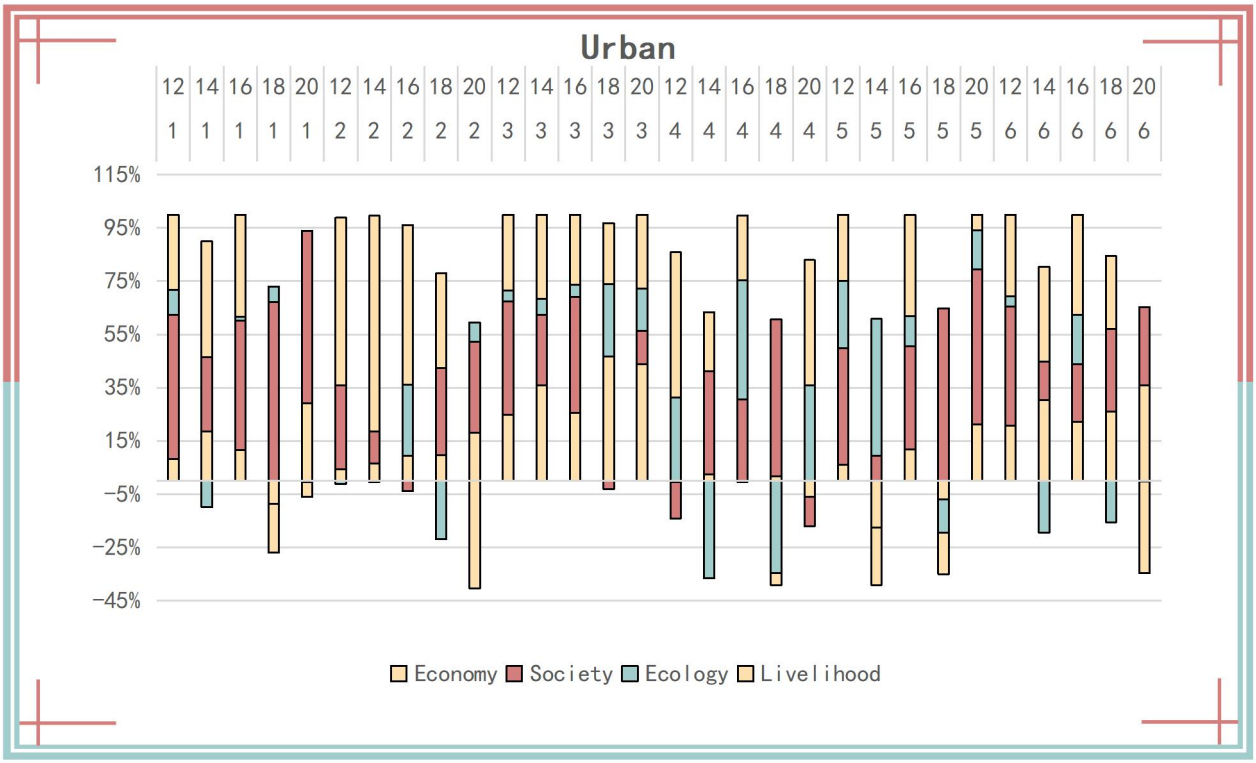

Figure 2.3 - Balanced development factor contribution map of ethnic urban areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

The ordinate in the figure refers to the contribution degree of the urban balanced development factor, with an interval of 5 units. If the contribution degree is greater than 0, it indicates that the factor has a positive impact on the balanced development of the region; if the contribution degree is less than 0, it indicates that

the factor has a negative impact on the balanced development of the region. The upper half of the horizontal coordinate refers to the year, the interval is 2 years, for example, 10 represents 2010, and the lower half of the horizontal coordinate refers to a specific city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Xizang, 5 represents Yunnan, and 6 represents Chongqing. By analogy, the full data on the contribution degree of urban balanced development factors in ethnic urban areas of Southwest China from 2010 to 2020 are shown in the appendix.

However, among the most immediate and realistic issues of concern to the people, it is still necessary to make overall plans for social security in education, income distribution, employment, medical and health care, and housing. In our work, we must delve deeply into the people's needs and provide them with more detailed livelihood services. Therefore, it is necessary to stabilize and balance social development, constantly promote social justice and equality, establish effective social governance and good social order, and strengthen the construction of the governance system in the ethnic minority areas of southwest China.

Table 2.1 Enhancement table of Balanced development Index of ethnic minority areas in Southwest China from 2010 to 2020.

Indicators	**Enhancement of Balanced Development Index**				
	2012	**2014**	**2016**	**2018**	**2020**
Guangxi					
Economy	0.36	0.49	1.62	0.65	1.11
Society	2.38	0.73	6.85	4.99	2.48
Ecology	0.41	0.26	0.2	0.43	0.01
Livelihood	1.24	1.13	5.41	1.36	0.22
Total	1.1	0.52	3.52	0.85	0.84
Guizhou					
Economy	0.08	0.12	0.63	0.21	0.41
Society	0.59	0.22	0.27	0.72	0.77
Ecology	0.02	0.01	1.81	0.48	0.17
Livelihood	1.17	1.48	4.03	0.78	0.91
Total	0.46	0.45	1.55	0.31	0.11

Indicators	Enhancement of Balanced Development Index				
	2012	**2014**	**2016**	**2018**	**2020**
Szechuan					
Economy	1.21	1.37	4.56	3.98	2.98
Society	2.09	1	7.75	0.27	0.87
Ecology	0.2	0.23	0.83	2.33	1.08
Livelihood	1.39	1.21	4.69	1.96	1.9
Total	1.22	0.96	4.46	2	1.71
Tibet					
Economy	0.01	0.03	0.03	0.08	0.18
Society	0.28	0.48	2.18	3.01	0.32
Ecology	0.65	0.45	3.18	1.77	1.05
Livelihood	1.14	0.27	1.72	0.24	1.38
Total	0.37	0.08	1.77	0.27	0.48
Yunnan					
Economy	0.16	0.32	1.05	0.35	0.39
Society	1.12	0.17	3.39	3.24	1.06
Ecology	0.65	0.95	0.99	0.63	0.27
Livelihood	0.64	0.4	3.34	0.79	0.11
Total	0.64	0.1	2.19	0.37	0.46
Chungking					
Economy	0.77	1.23	3.26	1.82	1.73
Society	1.64	0.58	3.17	2.17	1.43
Ecology	0.14	0.79	2.73	1.09	0.01
Livelihood	1.13	1.44	5.52	1.91	1.67
Total	0.92	0.61	3.67	1.2	0.37

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

The improvement index table in the above table selects the gap between 2012, 2014, 2016, 2018 and 2020 and 2011, 2013, 2015, 2017 and 2019 as a comparison. The positive index indicates that the development of this field in the current year has increased compared with the same period of last year. Indicating that the development of this field in that year is better than that in the previous year, while

the negative indicator indicates that the development of this field in that year is lower than that in the same period of last year, indicating that the development of this field in that year is worse than that in the previous year. By analogy, the full data on the improvement of the balanced development index of the ethnic minority areas in Southwest China from 2010 to 2020 are shown in the appendix.

Through further calculation, it is found that the contribution of various fields to the improvement of the balanced development index in different years and different urban areas shows a dynamic change, indicating that the degree of economic and social development balance in the ethnic areas of southwest China is from high to low in Sichuan Province, Guangxi Zhuang Autonomous Region, Yunnan Province, Chongqing Municipality, Guizhou Province and Tibet Autonomous Region. In terms of the degree of unbalanced development, from the highest to the lowest, it is the economic, ecological, social and people's livelihood fields, and the following results are obtained:

(1) In Guangxi Zhuang Autonomous Region of China, the economic field continues to develop in a balanced way, with a faster growth rate of 1. 62 in 2016; in the social field, the development fluctuates, and the degree of imbalance reached -4.99 in 2018; the development of the ecological field was extremely unbalanced, with an increase of 0.41 in 2012; the balanced development of the people's livelihood field is faster, but the impact of the epidemic in 2020 is -0.22.

(2) In Guizhou Province, China, the economic field maintained balanced development, with a faster growth rate of 0.63 in 2016; the social field fluctuated, and the degree of imbalance reached -0.27 in 2016; the ecological field developed sustainably, with an increase of 1.81 in 2016; the balanced development of people's livelihood is fast, but the impact of the epidemic in 2020 is -0.91.

(3) In Sichuan Province, China, the economic sector maintained high-quality growth, with a faster growth rate of 4.56 in 2016; The development of the social field fluctuated, and the degree of imbalance reached -0.27 in 2018; The sustainable improvement of the ecological field, with an increase of 2.33 in 2018; The balanced development of people's livelihood is fast, but the impact of the

epidemic in 2020 is -0.91. Affected by the epidemic, the balanced development rate slowed down in 2020.

(4) In Tibet Autonomous Region of China, the level of economic development is low and extremely unbalanced, with a faster growth rate of 0.18 in 2020; the social sector fluctuates, with a deep imbalance of -3.01 in 2018; the development problem in the ecological field was prominent, with an increase of 3.18 in 2016 alone; the balanced development of people's livelihood slowed down due to the impact of the epidemic, reaching -1.38 in 2020.

(5) In Chongqing City, Sichuan Province, China, the economic field continued to develop, with a faster growth rate of 3.26 in 2016; the sustainable development of social field, with a high development level of 3.17 in 2016; the sustainable development of ecological field, with growth in 2016; the balanced development of people's livelihood was relatively fast, with a growth rate of 5.52 in 2016.

In short, the dynamic changes in the contribution levels of various provinces and cities in the ethnic minority areas of Southwest China from year to year reflect that the ethnic minority areas of Southwest China are paying more attention to the coordinated development of social, ecological and livelihood fields while maintaining steady growth in the economic field. Since the report of the 19th National Congress of the Communist Party of China (CPC), the CPC Central Committee has made the people's aspiration for a better life the goal of the whole Party, attached great importance to improving people's livelihoods and social development, adhered to supporting social policies, paid attention to ensuring people's basic livelihood needs, and promoted fairness in people's livelihoods. People's happiness and sense of fulfillment in life have been continuously improved.

Moreover, according to the report of the 20th National Congress of the Communist Party of China, the intelligence of infrastructure construction is a harmonious and interdependent intelligence between man and nature. It is necessary not only to create more material and spiritual capital to make people's daily lives increasingly happy, but also to provide more high-quality ecological

goods to make people's ecological and natural environment increasingly beautiful. In the long run, the regional economy of the Chinese nation in Southwest China has maintained a rapid improvement, the overall economic strength has been greatly enhanced, and the people's daily living standards have been greatly improved. However, at the same time, the high consumption, high discharge and high environmental pollution have led to the tight control of regional resources, serious pollution of the natural environment and the degradation of the ecosystem software in Southwest China. The problems of unbalanced, disharmonious and unsustainable ecological and natural environment have become more and more obvious, and the excellent ecological and natural environment has become an urgent requirement for the better life of the people in Southwest China.

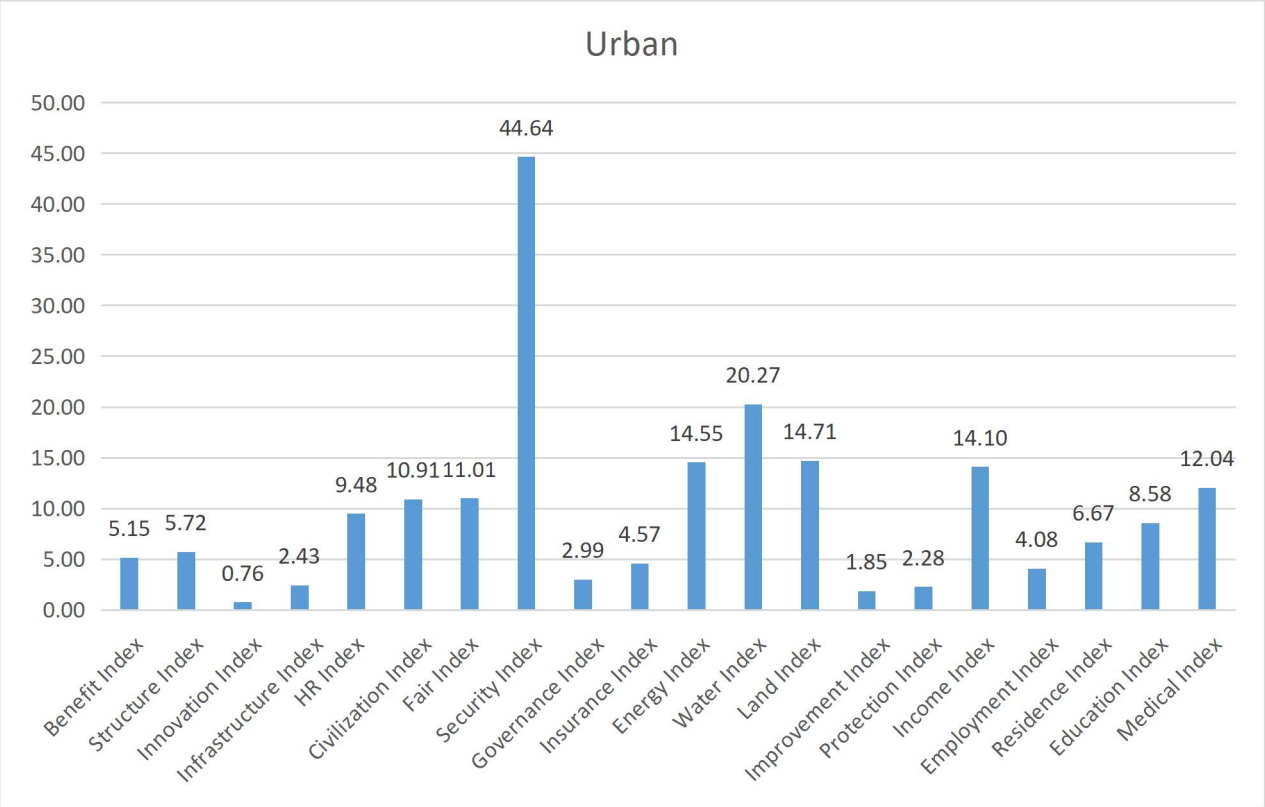

Figure 2.4 - Balanced development index of ethnic urban areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

The data comes from the National Bureau of Statistics of China. Based on the three-level balanced development index, this research draws the balanced development index of economy, society, ecology and people's livelihood in four fields based on the average value from 2010 to 2020 through summary calculation. Among them, the horizontal coordinate is derived from the three-level index of the balanced development index system table, refer to the appendix for details, and the vertical coordinate represents the overall situation of the balanced development index in each field, with a interval of 5 units.

As shown in Figure 2.4, in general, the development level of various fields in the ethnic minority areas of southwest China is relatively high, and the development loss is basically negative, but there are still different degrees of unbalances.

Table 2.2 - Improvement table of the Balanced Development Index from 2010 to 2020 in Southwest China

Year	Second indicators	Balanced Development Index												
		Guangxi		Guizhou		Sichuan		Xizang		Yunnan		Chongqing		average
		2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	
Economy	Benefit Index	0.6	6.9	0.0	2.0	2.4	29.0	0.0	0.9	0.1	3.1	1.6	24.6	5.2
	Structure Index	5.8	7.1	7.0	3.9	1.0	7.4	11.2	5.9	5.9	4.1	4.7	6.7	5.7
	Innovation Index	0.1	0.4	0.0	0.0	0.8	5.4	0.0	0.0	0.0	0.0	1.5	5.8	0.8
	Infrastructure Index	0.4	5.8	0.1	2.2	1.0	7.5	0.1	3.1	0.3	2.6	1.2	7.1	2.4
	HR Index	4.1	13.3	1.7	5.7	16.6	50.0	0.0	0.0	3.3	10.3	1.8	7.0	9.5
society	Civilization Index	5.8	24.3	2.9	14.6	7.2	10.8	3.5	13.9	4.8	7.3	8.9	26.8	10.9
	Fair Index	45.5	22.6	14.1	6.2	9.4	6.0	7.5	0.0	13.3	0.0	4.9	2.7	11.0
	Security Index	47.5	13.4	41.4	11.2	20.8	18.2	89.4	75.3	52.5	41.9	65.5	58.6	44.6
	Governance Index	0.3	4.3	0.2	1.0	4.9	20.1	0.0	0.1	0.2	3.1	0.1	1.6	3.0
	Insurance Index	0.7	5.2	0.5	2.8	1.9	32.4	0.0	0.1	0.9	4.6	0.3	5.6	4.6
ecology	Energy Index	18.8	13.6	19.8	14.7	4.3	7.9	21.7	17.4	20.4	13.5	10.8	11.7	14.6
	Water Index	13.9	13.1	17.1	13.9	10.2	7.1	55.1	54.9	21.5	17.2	11.5	7.8	20.3
	Land Index	17.0	14.5	15.7	12.3	6.0	8.8	22.7	14.9	13.8	10.8	19.4	20.5	14.7
	Improvement Index	0.6	0.9	0.5	2.9	0.9	9.0	0.1	0.0	1.4	5.5	0.2	0.5	1.9
	Protection Index	0.9	4.3	0.1	0.4	2.4	11.3	0.1	3.4	0.8	3.5	0.0	0.1	2.3

livelihood	Income Index	14.1	19.6	14.7	11.5	10.9	16.7	19.5	12.5	14.4	13.2	4.5	17.9	14.1
	Employment Index	1.4	11.1	0.8	4.0	2.9	16.4	0.1	3.5	0.8	3.9	1.0	3.1	4.1
	Residence Index	7.4	7.0	0.8	2.8	1.8	2.2	16.0	13.1	0.1	0.6	11.4	16.8	6.7
	Education Index	1.0	22.2	0.5	15.4	0.1	23.5	0.0	1.1	0.1	12.7	1.7	24.8	8.6
	Medical Index	0.2	21.4	0.4	22.7	1.5	43.2	1.1	9.0	0.5	24.5	0.9	26.1	12.0

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

*The improvement index table in the above table selects the development of different fields in 2010 and 2020 for comparison. The positive index indicates that the development of this field in 2020 will increase compared with the same period in 2010, indicating that the development of this field in this region in 2020 will be better than that in 2010. Negative indicators indicate that the development of this field in 2020 is declining compared with the same period in 2010, indicating that the development of this field in this region in that year is worse than that in the previous year. By analogy, the full data on the improvement of the Balanced development Index of the ethnic minority areas in Southwest China from 2010 to 2020 are shown in the appendix.

As shown in Table 2.1, Figure 2.5 and Figure 2.6, the economy of ethnic urban areas in Southwest China is growing steadily, but the degree of economic balanced development is low, and the balanced development index is 4.71. Specifically, from 2010 to 2020, the economic benefits and economic structure adapt to each other, and the economic structure adjustment in southwest China's ethnic minority areas has achieved initial results, with the rapid growth of the balanced development index reaching 5.15 and 5.72, respectively.

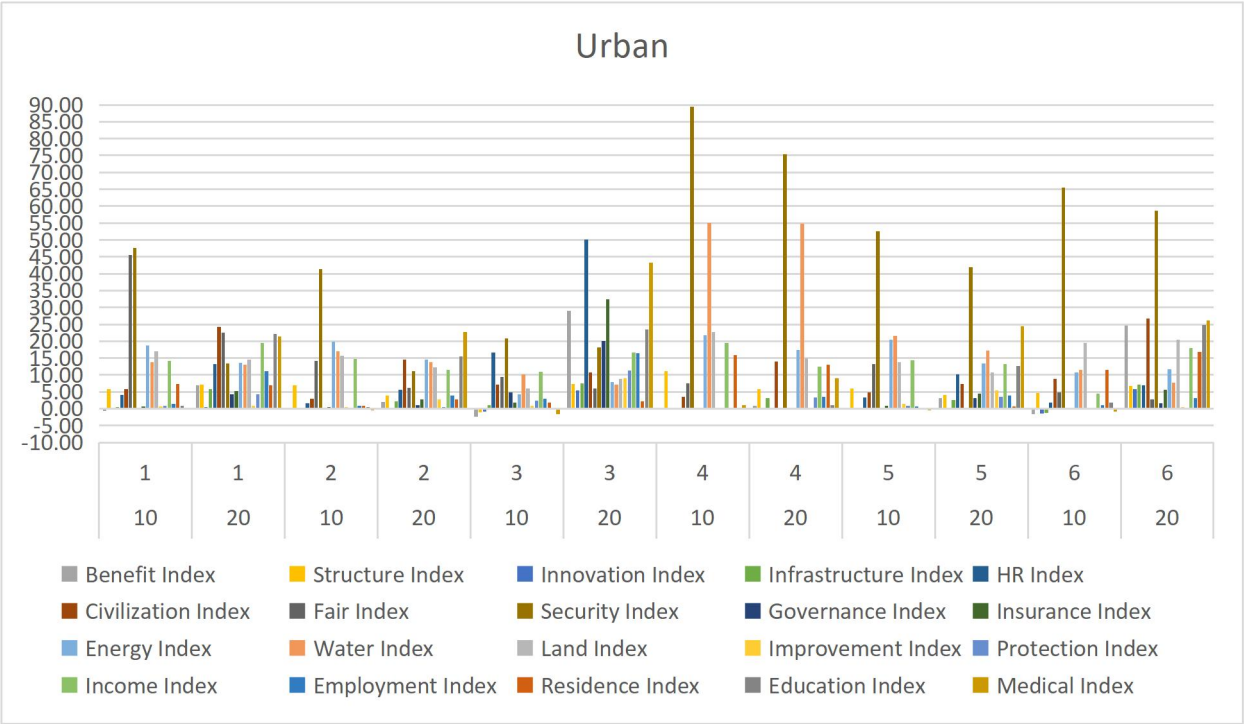

Figure 2.5 - Balanced development index of ethnic urban areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

Description: The ordinate in the figure indicates the relative degree of balanced development by field in the ethnic urban areas of southwest China from 2010 to 2020. A positive value indicates that the level of balanced development in this field is stable, while a negative value indicates that the level of development in this field is unbalanced. The upper half of the horizontal coordinate refers to the year, the interval of 2 years, for example, 10 represents 2010, and the lower half of the horizontal coordinate refers to a specific city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Tibet, 5 represents Yunnan, and 6 represents Chongqing. And so on, the figure above only shows the data of the first year and the last year, all the data are in the appendix, and all the data of the contribution degree of urban balanced development factors in the ethnic urban areas of Southwest China from 2010 to 2020 are in the Appendix.

The level of infrastructure-driven and innovation-driven development is low, and the development is extremely uneven, with the balanced development index of

0. 76 and 2.43, respectively; The degree of balanced development of human capital is relatively high, influenced by the western rural revitalization and the western Belt and Road policy, the construction of talent support system is gradually improving, and the balanced development index reaches 9.48.

As can be seen from Table 2.1, Figure 2.5 and Figure 2.6, the society in Southwest China's ethnic urban areas has made continuous progress, with comprehensive coverage of social construction and a balanced development index of 14.83. In particular, from 2010 to 2020, the balanced development index of social security is relatively high, reaching 44.64; the two secondary indexes of social civilization and social justice, the balanced development index grew rapidly, were 10.91 and 11.01, respectively; the relatively low development level of social governance and social security is due to the differences in governance and social security conditions in different ethnic areas, with the balanced development index of 2.99 and 4.57, respectively.

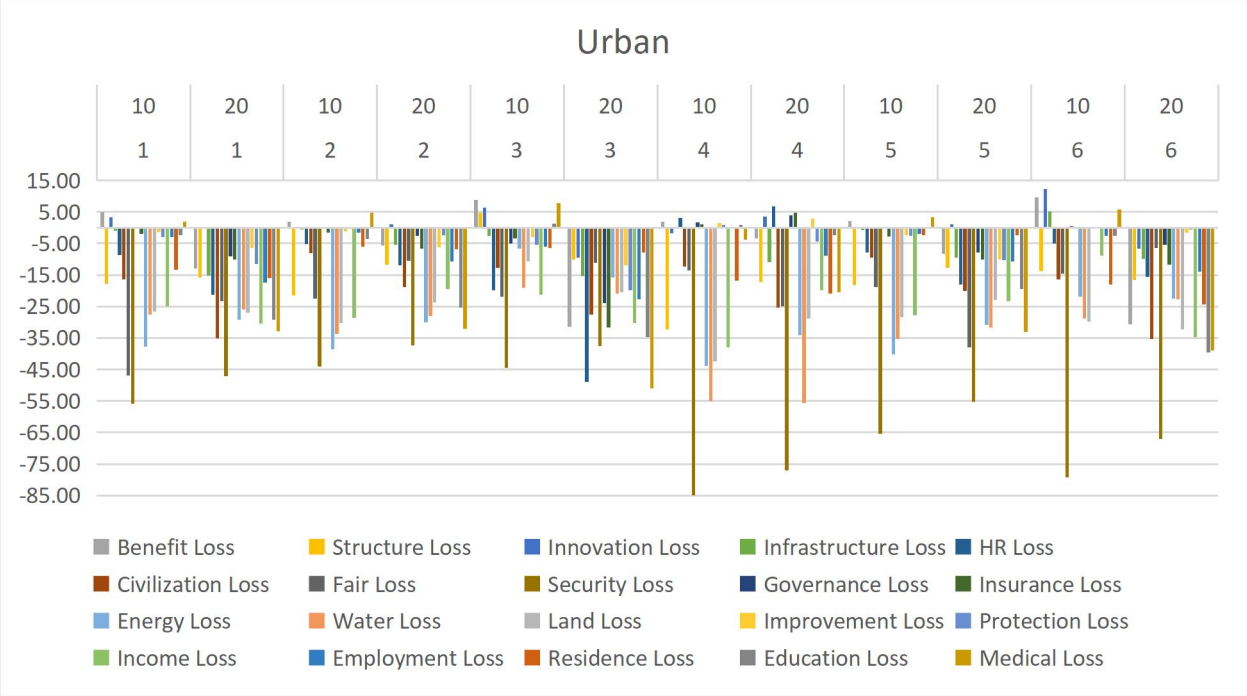

Figure 2.6 - Comparison of development losses in ethnic urban areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

Description see on figure 2.5

As shown in Table 2.1, Figure 2.5 and Figure 2.6, the ecological environment of ethnic minority areas in southwest China has been continuously improved, and the balanced development index is 10.73. In particular, from 2010 to 2020, the development and utilization of energy resources, water resources and land resources have maintained a high level, reaching 14.55, 20.27 and 14.71, respectively. However, environmental governance and ecological protection are poor, and the balanced development index is 1.85 and 2.28, respectively. The speed of ecological environmental governance and protection is much slower than the speed of development and utilization, and there are great risks to ecological sustainable development.

As shown in Table 2.1, Figure 2.5 and Figure 2.6, the livelihood and well-being of people in ethnic minority areas in southwest China continue to improve, and the balanced development index is 9.09. Specifically, from 2010 to 2020, the balanced development index of income is growing faster, reaching 14.10.

2.1.2 Characteristics analysis of unbalanced development of ethnic rural areas in southwest China.

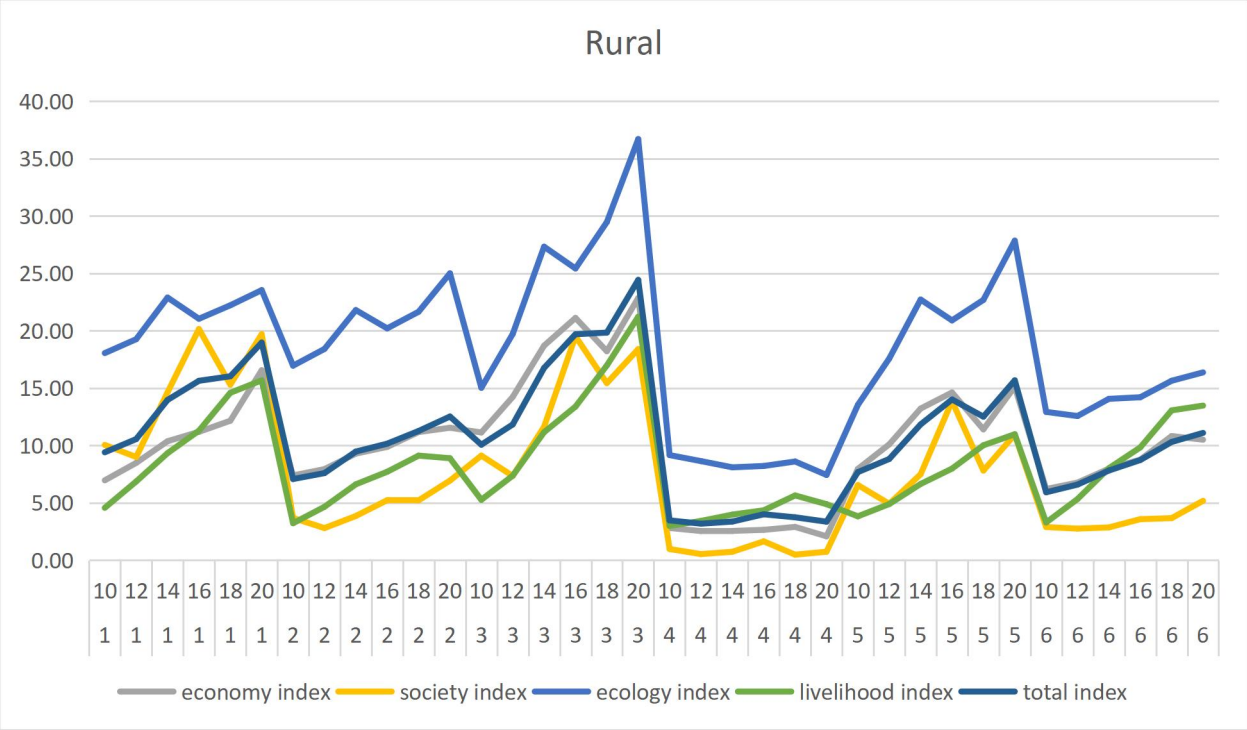

Figure 2.7 - Balanced development index of ethnic rural areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

Description see Figure 2.5

The balanced development index of education and medical and health have been steadily increasing, reaching 8.58 and 12.04, respectively; the balanced development of housing is good, with a balanced development index of 6.67. However, the employment problem is still more prominent, and the development is extremely unbalanced, and the balanced development index is 4.08.

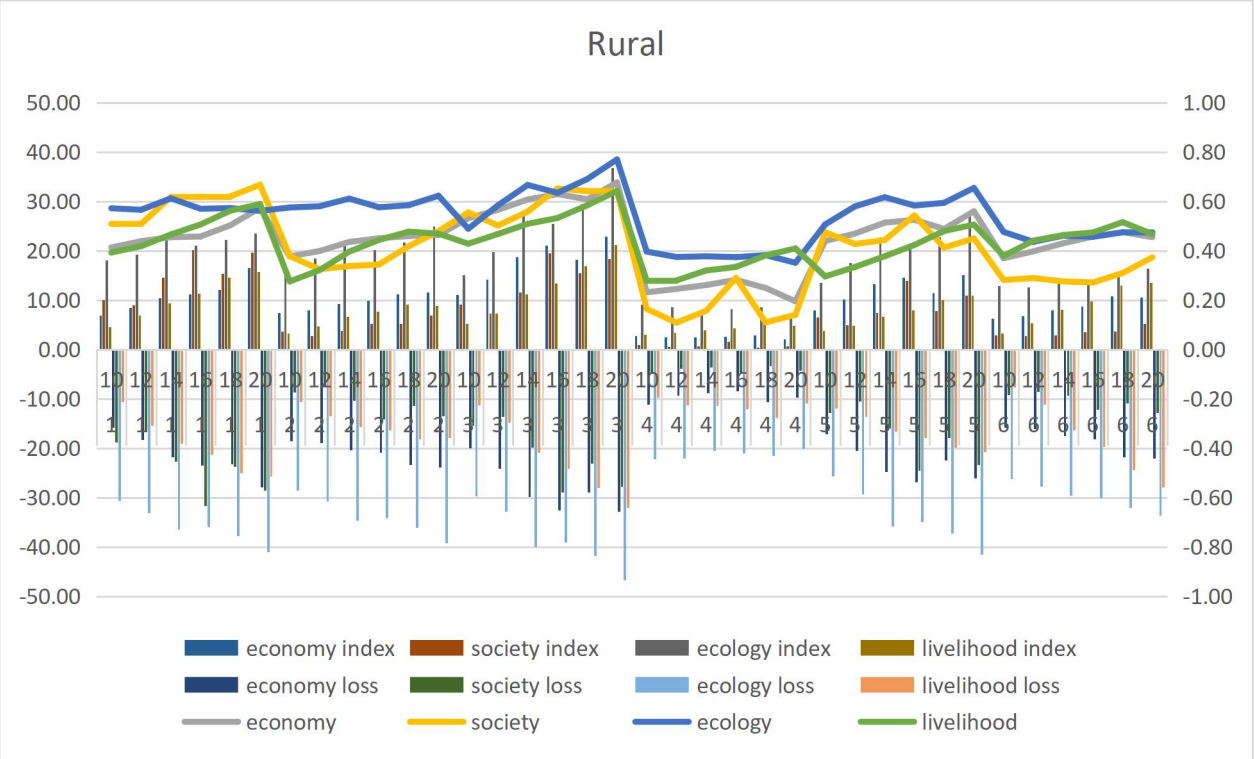

Figure 2.8 - Development imbalance in Southwest China's ethnic rural areas from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

Description: The values on the left vertical axis of the figure represent the specific situation of development index and development loss, and the interval is 10 units. A negative development loss indicates that the development situation is improving, while a positive

development loss indicates that the development situation is declining and improving. The value on the right side of the graph shows the fluctuation of the absolute value of the difference between development index and development loss. The upper half of the horizontal coordinate refers to the year, the interval of 2 years, for example, 10 represents 2010, and the lower half of the horizontal coordinate refers to the rural areas of a specific province or city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, and 4 represents Tibet. 5 represents Yunnan, and 6 represents Chongqing. And so on, the full data on the unbalanced development of ethnic urban areas in Southwest China from 2010 to 2020 are in the appendix C.

First, the overall development index of ethnic rural areas in southwest China is as high as 30, and it will continue to increase from 2010 to 2020. In addition, the balanced development index is 15 compared with that of urban areas, and the balanced development index will gradually increase from 2010 to 2020. In the rural areas of the six provinces, autonomous regions and municipalities in Southwest China, Sichuan Province, Guangxi Zhuang Autonomous Region and Yunnan Province have relatively high development index and balanced development index, with the development index above 30 and the balanced development index above 15; while Sichuan Province and Chongqing Municipality, Tibet Autonomous Region and Guizhou Province have relatively low development index and balanced development index, with the development index below 30. And the balanced development index was below 15.

Among the four major areas, the development index (40) and the degree of balanced development (25) in the ecological area are the highest, followed by the development index (30) and the degree of balanced development (15) in the economic area, and the development index (25) and the degree of balanced development (10) in the people's livelihood and social area are the lowest.

Second, the development loss of Southwest China's ethnic rural areas is negative, and the development loss fluctuates widely from 2010 to 2020, indicating that the development level of Southwest China's ethnic rural areas has improved and the development speed is gradually accelerating. From the highest to the

lowest development speed, Sichuan Province, Guangxi Zhuang Autonomous Region, Yunnan Province, Guizhou Province, Chongqing Municipality of Sichuan Province and Tibet Autonomous Region have development losses of -45, -40, -35, -30, -29 and -25, respectively.

The agrarian economy has developed gradually, the material and cultural living standards of the rural people have improved significantly, and rural development has made significant progress. Ecological progress in rural areas has reached a new level, and the quality of the environment has been continuously improved. Farmers' lives have been greatly improved, and their sense of fulfillment has been greatly enhanced. Among them, Sichuan Province, Guangxi Zhuang Autonomous Region and Yunnan Province, while the agricultural economy has gradually developed and the construction of agriculture, rural areas and farmers have made achievements, environmental protection and ecological construction in the ecological field have shown remarkable results.

Guizhou Province, Chongqing Municipality of Sichuan Province and Tibet Autonomous Region have gradually improved their development, but the problem of unbalanced development is still serious, and poverty alleviation needs to be deepened. At the same time, the social security system in Southwest China's ethnic rural areas covers all aspects of social civilization and security management. It is necessary to further improve the living standards of the people in ethnic rural areas so as to promote the construction of ethnic civilization.

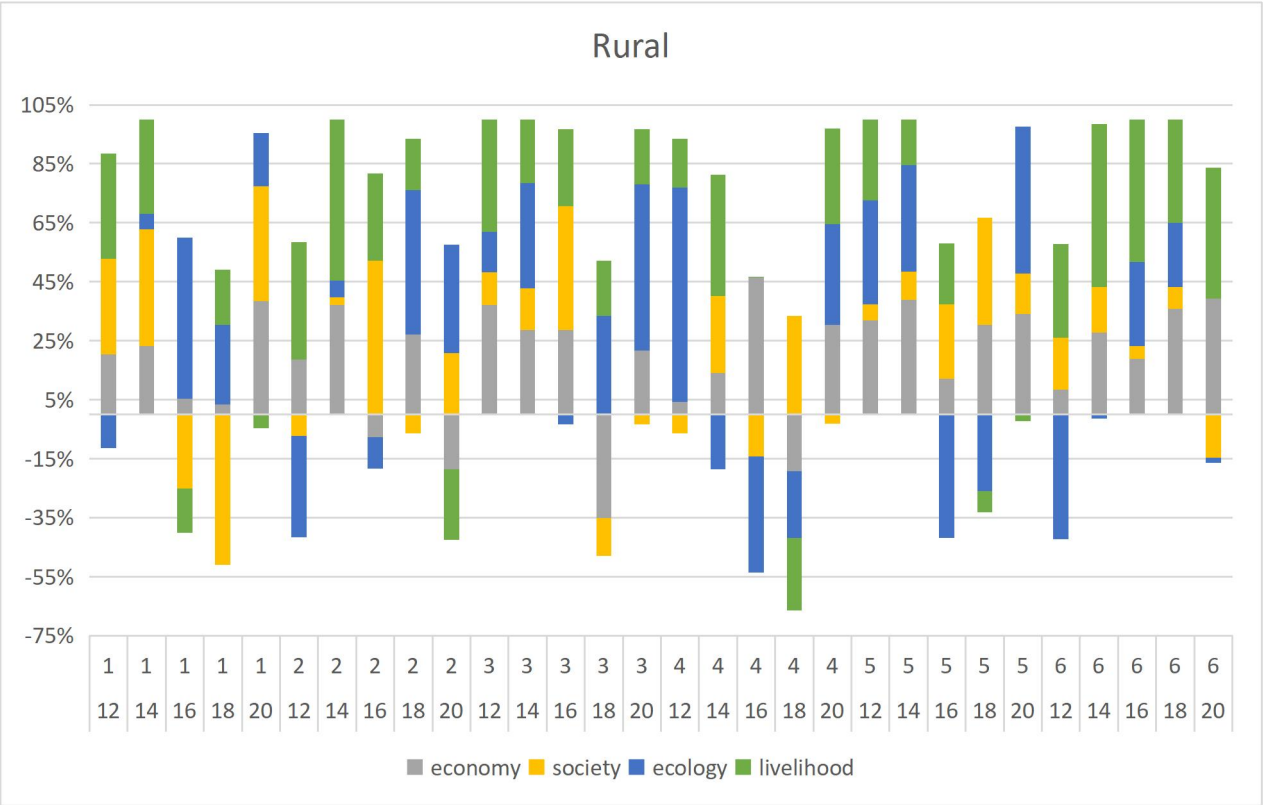

Figure 2.9 - Contribution map of ethnic rural areas in Southwest China by field from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

The ordinate in the figure refers to the contribution degree of the urban balanced development factor, with an interval of 5 units. If the contribution degree is greater than 0, it indicates that the factor has a positive impact on the balanced development of the region; if the contribution degree is less than 0, it indicates that the factor has a negative impact on the balanced development of the region. The upper half of the horizontal coordinate refers to the year, the interval of 2 years, such as 10 represents 2010, and the lower half of the horizontal coordinate refers to a specific rural area, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Tibet, 5 represents Yunnan, and 6 represents Chongqing. By analogy, the full data on the contribution degree of urban balanced development factors in ethnic rural areas of Southwest China from 2010 to 2020 are in the appendix.

Table 2.3 - Improvement of Balanced development Index of ethnic rural areas in Southwest China from 2010 to 2020

Indicators	2012	2014	2016	2018	2020
	Guangxi				
Economy	0.8	0.96	0.28	0.24	2.53
Society	1.27	1.65	1.32	3.51	2.56
Ecology	0.45	0.22	2.87	1.86	1.19
Livelihood	1.4	1.33	0.79	1.28	0.3
Total	0.91	1.15	0.11	0.04	1.56
	Guizhou				
Economy	0.59	0.77	0.13	0.92	0.92
Society	0.23	0.05	0.86	0.22	1.04
Ecology	1.08	0.12	0.17	1.66	1.83
Livelihood	1.25	1.13	0.49	0.6	1.19
Total	0.21	0.58	0.4	0.72	0.12
	Szechuan				
Economy	1.63	2.12	0.53	3.68	2.29
Society	0.48	1.05	0.78	1.35	0.34
Ecology	0.6	2.66	0.06	3.52	5.94
Livelihood	1.66	1.59	0.48	1.96	1.97
Total	1.1	1.78	0.39	0.07	2.2
	Tibet				
Economy	0.1	0.1	0.4	0.39	1.15
Society	0.15	0.19	0.12	0.68	0.12
Ecology	1.74	0.13	0.34	0.46	1.29
Livelihood	0.4	0.3	0	0.5	1.22
Total	0.29	0.18	0	0.11	0.68
	Yunnan				
Economy	1.1	1.71	0.5	3.25	2.22
Society	0.19	0.42	1.03	3.9	0.89
Ecology	1.22	1.59	1.72	2.79	3.23
Livelihood	0.95	0.67	0.85	0.77	0.15
Total	0.84	1.03	0.34	1.19	1.43
	Chungking				
Economy	0.29	0.64	0.23	1.71	1.55
Society	0.61	0.35	0.05	0.35	0.58
Ecology	1.46	0.03	0.35	1.04	0.07
Livelihood	1.1	1.26	0.58	1.67	1.74
Total	0.38	0.59	0.29	1.17	0.52

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

The improvement index table in the above table selects the gap between 2012, 2014, 2016, 2018 and 2020 and 2011, 2013, 2015, 2017 and 2019 as a comparison. The positive index indicates that the development of this field in the current year has increased compared with the same period of last year. Indicating that the development of this field in that year is better than that in the previous year, while the negative indicator indicates that the development of this field in that year is lower than that in the same period of last year, indicating that the development of this field in that year is worse than that in the previous year. By analogy, the full data on the improvement of the balanced development index of the ethnic minority areas in Southwest China from 2010 to 2020 are shown in the appendix.

Through further calculation, it is found that the contribution of different areas to the improvement of the balanced development index in different years and different rural areas shows a dynamic change, indicating that the degree of economic and social development balance in southwest China's ethnic areas is from high to low: Sichuan Province, Guangxi Zhuang Autonomous Region, Yunnan Province, Guizhou Province, Chongqing Municipality of Sichuan Province and Tibet Autonomous Region. In terms of the degree of unbalanced development, people's livelihood, ecology, society and economy are the areas from the highest to the lowest, and the following results are obtained:

- In Guangxi Zhuang Autonomous Region of China, the balanced development of agricultural economy is with an improvement of 2.53 in 2020; the development of rural construction is uneven, with an improvement of 2.56 in 2020; the improvement of ecological field is relatively slow, with an improvement of 1.19 in 2020; the balanced development of people's livelihood field is faster, but the impact of epidemic in 2020 is -0.30.

- In Guizhou Province, China, the balanced development of agricultural economy is relatively slow, with an improvement of -0.92 in 2020; rural construction lags behind, with an improvement of 1.04 in 2020; ecological development needs to be improved, with an improvement of 1.83 in 2020; the balanced development of people's livelihood is fast, but the impact of epidemic in

2020 is -1.19.

- In Sichuan Province, China, the agricultural economy will maintain a high growth rate, with a growth rate of 2.29 in 2020; the rural sector will develop in fluctuations, and the degree of imbalance will reach -0.34 in 2020; the sustainable improvement of the ecological sector, with an increase of 5.94 in 2020; the balanced development of people's livelihood has slowed down due to the impact of the epidemic, but it will still be 1.97 in 2020.

- In the Tibet Autonomous Region of China, the development level of the agricultural economy is low and extremely unbalanced, with a faster growth rate of -1.15 in 2020; the rural construction sector has a fluctuating development, with an improvement of 0.12 in 2020; the development problems in the ecological field are prominent, with an improvement of -1.29 in 2020; the balanced development of people's livelihood has slowed down due to the impact of the epidemic, reaching -1.22 in 2020.

- In Yunnan Province, China, the agricultural economy has developed in a balanced way, with a relatively stable growth rate of 1.5; In the rural area, the development fluctuated, and the degree of imbalance reached -3.90 in 2018; Sustainable development in the ecological field, with an improvement of 3.23 in 2020; But the impact of the epidemic in 2020 is -0.15.

- In Chongqing Municipality, Sichuan Province, China, the development of agricultural economy is extremely unbalanced, the imbalance reaches -1.55 in 2020; sustainable development in rural construction, 0.58 improvement in 2020; sustainable development in the field of ecology, with an increase of 0.07 in 2020; the field of people's livelihood has a faster balanced development, but the impact of the epidemic in 2020 is -0.52.

In short, the dynamic changes in the contribution levels of different provinces and cities in the ethnic rural areas of Southwest China from year to year reflect that the ethnic areas in Southwest China are paying more attention to the coordinated development of social, ecological and livelihood fields while maintaining steady economic growth. However, there is still a situation of unbalanced development of

provinces and cities. For example, the rural development of Chongqing has problems of unbalanced development in the field, a wide gap between urban and rural areas, and uncoordinated economic and ecological development.

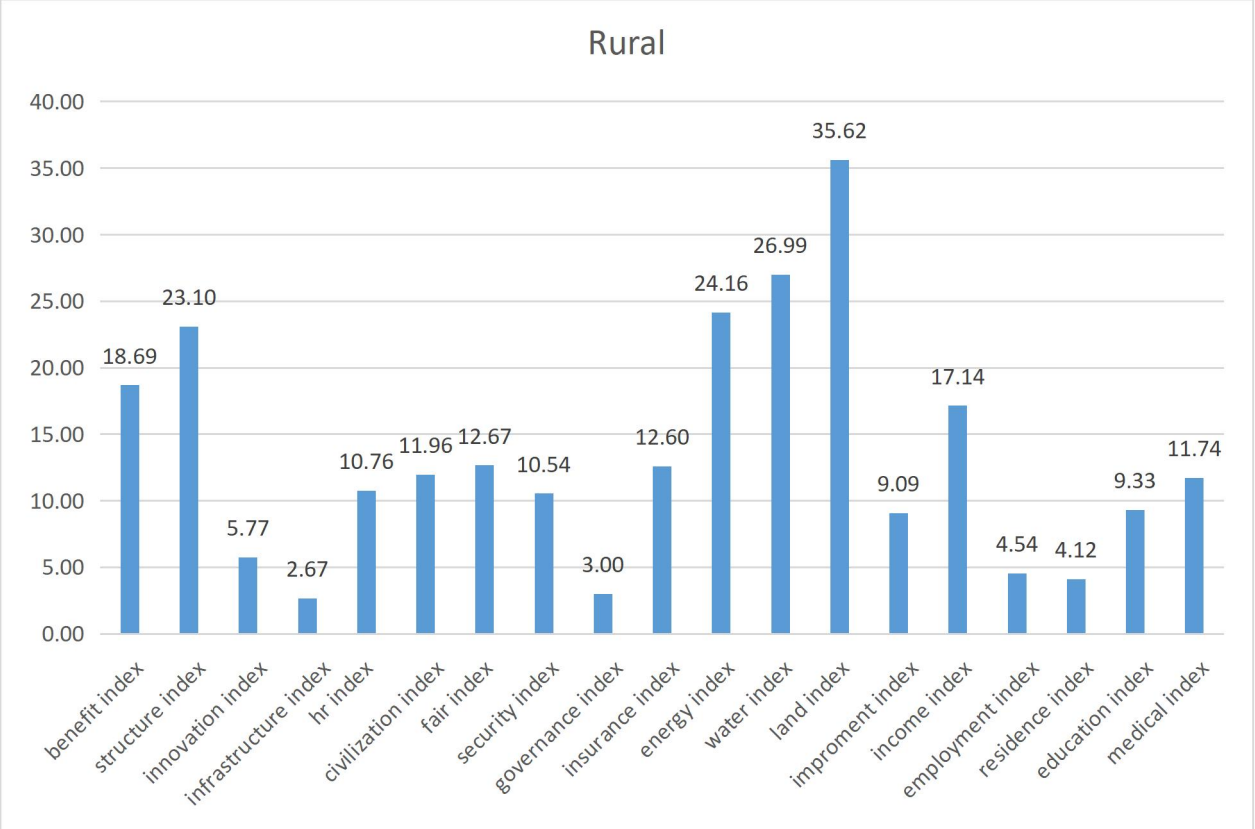

Figure 2.10 - Summary of balanced development index of ethnic rural areas in Southwest China from 2010 to 2020

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

In the figure, the vertical coordinate is the development index, the interval is 5 units, the upper half of the horizontal coordinate refers to the year, the interval is 2 years, such as 10 represents 2010, and the lower half of the horizontal coordinate refers to the rural area of a specific province or city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Tibet, 5 represents Yunnan, and 6 represents Chongqing. By analogy, the full data of the balanced development Index of ethnic urban areas in Southwest China from 2010 to 2020 are shown in the appendix.

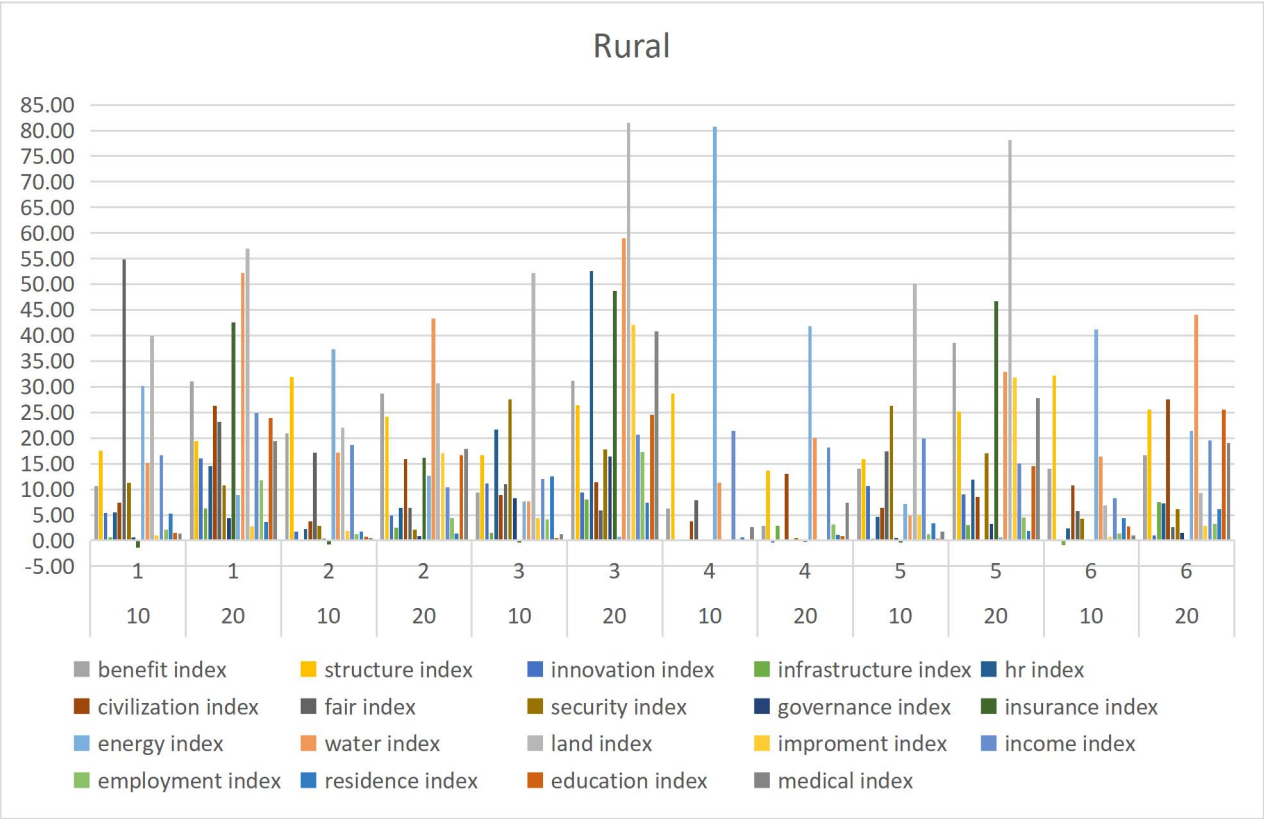

Figure 2.11 - Balanced Development Index of ethnic rural areas in Southwest China from 2010 to 2020 by field

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

The ordinate in the figure indicates the relative degree of balanced development by field in the ethnic urban areas of southwest China from 2010 to 2020. A positive value indicates that the level of balanced development in this field is stable, while a negative value indicates that the level of development in this field is unbalanced. The upper half of the horizontal coordinate refers to the year, the interval of 2 years, for example, 10 represents 2010, and the lower half of the horizontal coordinate refers to a specific city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Tibet, 5 represents Yunnan, and 6 represents Chongqing. And so on, the figure above only shows the data of the first year and the last year, all the data are in the appendix, and all the data of the contribution degree of urban balanced development factors in the ethnic urban areas of Southwest China from 2010 to 2020 are in the Appendix.

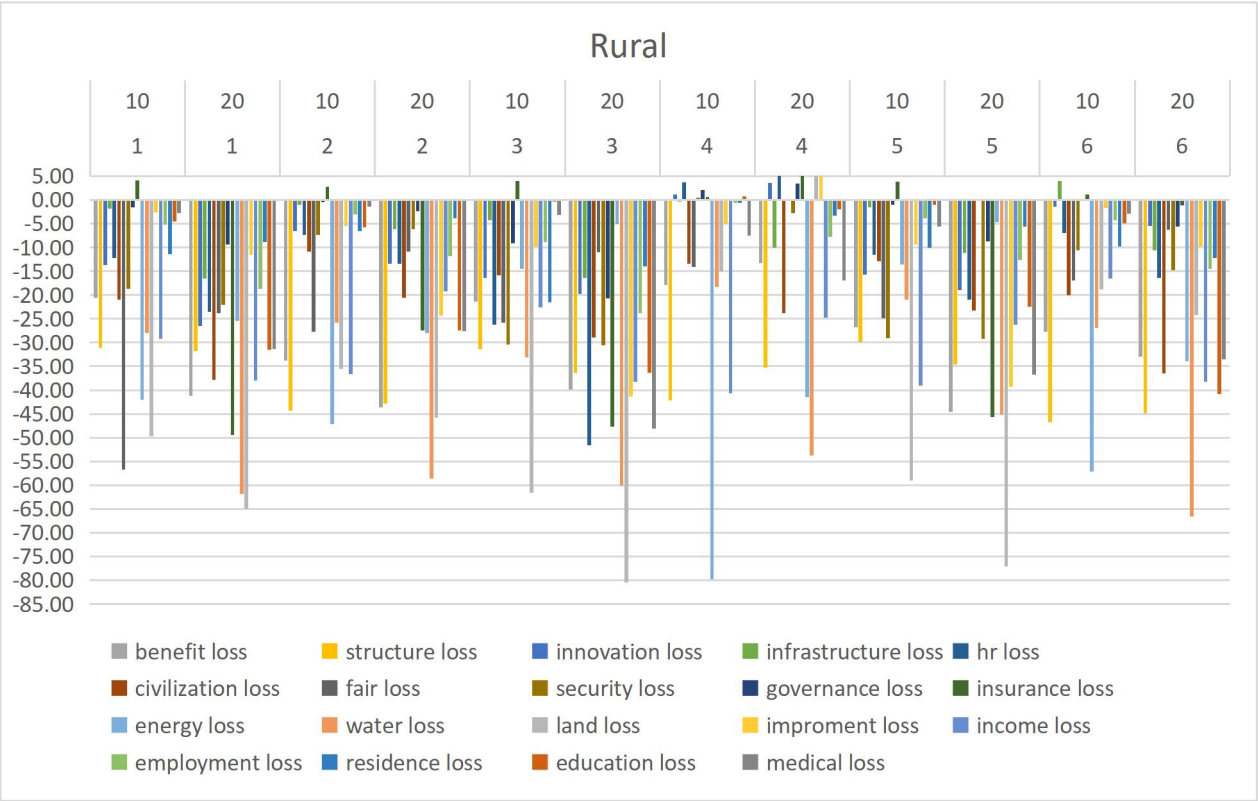

Figure 2.12 - Development loss map of rural ethnic areas in Southwest China from 2010 to 2020 by field

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

The ordinate in the figure indicates the relative degree of balanced development by field in the ethnic urban areas of southwest China from 2010 to 2020. A positive value indicates that the level of balanced development in this field is stable, while a negative value indicates that the level of development in this field is unbalanced. The upper half of the horizontal coordinate refers to the year, the interval of 2 years, for example, 10 represents 2010, and the lower half of the horizontal coordinate refers to a specific city, where 1 represents Guangxi, 2 represents Guizhou, 3 represents Sichuan, 4 represents Tibet, 5 represents Yunnan, and 6 represents Chongqing. And so on, the figure above only shows the data of the first year and the last year, all the data are in the appendix, and all the data of the contribution degree of urban balanced development factors in the ethnic urban areas of Southwest China from 2010 to 2020 are in the Appendix.

On the whole, the development level of various fields in the ethnic rural areas of southwest China is relatively high, and the development loss is basically negative, but there are still different degrees of imbalance. The unbalanced analysis of various fields is as follows:

The economy of ethnic rural areas in southwest China is growing steadily, but the degree of balanced development of agricultural economy is high, and the balanced development index is 12.20. Specifically, from 2010 to 2020, the output value of agriculture, rural areas and the structure of agriculture, rural areas and rural areas adapt to each other, and the economic structure adjustment in southwest China has achieved initial results, with the rapid growth of the balanced development index reached 18.69 and 23. 10; the development level of agricultural infrastructure and mechanization is low, and the development is extremely uneven, with the balanced development index of 5.77 and 2.67 respectively; the degree of balanced development of human capital is relatively high, which is influenced by China's rural revitalization policy, and the balanced development index reaches 10.76.

Ethnic rural areas in southwest China are experiencing continuous social progress and all-round development of rural construction, with a balanced development index of 10.15. In particular, from 2010 to 2020, the balanced development index of social security is relatively high, reaching 12.60; the balanced development index of the three secondary indexes of social civilization, social justice and social security grew rapidly, reaching 11.96, 12.67 and 10.54 respectively; the development level of rural governance is relatively low, which is caused by the difference in rural cultural level and folk customs, and the balanced development index is 3.00.

The ecological environment of southwest China's ethnic rural areas has continued to improve, and the balanced development index is 23.97. In particular, from 2010 to 2020, the development and utilization of energy resources, water resources and land resources have maintained a high level, and the level of balanced development has reached 24.16, 26.99 and 35.62, respectively. However,

the level of environmental governance is poor, and the balanced development index is 9.09. The speed of ecological environmental management and protection is much slower than that of development and utilization. There is a dilemma of over-exploitation of ecological resources.

The well-being of people in ethnic minority areas in southwest China has continued to improve, with a balanced development index of 9.37. Specifically, from 2010 to 2020, the balanced development index of income grew at a faster rate, reaching 17.14; the balanced development index of education and medical and health have steadily increased, reaching 9.33 and 11.74, respectively. Housing and employment are still serious problems, and development is extremely unbalanced, with balanced development indexes of 4.12 and 4.54.

2.2. Comprehensive Evaluation of the Unbalanced Development in southwest China

This section mainly adopts the comprehensive evaluation model to evaluate the development level and development gap of ethnic minority areas in Southwest China from the two perspectives of urban and rural areas, and studies the specific conditions of economy, society, ecology and people's livelihood in ethnic minority areas in Southwest China, laying the foundation for the study of influencing factors in Chapter 3. To provide the development situation of the ethnic minority areas in Southwest China as a basis for policy formulation for the study of sustainable development countermeasures in Chapter 3.

This index evaluation system is graded with reference to the index system of unbalanced development of Tsinghua University. The first-level indicators are economy, society, ecology and people's livelihood. The second-level indicators are Benefit, Structure, Innovation, Infrastructure, HR, Civilization, Fair, Security, Governance, Insurance, Energy, Water, Land Protection, Income, Employment, Residence, Education and Medical, the development level refers to the overall development degree of the field in which the index is located, and the first-level

development weight refers to the contribution degree of the field to the social and economic development of the southwest ethnic areas. The second-level development weight refers to the contribution of this field to the development of the first-level field.

2.2.1 Comprehensive evaluation of unbalanced development in ethnic urban areas in Southwest China.

PART ONE : Overall level

Table 2.4- Comprehensive evaluation results of development of ethnic urban areas in southwest China from 2010-2020

Primary indicators	Primary development level	Primary development weight	Secondary indicators	Secondary development level	Secondary development weight
Economy	10.74	0.29	Benefit	0.63	0.24
			Structure	0.47	0.18
			Innovation	0.45	0.17
			Infrastructure	0.39	0.15
			HR	0.71	0.27
Society	9.57	0.26	Civilization	0.44	0.16
			Fair	0.56	0.20
			Security	0.52	0.19
			Governance	0.62	0.23
			Insurance	0.62	0.23
Ecology	7.41	0.20	Energy	0.30	0.14
			Water	0.54	0.26
			Land	0.33	0.16
			Improvement	0.58	0.28
			Protection	0.35	0.17
Livelihood	9.02	0.25	Income	0.37	0.17
			Employment	0.41	0.19
			Residence	0.42	0.20
			Education	0.44	0.21
			Medical	0.49	0.23

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

As shown in Table 2.4, from 2010 to 2020, the overall development level of ethnic urban areas in southwest China has reached 9.19, and the development is relatively stable. Among them, the level of economic development reaches 10.74, with a weight of 0.292, ranking at the highest level of development; the development level of social field reaches 9.57, with a weight of 0.26, which is at a higher level of construction; the development level of ecological civilization reached 0.202, with unbalanced development in some areas; the development of various dimensions of the construction of people's livelihood and welfare is extremely unbalanced, but the overall level reached 0.245.

Therefore, in the new era of urban construction in southwest China's ethnic areas, the adjustment and deepening reform of the national economic structure in the fields of economy, society, ecology and people's livelihood have made the economic and social construction in southwest China's ethnic urban areas quite effective. According to the statistics of the National Bureau of Statistics of China in 2022, at present, among the ethnic urban areas in southwest China, Guangxi Zhuang Autonomous Region of China shoulders the task of building a major international channel facing ASEAN, building a new strategic fulcrum for the opening up and development of southwest and central south China, and forming an important gateway for the organic connection of the Belt and Road Initiative.

China's Yunnan Province has taken on the task of "becoming a demonstration zone of ethnic unity and progress, a vanguard of ecological civilization construction, and a radiation center for South and Southeast Asia"; China's Tibet Autonomous Region has taken on the task of "becoming a model area for promoting ethnic unity, a demonstration area for public services, a clean energy base, and a gateway open to South Asia"; Guizhou Province has taken on the task of "becoming a model area for promoting ethnic unity, a demonstration area for public services, a clean energy base, and a gateway open to South Asia".

Guizhou Province is committed to becoming "an important national energy base, a deep processing base for resources, a distinctive light industry base, an equipment manufacturing base with a focus on aerospace, and an important land

transportation hub in southwest China".

PART TWO: Difference analysis

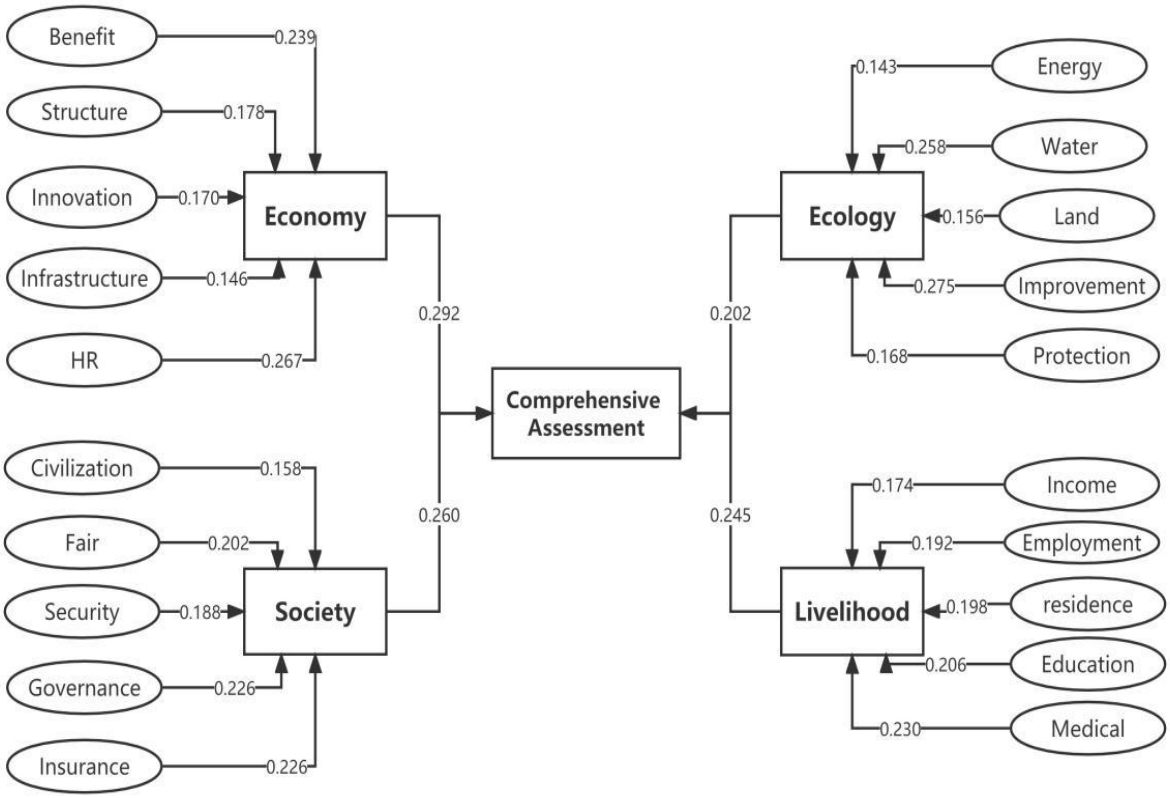

Figure 2.13 - Development weight framework diagram of comprehensive evaluation of ethnic urban areas in Southwest China from 2010-2020

Source: author`s research on Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

This figure shows the composition of first-level development weights and second-level development weights in Table 2.4, where the box is the first-level indicator, the oval box is the second-level indicator, the arrow point is the composition relationship, and the indicator on the arrow is the corresponding development weight.

As shown in Figure 2.13, the current economic development level of ethnic urban areas in southwest China is extremely unbalanced, and the overall development level of various provinces and cities has a large gap, and the development level of various fields has great differences. The analysis of the

development gap in various fields is as follows:

Based on the measurement results of the unbalanced development index of ethnic minority areas in southwest China and the comprehensive evaluation results in Table 2.4 and Figure 2.13: Based on the economic areas with the best development level, the development subordination degrees of economic use, economic structure, innovation-driven, infrastructure and human capital are 0.239, 0.178, 0.170, 0.146 and 0.267, respectively. Only human capital and economic utility have relatively high development levels. In the three aspects of economic structure, innovation-driven, infrastructure development level is low, there are large differences in the five indicators of the economic field, and the final manifestation is the imbalance in the overall benefit of economic development in the ethnic urban areas of southwest China.

Tracing back to the source, this study finds that economic benefit as the direct expression of economic development, economic structure as the framework of economic development, innovation-driven as the important driving force of economic development, infrastructure as the important foundation of economic development, and human capital group as the important support of economic development, the interaction of the five factors leads to the deep poverty of ethnic urban areas in southwest China. At the same time, there are extremely complex coupling relationships among the five factors, resulting in the subjective poverty and spatial poverty of economic development in Southwest China's urban areas.

Based on the measurement results of the unbalanced development index of ethnic areas in southwest China and the comprehensive evaluation results in Table 2.4 and Figure 2.13, the research finds that the economic advantages can be concretely manifested as the accumulation cycle of capital (GDP, total foreign trade and industrial added value in different time and space, forming different growth poles of economic advantages); the economic structure (the proportion of three industries, the proportion of service industry in exports and the proportion of technological output value) is distorted by the uneven distribution of industries at different levels.

The driving factors of innovation (patent and intellectual property) can be manifested as the unbalanced flow of knowledge elements within the region, resulting in the difference in the degree of innovation driving in different cities; The gap between the speed of infrastructure development (road traffic) and the speed of economic growth is the root cause of the difference in the level of infrastructure among regions. The unbalanced flow of human capital (stock and quality) driven by the economic policy environment is the root cause of regional human resource differences.

Based on the measurement results of the unbalanced development index of ethnic areas in southwest China and the comprehensive evaluation results in Table 2.4 and Figure 2.13: The research finds that based on the relatively good development level of social areas, among them, the development membership degree of social civilization, social equity, social security, social governance and social security is 0.158, 0.202, 0.188, 0.226, 0.226. Among them, the development level of social civilization and social security is relatively low, and the development level of social equity, social governance and social security is relatively high. There is a big gap between the five indicators in the social field, which is reflected in the imbalance of economic and social development in ethnic urban areas in southwest China.

Basically, the ethnic areas in Southwest China are multi-ethnic gathering places, with more than 30 ethnic minorities in the area. The integration of ethnic cultures has formed ethnic and regional cultural characteristics. In daily life, people have more opportunities to come into contact with modern society and culture in a wider range. The shared information environment promotes the integration of lifestyles in ethnic areas.

However, due to the spatiotemporal heterogeneity of information coverage, cultural differences, social governance, differences and integration degree of social security, the social development of ethnic urban areas in southwest China is ultimately different. Based on this, the research finds that the quality of social civilization (public books, movies and television), the degree of social justice

(disposable income ratio), the stability of social security (traffic accidents), the level of social governance (social organizations, autonomous organizations), and the coverage of social security (five insurances, basic medical insurance) jointly determine the differences in social development of ethnic urban areas in southwest China.

Based on the measurement results of the unbalanced development index of ethnic areas in Southwest China and the comprehensive evaluation results in Table 2.4 and Figure 2.13, the research finds that based on the ecological areas with the worst development level, the development membership degree of energy, water resources, land resources, environmental governance and ecological protection are 0.143, 0.258, 0.156, 0.275 and 0.168, respectively. Among them, water resources and environmental governance have a higher development level, while energy, land resources and ecological protection have a lower development level.

The gap between the five ecological indicators is large, which is reflected in the imbalance of ecological development in ethnic urban areas in southwest China. The root cause is that with years of development, the differences in regional ecological resources (oil and gas resources, hydropower resources, land use) show an increasing trend, coupled with the heterogeneity of regional governments' emphasis on environmental control (industrial pollution, soil erosion) and ecological protection (capital investment, area under control), which together lead to the imbalance of regional ecological development.

Based on the measurement results of the unbalanced development index of ethnic areas in southwest China and the comprehensive evaluation results in Table 2.4 and Figure 2.13, the study finds that based on the relatively backward development level of people's livelihood fields, among them, the development membership degree of income, employment, housing, education and medical care is 0.174, 0.192, 0.198, 0.206 and 0.230. The higher level of development is education and medical care, while the lower level of development is income, employment, housing and people's livelihood. It is reflected in the unbalanced development of people's livelihood in ethnic urban areas in southwest China.

2.2.2 Comprehensive evaluation of Unbalanced development in ethnic rural areas in Southwest China

PART ONE : Overall level

Table 2.5 - Comprehensive evaluation results of ethnic rural areas development in southwest China from 2010 to 2020

Secondary Indicators	Level of development	Weight of development	Tertiary indicators	Level of development	Weight of development
economy	558.15	0.23	benefit	17.45	0.199
			structure	16.14	0.184
			innovation	20.74	0.236
			infrastructure	10.50	0.12
			hr	22.85	0.261
society	449.26	0.185	civilization	13.28	0.164
			fair	18.32	0.226
			security	13.06	0.161
			governance	17.84	0.221
			insurance	18.40	0.227
ecology	896.53	0.37	energy	15.06	0.122
			water	35.47	0.287
			land	36.70	0.297
			improment	36.50	0.295
livelihood	518.26	0.214	income	11.17	0.164
			employment	14.76	0.217
			residence	10.49	0.154
			education	13.94	0.205
			medical	17.67	0.26

Source: Balanced Development Index Report of China 2020 of Tsinghua University, Xu Xianchun, Bai Chongen and Liu Taoxiong (2021)

After tracing the root causes, the research found that, the relative inequality of income distribution (disposable income and disposable consumption expenditure) caused by regional economic development, the bottleneck problem of employment (unemployment rate and employment rate) caused by poor economic environment, and housing (housing demand, housing cost, population density).

The regional mismatch between supply and demand, and the spatio-temporal heterogeneity of education (education quality, education expenditure) and health care (medical level, medical input) have all contributed to the unbalanced livelihood development differences in ethnic urban areas in southwest China.

This index evaluation system is graded with reference to the index system of unbalanced development of Tsinghua University. The first-level indicators are economy, society, ecology and people's livelihood. The second-level indicators are Benefit, Structure, Innovation, Infrastructure, HR, Civilization, Fair, Security, Governance, Insurance, Energy, Water, Land Protection, Income, Employment, Residence, Education and Medical, the development level refers to the overall development degree of the field in which the index is located, and the first-level development weight refers to the contribution degree of the field to the social and economic development of the southwest ethnic areas. The second-level development weight refers to the contribution of this field to the development of the first-level field.

As shown in Table 2.4, based on the four dimensions of economy, society, ecology and livelihood, from 2010 to 2020, the overall development level of ethnic rural areas in southwest China reaches 605.55, and the development of rural areas, agriculture and farmers is rapid. Among them, the development level of economic field reached 558.15, with a weight of 0.23, which is in a relatively stable development level; the development level of social field reached 449.26, the weight reached 0.185, in a low construction level, the development is extremely uneven; the development level of ecological civilization reached 896. 53, the weight reached 0.37, and the development level was relatively good; The development of various dimensions of the construction of people's livelihood and

well-being is extremely unbalanced, reached a relatively high level of 518.26, with a weight of 0.214.

Therefore, in the construction of ethnic cities in southwest China in the new era, under the background of rural revitalization strategy of rural areas, agriculture and farmers and comprehensive poverty alleviation, the construction of ethnic rural areas in southwest China has made certain achievements, but there are still prominent problems of unbalanced development. At the level of political stability, the problems of unbalanced development, such as insufficient sharing of autonomy, ineffective implementation of autonomy, low integration ability of local governments in ethnic minority areas, low political trust, and weak construction of political power at the grassroots level, are more serious in remote mountainous areas, agricultural areas, and pastoral areas.

At the level of economic development, there are weak infrastructure, insufficient investment in construction, poor natural environment, widening gap between urban and rural areas, lagging social services and other problems, especially the poor economic resources and foundation for development in rural areas. From the level of culture and education, the weak foundation, lack of long-term development momentum, low overall scale of higher education, unbalanced regional development, high scale of education and low overall quality of human resources are the weak links in the implementation of rural revitalization in ethnic minority areas in southwest China. At the level of social construction, incomplete infrastructure, inadequate social security, and the general backwardness of social construction are the historical problems left over from the ethnic rural areas of Southwest China.

PART TWO: Difference analysis

The figure 2.14 shows the composition of first-level development weights and second-level development weights in Table 2.4, where the box is the first-level indicator, the oval box is the second-level indicator, the arrow point is the composition relationship, and the indicator on the arrow is the corresponding development weight.

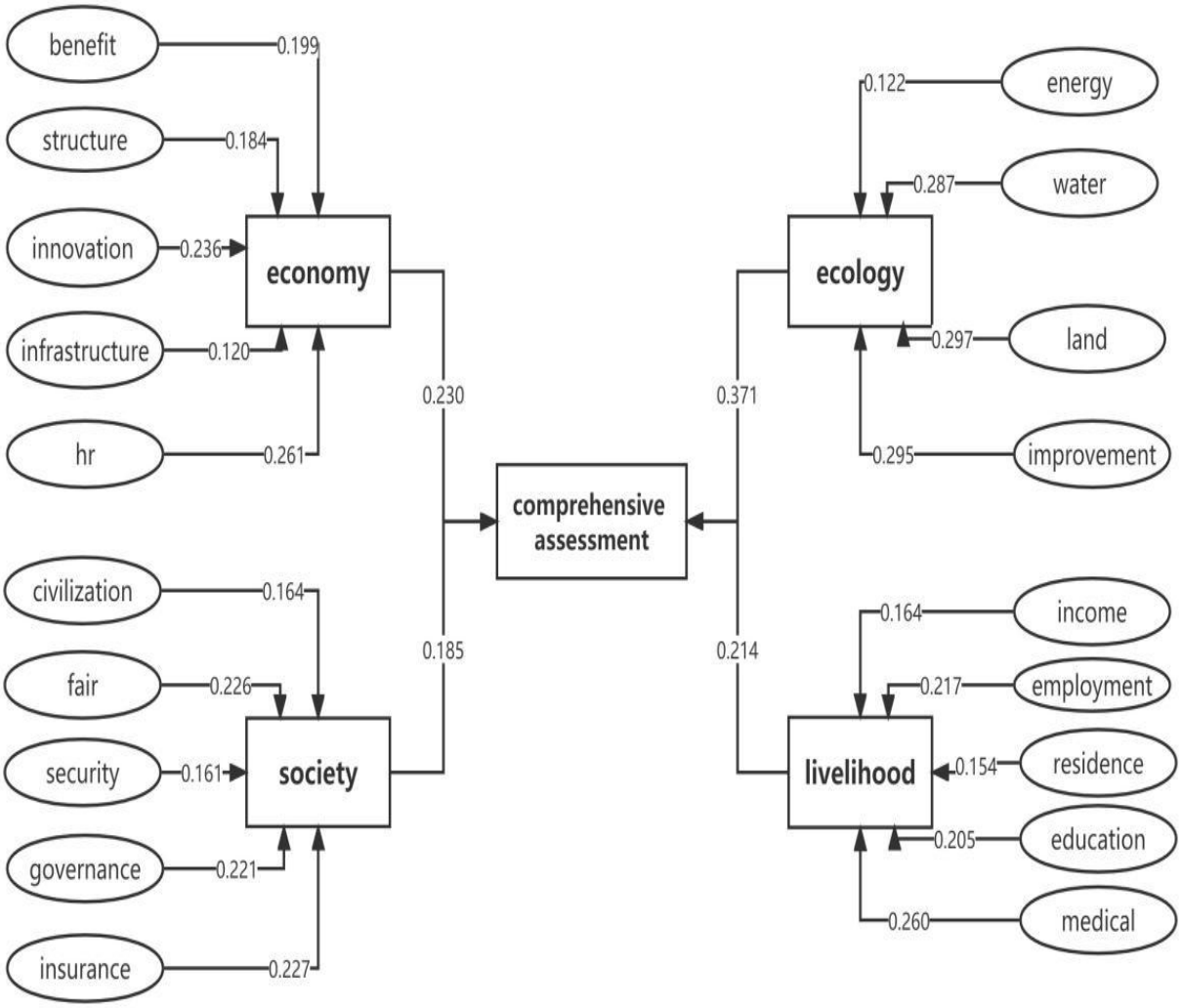

Figure 2.14 - Comprehensive evaluation structure chart of development of ethnic rural areas in southwest China from 2010 to 2020

Source: author`s research

As shown in Figure 2.14, the current economic development level of ethnic rural areas in southwest China is extremely unbalanced, and the overall development level of each province and city has a large gap, and the development level of each field has a large difference, the following is the analysis of the development difference in each field:

In the fields of agriculture, rural and rural economy with higher development level, the development subordination degree of agriculture, rural efficiency, agricultural structure, mechanization level, infrastructure and human capital is

0.199, 0.184, 0.236, 0.12 and 0.261, respectively. Only the development level of human capital and mechanization is relatively high. In the three aspects of economic advantages, agricultural structure and infrastructure, the development level is low, and there are big differences in the five indicators in the fields of agriculture, rural areas and farming, which ultimately reflects the imbalance of economic development in the ethnic rural areas of southwest China.

Tracing back to the source, this study finds that the root cause of rural poverty is the coupling and accumulation result between the five elements. Based on this, the research finds that The economic benefits of agriculture, forestry and animal husbandry can be concretely expressed as the production quality of capital (output value of agriculture, forestry, animal husbandry, sideline and grain sowing), the proportion of agricultural structure (input of production factors), the degree of mechanization of innovation drivers (use of machinery), the coverage speed of infrastructure (road traffic) and the flow of human capital (stock and quality). Is the root cause of economic development difference in the southwest ethnic rural areas.

Based on the social fields with the worst development level, among them, the development subordination degree of rural culture, social justice, natural security, rural governance and social security is 0.164, 0.226, 0.161, 0.221, 0.227. Among them, the development level of rural civilization, rural governance is low, and the development level of social justice, rural governance and social security is high. There is a big gap between the five indicators in the social field, which is reflected in the imbalance of economic and social development in the ethnic rural areas of southwest China.

Basically, the ethnic minority areas in Southwest China are multi-ethnic gathering places, with more than 30 ethnic minorities in the area. The integration of ethnic cultures has formed ethnic and regional cultural characteristics. In daily life, people have more opportunities to come into contact with modern society and culture in a wider range. The sharing of information environment promotes the integration of lifestyles in ethnic areas. However, due to the gap between urban and

rural areas in information coverage, cultural differences, social governance, differences and integration degree of social security, the social development of ethnic rural areas in southwest China is ultimately different. Based on this, the research finds that the quality of social civilization (public books, movies and television), the degree of social justice (disposable income ratio), the stability of social security (natural disaster management), the level of social governance (social organizations, autonomous organizations), and the coverage of social security (medical insurance) jointly determine the differences in social development in southwest China's ethnic rural areas.

Based on the ecological fields with the best development level, the development membership degrees of energy, water resources, land resources, and environmental governance are 0.122, 0.287, 0.297, and 0.295, respectively. Among them, the development level of water resources, land resources, and environmental governance is higher, while the development level of energy is lower. There is a large gap between the four ecological indicators, which is reflected in the imbalance of ecological development in the ethnic rural areas of southwest China. The root cause is that with the years of development, the differences in ecological resources (oil and gas resources, hydropower resources, land use) in rural areas show a widening trend, and autonomous organizations attach importance to environmental control (industrial pollution, soil erosion) and the heterogeneity of control efforts, which together lead to the imbalance in ecological development of ethnic rural areas in southwest China.

Based on the relatively good development level of people's livelihood, among them, the development subordination degree of income, employment, housing, education and medical treatment is 0.164, 0.217, 0.154, 0.205, 0.26. The higher development level is employment, education and medical treatment, while the lower development level is income and housing. There is a big gap between the five indicators in the field of people's livelihood, which is reflected in the unbalanced development of people's livelihood in the ethnic rural areas of southwest China.

2.3 Analysis of Factors Influencing Ethnic Area Development in Southwest China

This section mainly adopts the time-spatial geographical weighted regression method. First, it verifies the correlation between urban-rural development gap and economic, social, environmental and livelihood factors in ethnic minority areas in Southwest China, lays the foundation for researching the influencing factors of urban-rural development gap in ethnic minority areas in Southwest China, and further analyzes the influencing factors of unbalanced socioeconomic development in ethnic minority areas in Southwest China. Laying the empirical research foundation for the sustainable development countermeasures in Chapter 3.

2.3.1 Comparative analysis of the GTWR model in urban and rural areas.

After tracing the root causes, the research found that the relative inequality of income distribution (disposable income and disposable consumption expenditure), the dilemma of employment (unemployment rate and employment rate), the imbalance of housing supply and demand (housing demand, housing cost, population density), the spatio-temporal heterogeneity of education (education quality, education expenditure) and health care (medical level, medical input), Together create the unbalanced livelihood development differences in the ethnic rural areas of southwest China.

Table 2.6 - Validity analysis of GTWR model in ethnic urban and rural areas of Southwest China from 2010 to 2020

Regression Type	**Rural GTWR**	**Region GTWR**
Bandwidth Type	AICc	
Kernel Type	Adaptive	
Auto stfusion	t	
sp_index	1	
Low Search Time	0.1	
Up Search Time	5	
Low Search Bandwidth	0.1	

Regression Type	Rural GTWR	Region GTWR
Up Search Bandwidth	2	
Low Search Bandwidth Adaptive	0.1	
Up Search Bandwidth Adaptive	0.4	
min_exp	0.001	
Neighbor	12	21
Residual Squares	0.04036	0.32927
Sigma	0.02473	0.07063
AICc	124.48	97.68
R^2	0.99998	0.99930
R2Adjusted	0.99998	0.99926
Spatio-temporal Distance Ratio	0.64183	2.32581
Trace_of_S Matrix	36.11	20.19

Source: author`s research

The data comes from the Statistical yearbook of the National Bureau of Statistics of China from 2010 to 2020. The author collates and measures the overall development level of ethnic minority areas in Southwest China as the dependent variable, economic, social, ecological and livelihood factors as the independent variables, and the control time is from 2010 to 2020. The control space is Xizang, Sichuan, Chongqing, Yunnan, Guizhou and Guangxi. The spatiotemporal and geographical weighted regression analysis is carried out. The validity analysis table of the above model is obtained, and the $R^2 > 0.95$ indicates that the regression of the model is very good.

First, as shown in Table 2.5, the GTWR regression test was conducted on the balanced development index of urban and rural areas and the explanatory variables (economic factors, social factors, ecological factors, and people's livelihood factors), and it was found that the P-value of each variable was less than 5%, indicating that all the explanatory variables had relatively good significance. In addition, the balanced development index of urban and rural areas is correlated with the independent variables, as shown in the Appendix.

Second, the GTWR model regression diagnostic coefficient is shown in the

table for urban and rural variable data respectively. The model diagnostic results show that the attribute values of urban and rural local spatial metrology models are quite different. In general, R>2 0.9, AICc value and RSS of GTWR model show good statistical significance. The temporal and spatial effects of factors influencing the economic and social development imbalance in ethnic minority areas in southwest China are studied by using the GTWR model.

Based on the GTWR model, the present value and predicted value of the balanced development index of ethnic cities and rural areas in southwest China are obtained. They are shown in Figure 2.15 and Figure 2.16 below.

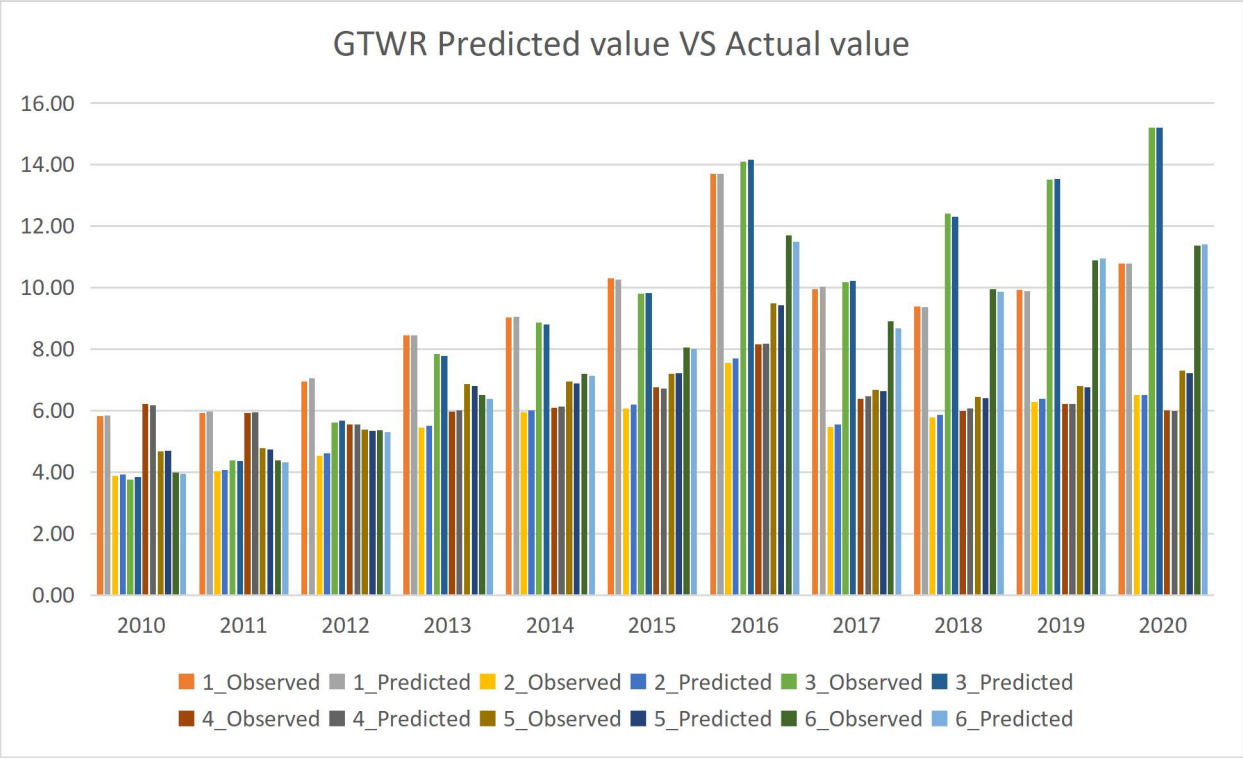

Figure 2.15 - Fitting effect map of ethnic city area in Southwest China from 2010 to 2020

Source: author`s research

Among them, 1_Observed indicates the actual balanced development degree of the region in the corresponding year, and 1_Predicted indicates the predicted balanced development degree of the region in the corresponding year, and the same is true for other legends. Moreover, 1 stands for Guangxi, 2 for Guizhou, 3 for Sichuan, 4 for Tibet, 5 for Yunnan and 6 for Chongqing.

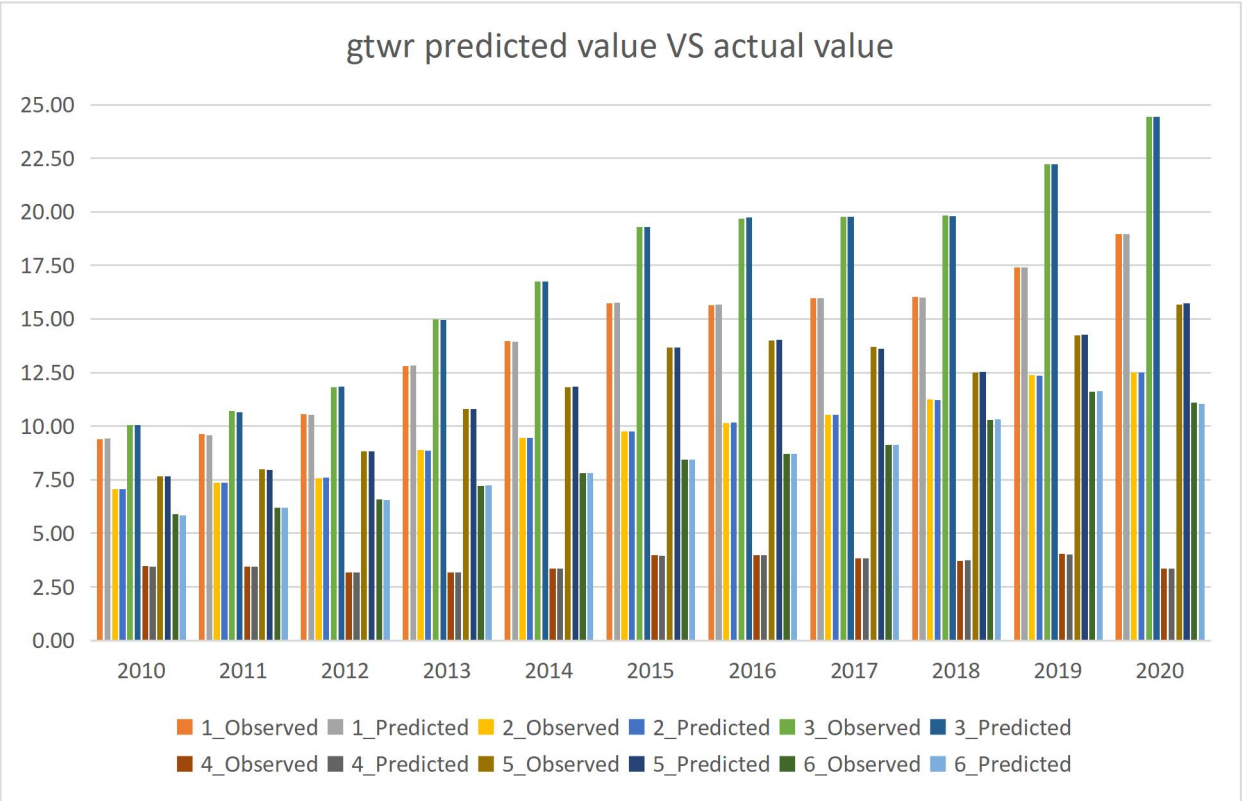

Figure 2.16 - Fitting renderings of ethnic rural areas in Southwest China from 2010 to 2020

Source: author`s research

Among them, 1_Observed indicates the actual balanced development degree of the region in the corresponding year, and 1_Predicted indicates the predicted balanced development degree of the region in the corresponding year, and the same is true for other legends. Moreover, 1 stands for Guangxi, 2 for Guizhou, 3 for Sichuan, 4 for Tibet, 5 for Yunnan and 6 for Chongqing.

On the whole, the present value and predicted value of the urban balanced development index are lower than those of the rural balanced development index. On the one hand, because the basic quantity of the urban balanced development index is large and the number of cities is large, while the number of rural areas is small and the number of villages and towns is small, the measurement result of the rural balanced development index is higher than that of the urban balanced development index.

On the other hand, because the unbalanced urban development involves a

wide range of areas, while the rural balanced development index is precisely measured around the development of agriculture, rural areas, indicating that the degree of imbalance in urban construction in ethnic minority areas of southwest China is higher than that of agriculture, rural areas, and there is a great imbalance in urban and rural development.

From the point of view of time, the present value and predicted value of the urban balanced development index show a fluctuating upward trend, and the fluctuations are concentrated in 2016 and 2020. However, the present value and predicted value of the rural balanced development index show a gradual upward trend, and the highest value is in 2020. It shows that with the deepening of industrial structure adjustment strategy and the rise of the West, urban areas will gradually adjust their development direction, shift to the direction of industrial structure optimization, healthy urban construction, sustainable ecological civilization and improvement of people's well-being, and constantly improve the level of balanced development.

At the same time, it also shows that with the promotion of rural revitalization strategy and comprehensive poverty alleviation, rural areas have gradually solved the shortcomings of the development of agriculture, rural areas and farmers, completed the task of comprehensive poverty alleviation, and gradually moved toward the balanced development pattern of rural revitalization, rural culture civilization and ecological livable.

Regionally, the urban balanced development index is higher for Guangxi Zhuang Autonomous Region, Sichuan Province and Chongqing Municipality of Sichuan Province, and lower for Guizhou Province, Yunnan Province and Tibet Autonomous Region, while the rural balanced development index is higher for Guangxi Zhuang Autonomous Region, Sichuan Province and Yunnan Province, and lower for Chongqing Municipality of Sichuan Province, Guizhou Province and Tibet Autonomous Region.

In terms of differences between urban and rural areas, the most profound are Chongqing and Yunnan in Sichuan Province, mainly because Chongqing in

Sichuan Province is a traditional industrial city, while Yunnan Province is based on tourism economy and the proportion of agriculture, rural and rural industries. The two regions have different development priorities, so there will be a big difference in urban and rural areas dependent on industry.

Guangxi Zhuang Autonomous Region has a good agricultural and industrial economic base and strong development force. Liuzhou City, as the most important industrial city in Guangxi Zhuang Autonomous Region, has a well-developed secondary industry, and its economic aggregate is higher than other cities in Guangxi Zhuang Autonomous Region. As a famous tourist city in China, Guilin has unique tourism resources, and tourism and other service industries are relatively developed. The development of its tourism industry has driven the overall economic growth of Guilin. Fangchenggang City and Beihai City, although their economic aggregate is not relatively high compared with other cities, but the per capita income of residents is higher. Chongzuo City, Guigang City, Baise City, Laibin City, Hechi City and Hezhou City have always been relatively backward in economic development in Guangxi Zhuang Autonomous Region.

These areas are located in remote areas with inconvenient transportation. The relatively weak economic base and low level of education are the methods of unbalanced development. In recent years, Guizhou has achieved good results in terms of total economic size, economic growth rate and industrial structure. However, as an inland province not close to the border or the sea, Guizhou's economic development is relatively backward. Its per capita GDP is only two-thirds of the national average and less than 40 percent of the average in the eastern region.

In short, facing the low level of balanced development and the wide gap between urban and rural areas, the ethnic areas in southwest China should introspect. In order to narrow the gap, it is necessary to find out the reasons for the unbalanced development of urban and rural areas, which has become one of the urgent tasks to be solved in the economic development of ethnic areas in southwest China.

2.3.2 Comparative analysis of GTWR factors between urban and rural areas in Southwest China ethnic areas.

PART ONE: Comparison of economic factors in urban and rural ethnic areas

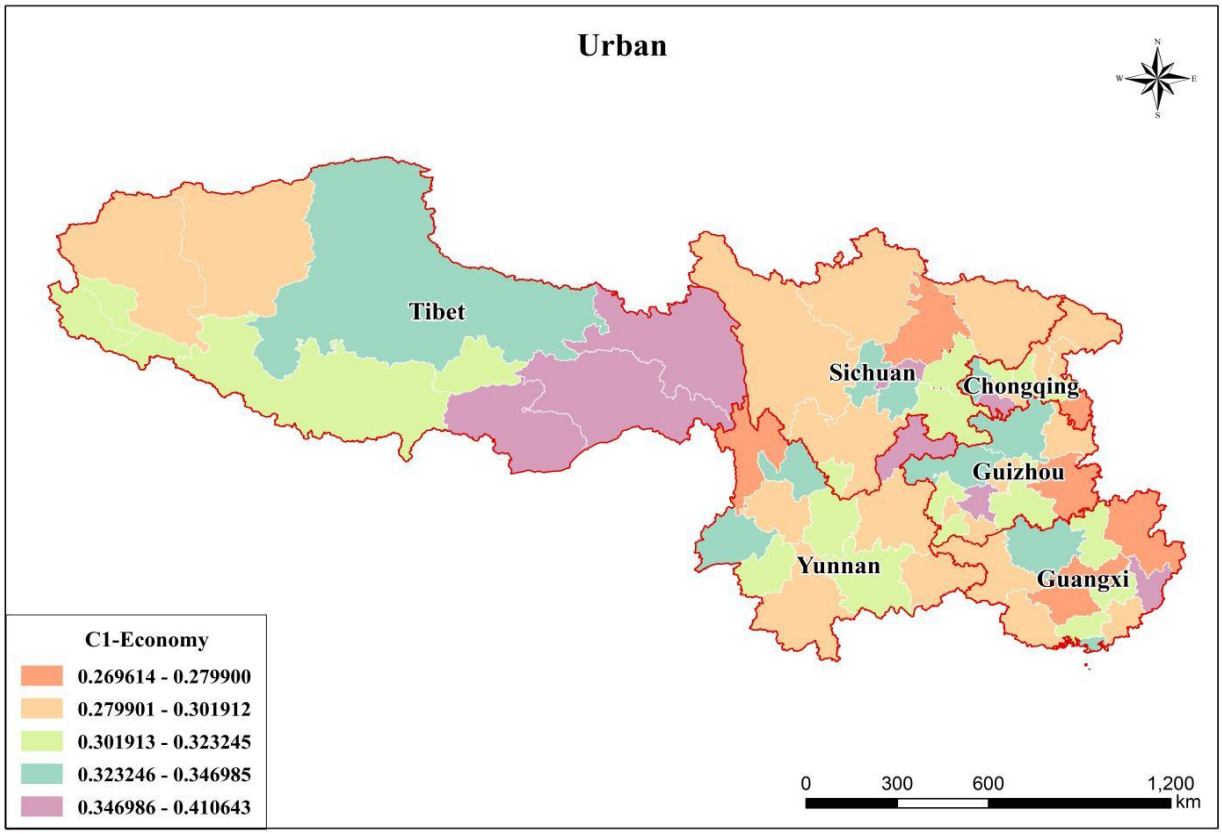

Figure 2.17 - Comparison of economic factor regression in ethnic urban areas of southwest China from 2010 to 2020

Source: author`s research

Description: As shown in the illustration, different colors indicate the degree of influence of economic factors on the unbalanced development of urban and rural areas in different ethnic regions of southwest China. The influence degree of different regions is mainly divided by the five-fold method. The influence coefficient ranges from small to large from light brown, light yellow, light green, dark green and dark blue, and the darker the color indicates the deeper the influence degree.

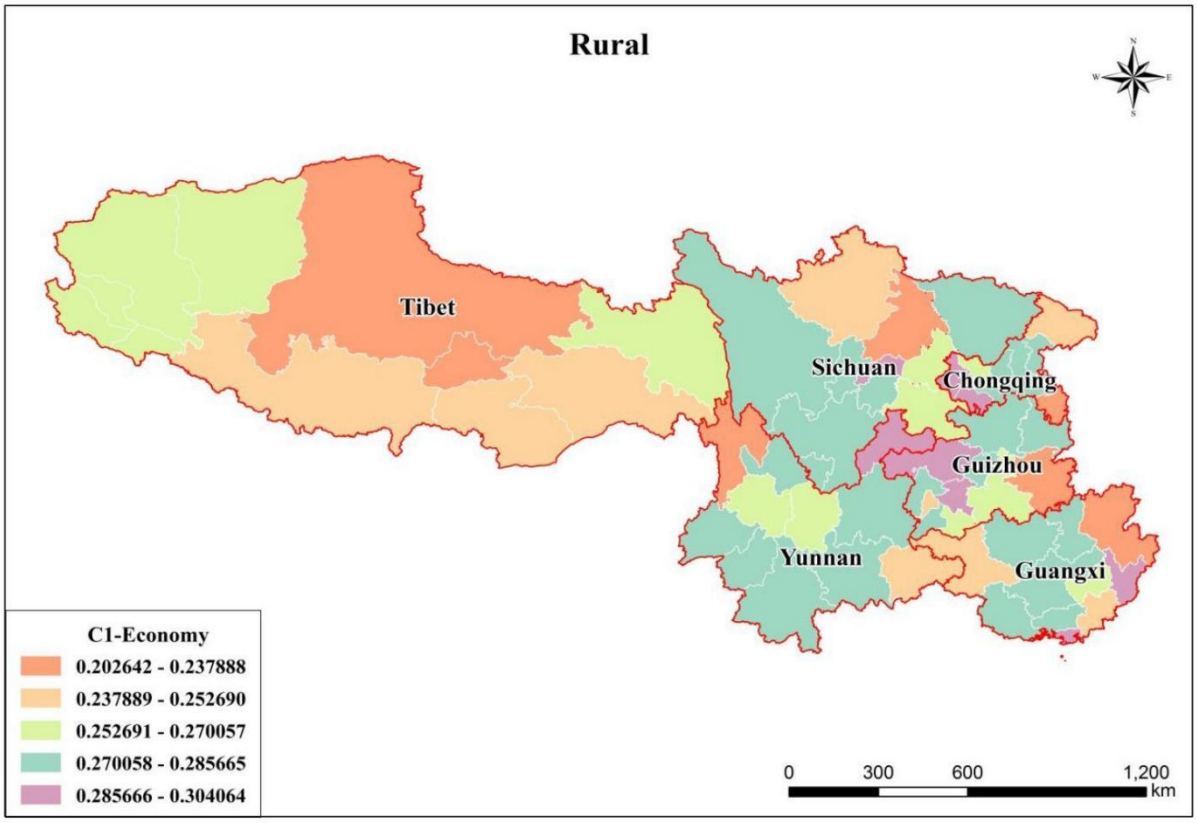

Figure 2.18 - Regression comparison chart of economic factors in ethnic rural areas of Southwest China during 2010-2020

Source: author`s research (description see figure 2.17)

From the comparison of urban and rural areas, it can be seen from Figure 2.17 that there is a large gap between urban and rural areas in the level of economic development and vitality of economic growth in ethnic areas in southwest China. Among them, from the urban regression map, the degree of influence of economic factors in ethnic minority areas in Southwest China is high in the middle and low on both sides.

The economic development level of Chengdu-Chongqing area is high, and the weight of economic factors is relatively high, while the influence weight of economic factors in Yungui area and Tibet area is relatively low. Moreover, from the perspective of the rural regression map, the influence degree of economic factors in the ethnic areas in southwest China gradually increases from west to east, and the influence degree of economic factors near the coastal areas and developed

areas in the east is higher.

First of all, the overall economic development pattern must be optimized. Generally speaking, the economic development level of the eastern region is higher than that of the northwest, and the vitality of economic growth is also better than that of the northwest. In the future development, it is necessary to give full play to the comparative advantages of different regions and establish a reasonable pattern of cooperation and division of labor in the ethnic minority areas of southwest China, so as to promote the overall development of the southwest region. A new development pattern should be established, featuring in-depth development in the west, national revitalization in the southwest, enhanced economic vitality in the southwest, and a prominent economic circle in the southwest.

Second, it is necessary to build a new development area that integrates urban and rural areas. Since the implementation of China's western development and rural revitalization strategy, the level of urban construction and urbanization in ethnic minority areas in southwest China has greatly improved, and more new areas of urban integration have been derived. As new development areas. The emergence of new cities contributes to the formation of a unique pattern of ethnic urban-rural integrated development, including new central cities at all levels and urban agglomerations based on old central cities.

However, the number of cities in southwest China's ethnic minority areas is smaller than that in eastern China, the scale of central cities is smaller, and the level of urbanization is lower, which lags behind the overall economic development level of southwest China's ethnic minority areas. Therefore, it is necessary to pay attention to the economic development gap between cities, enhance the spatial attractiveness of new development areas in western China, strengthen the connection between new development areas and old urban areas, and form large-scale urban circles with competitive advantages, such as Chengdu-Chongqing-Guizhou (Sichuan Province, Chongqing Municipality and Guizhou Province) urban circles.

Third, the key areas of urban and rural development must be planned. Since

the implementation of the western region development strategy, the ethnic minority areas in southwest China have implemented the regional development strategy of "connecting points with lines and covering areas with points", which has promoted the development of key areas. During the 14th Five-Year Plan period, the ethnic minority areas in southwest China took transportation and communication arteries, energy and water sources as their "axes". Three key economic regions began to take shape: the West Longhai-Lanxin Economic Belt, the Chengdu-Chongqing Economic Belt on the upper reaches of the Yangtze River (Chengdu City, Sichuan Province and Chongqing City, Sichuan Province), the South Guikun Economic Zone (Nanning City, Guangxi Zhuang Autonomous Region, Guiyang City, Guizhou Province and Kunming City, Yunnan Province) and the economic development of the Sichuan-Tibet line.

Relying on the three economic belts, key areas such as finance and heavy industry in the Chengdu-Chongqing area, transportation center radiation industry in the West Longhai-Lanxin line economic zone, foreign trade of agricultural products in the South Guian-Kunming economic zone, border trade and nature protection in the Sichuan-Tibet line have been developed at first. However, the existing economic belt needs to be further planned to make full use of the comparative advantages of urban and rural integrated development, fully balance the development advantages of different regions, and promote the key development of key regions.

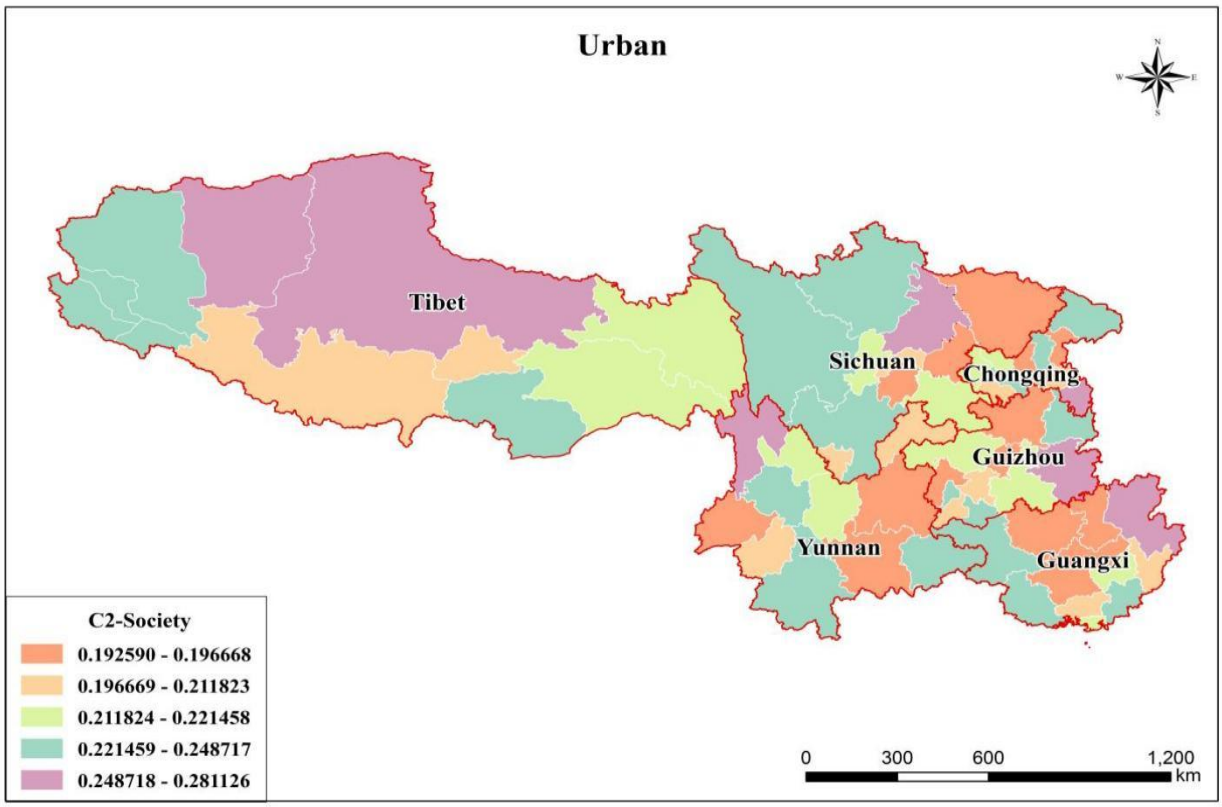

Figure 2.19 - Comparison of social factor regression in ethnic urban areas of southwest China from 2010 to 2020

Source: author`s research (description see figure 2.17)

From the comparison of urban and rural areas, it can be seen from Figure 2.18 that there is a large urban-rural gap in the social development level and construction pattern of ethnic areas in Southwest China. Among them, according to the urban regression map, the degree of influence of economic factors in ethnic minority areas in Southwest China gradually decreases from west to east. The social development level of Sichuan-Tibet areas is high, and the influence weight of social factors is relatively high, while the influence weight of social factors in eastern China is relatively low. Moreover, from the perspective of the rural regression map, the influence of social factors in the ethnic areas of southwest China gradually decreases from west to east, while the influence of social factors near the coastal areas and developed areas in the east is relatively low.

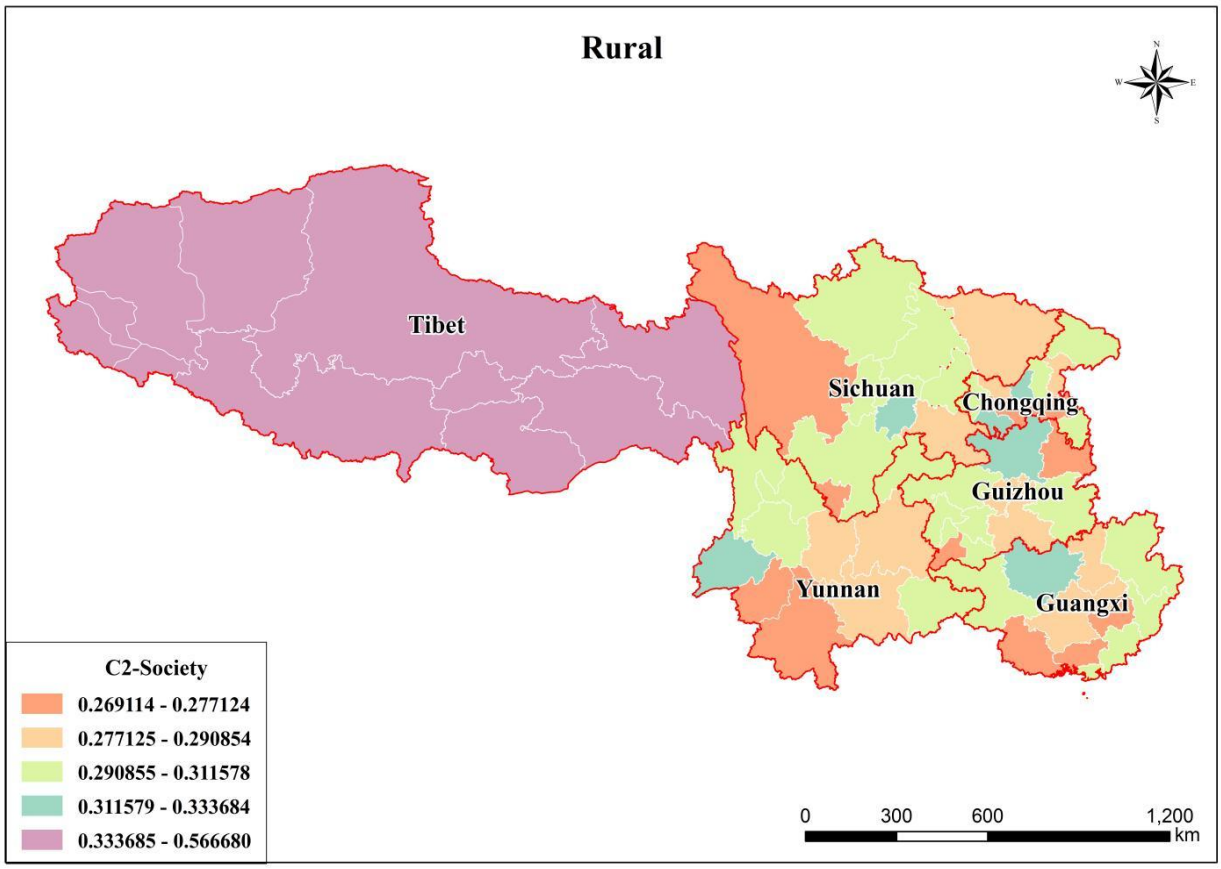

Figure 2.20 - Regression comparison chart of social factors in ethnic rural areas of Southwest China from 2010 to 2020

Source: author`s research (description see figure 2.17)

First, the social construction for all-round development must be further implemented. It is a new leap forward in the Sinicization of Marxist ethnic theory, an important ideological foundation for achieving national reunification, social stability and ethnic unity, and a practical guide for building a stronger community of shared future for the Chinese nation.

Second, the ethnic problem of urban-rural integration must be effectively solved. The diversified ethnic culture should bring diversified industrial benefits, but the degree of harmony between culture, ethnic culture and ethnic industry is not high, so the economy of ethnic areas in Southwest China is still differentiated. For example, Yunnan Province is an ethnic culture province with the largest number of ethnic minorities in China. Multi-ethnic cultures bring diversified cultures and become an attractive point for Yunnan's tourism economy. However,

the development of ethnic culture and economy in Yunnan Province has not been fully popularized. 70% of the economic power is concentrated in Kunming, Yuxi City, Chuxiong Prefecture, Xishuangbanna Prefecture and their surrounding counties and cities. The development of border ethnic culture industry is still relatively backward; At the same time, financial investment and cultural creativity are not fully targeted to the local culture, resulting in poor integration of resources and enterprise promotion, resulting in the value of tourism and cultural industry chain in Yunnan Province has not been fully utilized and developed.

Third, the social security of urban and rural development must be comprehensively deepened. A social security system covering people of all ethnic groups was first established in ethnic minority areas in southwest China. The concept of social security was used for the first time in the Seventh Five-Year Plan for National Economic and Social Development adopted in March 1986, and it was proposed that an embryonic social security system suited to China's national conditions should be gradually built. Under the guidance of the policy of improving the social security system and promoting social justice set forth in the report of the 19th National Congress of the Communist Party of China, the governments of the ethnic minority areas in southwest China and the social security departments of the provinces and municipalities at all levels have concentrated their efforts and invested a lot of resources and policies in the ethnic minority areas, and have established various relatively complete urban and rural social security systems. The social security enterprises in ethnic minority areas have made amazing achievements and great development. However, due to the uniqueness of natural geography, history, culture and other aspects, as well as the peculiarity and complexity of ethnic minority areas, there are still some shortcomings in the construction of their social security system. Due to the weak economic foundation, complex geographical environment, prominent ethnic problems, small population and low urbanization level, the level of social security in ethnic minority areas in southwest China is lower than that in eastern China. With a late start in development, the social security foundation is relatively weak.

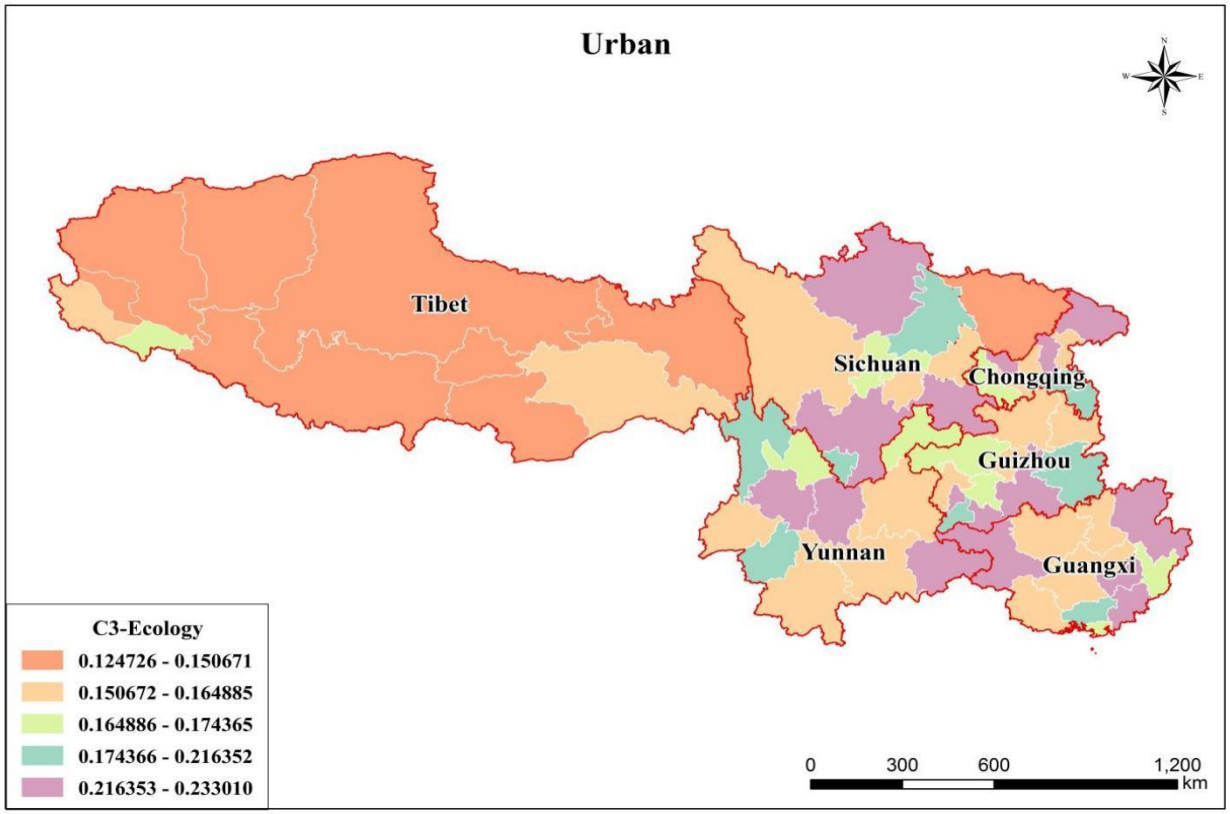

Figure 2.21 - Comparison of ecological factor regression in ethnic urban areas of southwest China from 2010 to 2020

Source: author`s research (description see figure 2.17)

As can be seen from the regression comparison of urban ecological factors (Fig. 2.19) and rural ecological factors (Fig. 2.20), there is a large gap between urban and rural areas in the level of ecological development and the degree of ecological civilization in the ethnic areas of Southwest China. Among them, from the urban regression map, the impact of economic factors in the ethnic areas of southwest China is higher in the central cities and lower in the peripheral cities. Chengdu-Chongqing (Chengdu and Chongqing of Sichuan Province) has a higher level of ecological development and a higher weight of ecological civilization factors, while Yunnan-Guizhou and remote areas of Tibet have a lower weight of ecological factors. In addition, according to the rural regression map, the influence of ecological factors in ethnic minority areas in southwest China is higher in economically developed areas and lower in developing areas, and the influence of economic factors is higher in coastal areas and eastern developed areas.

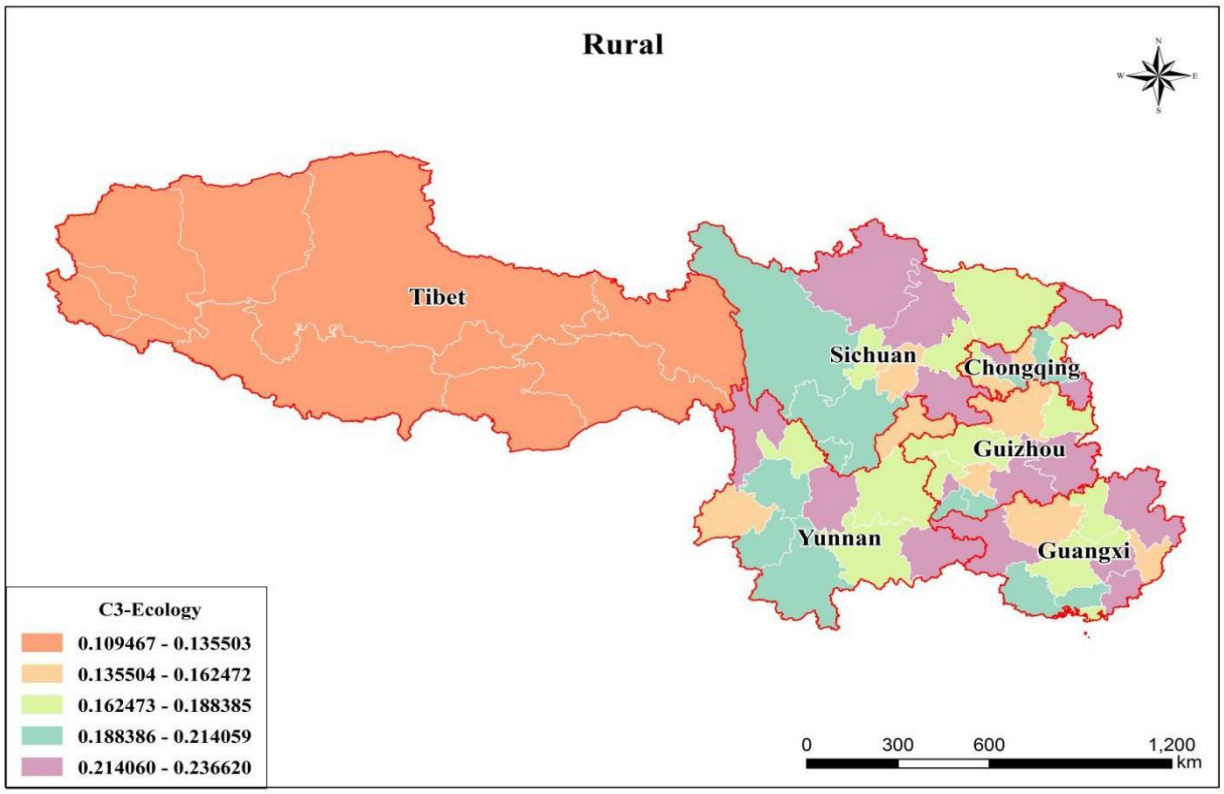

Figure 2.22 - Comparison of ecological factor regression in ethnic rural areas of southwest China from 2010 to 2020

Source: author`s research (description see figure 2.17)

First, the overall development of ecological civilization must be built in a sustainable way. Ecological progress is in line with the current new trend and trend of world development, and is closely related to the path of great rejuvenation of the Chinese nation. It is the only way for China's economic and social development in the future. As an important national development strategy, ecological civilization construction requires the participation of the whole country, and the ethnic minority areas in southwest China must also shoulder important construction tasks and development responsibilities.

Second, the ecological problem of rural-urban integration must be solved. Since the report of the 19th National Congress of the Communist Party of China, the ethnic minority areas in southwest China have actively responded to the call of the CPC Central Committee and vigorously promoted the construction of ecological civilization. However, due to the unique geographical climate and

economic and industrial structure, there are still many problems in the construction of ecological civilization in the region. Specifically, these problems are mainly manifested in the following aspects:

- First, the concept of ecological civilization is weak. Due to the backward way of production and living and the inertia of thinking for thousands of years, the people in the ethnic minority areas of southwest China are still relatively weak in their awareness of environmental protection and the concept of ecological civilization, and their enthusiasm and initiative to participate in ecological protection are not strong.
- Second, the extensive mode of economic development still exists. As most of the ethnic minority areas in southwest China are located in remote mountainous areas, the special geographical and transportation conditions restrict the local economic and social development, which also leads to the extensive economic development mode still occupying an important position in the local area. However, this development mode is obviously at the expense of the ecological environment.
- Third, the natural resources are seriously damaged. Most of southwest China has subtropical monsoon climate, abundant rainfall, suitable climate, and mountainous hills, so the forest resources are rich. However, for a long time, the local government has not paid enough attention to and supervised the forest resources, resulting in serious deforestation and frequent forest fires, which have severely damaged the forest resources.

There are various types of land in southwest China, but the lack of proper planning and development in many areas has led to the gradual deterioration of soil functions and even soil erosion. In addition, affected by water erosion, wind erosion, freeze-thaw, etc., land desertification and desertification in Tibet Autonomous Region of China are also serious problems.

- Fourth, environmental pollution is a serious problem. The ethnic areas in southwest China are rich in various metal deposits, but due to predatory exploitation, the vegetation in many areas has been destroyed and the surface and underground waters have been polluted. In addition, excessive use of pesticides

and chemical fertilizers in agricultural production is common in Southwest China, which further aggravates soil compaction and degradation and water pollution.

-Fifth, the ecological value of urban and rural development needs to be explored with high quality. There is an increasing tendency for ethnic groups to mix and live together. However, in general, ethnic minorities in China are still concentrated in border areas. These areas often have unique geographical and climatic environments, fragile ecosystems, backward economic, social, scientific and technological levels, and great natural and social constraints on ecological progress. Therefore, the practice of ecological civilization construction in ethnic minority areas should not be one-sidedly copied from other regions, but should be adapted to local conditions in the light of regional economic, social and natural ecological environment characteristics, and explore new development paths based on facts.

In practical work, according to the characteristics of ethnic minority areas in southwest China, we should earnestly reach out to the people, do a good job of environmental protection publicity through village visits and other ways, and actively use the Internet, television and other digital media to improve publicity efficiency. We must change the mode of economic development. On the one hand, we should actively improve agricultural production technology, develop intensive and ecological agriculture, reduce the use of pesticides and fertilizers, and protect land resources and the agro-ecological environment. On the other hand, it is necessary to rationally plan and develop local natural resources.

In the process of resource utilization, it is necessary to adhere to the concept of ecological civilization and sustainable development, and ensure that resource utilization and exploitation are coordinated with ecological protection. Building an ecological civilization is the only way to achieve green and sustainable development in ethnic minority areas, and it is also an inevitable requirement to meet the needs of Chinese people of all ethnic groups for a better life.

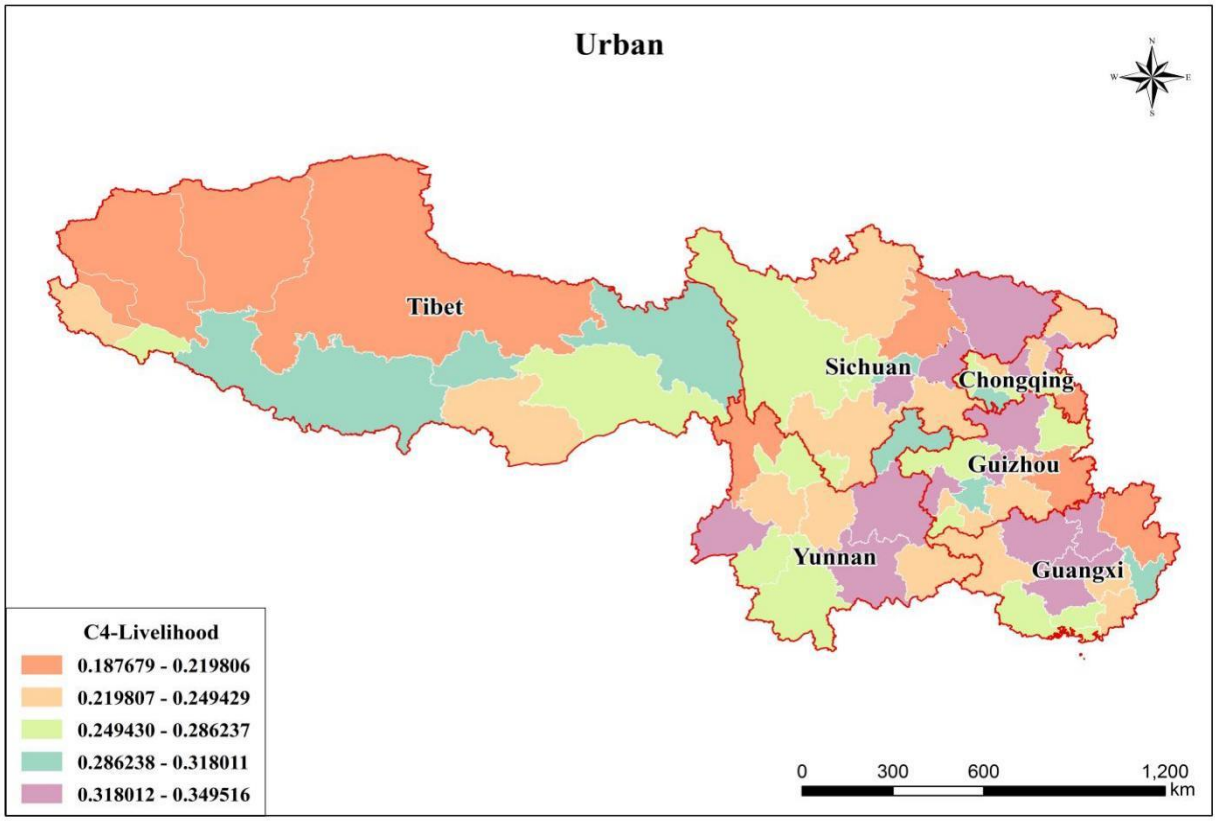

Figure 2.23 - Regression comparison of people's livelihood factors in ethnic urban areas of southwest China from 2010 to 2020

Source: author`s research (description see figure 2.17)

From the urban-rural comparison map, it can be seen that there is a big gap between urban and rural areas in the development level of people's livelihood and the improvement degree of people's well-being in the ethnic areas of Southwest China. According to the urban regression map, the economic factors in the ethnic minority areas of Southwest China have a higher degree of influence in the east and a lower degree in the west. The Chengdu-Chongqing area has a higher level of people's livelihood development, and the weight of people's livelihood factors is relatively high, while the remote areas of Tibet have a relatively low weight of people's livelihood factors. Moreover, from the rural regression map, the impact of livelihood factors in the ethnic minority areas of southwest China is higher near the city, lower far from the city, and the impact of livelihood factors near the coastal areas and eastern developed areas is higher.

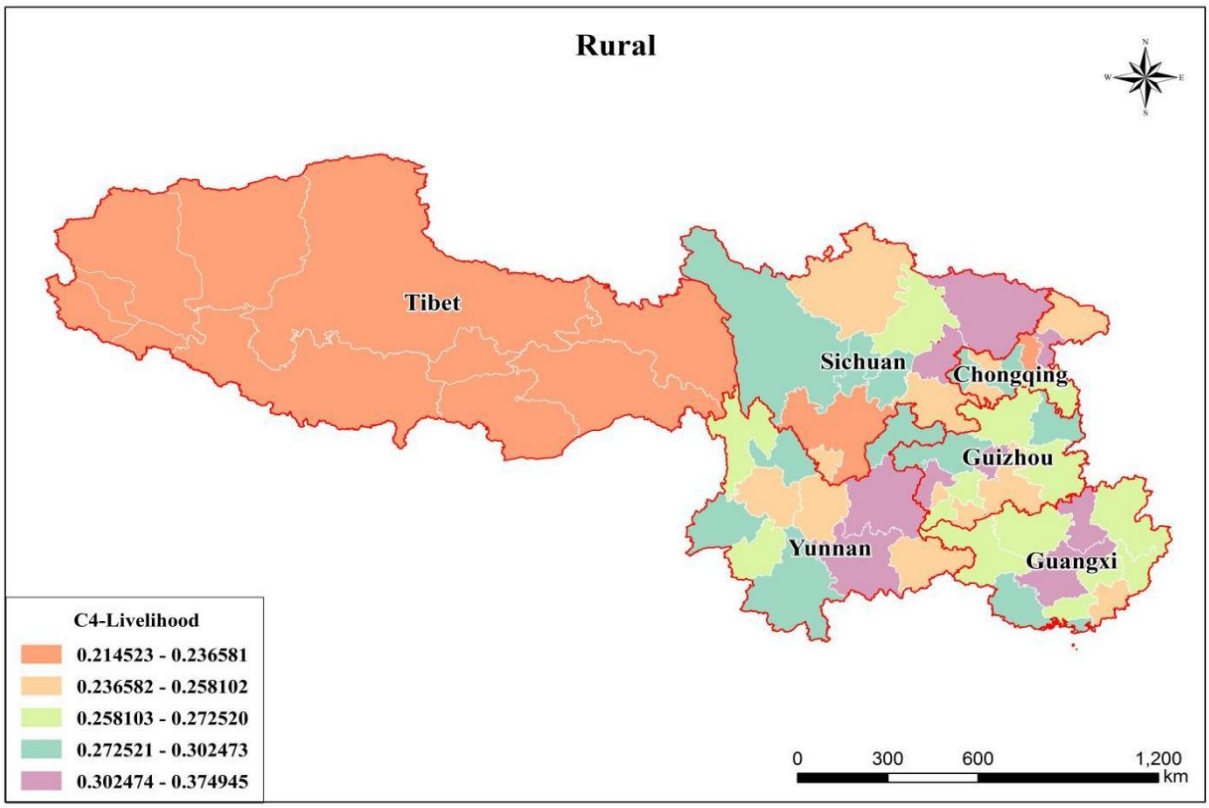

Figure 2.24 - Regression comparison of people's livelihood factors in ethnic rural areas of Southwest China from 2010 to 2020

Source: author`s research (description see figure 2.17)

First, the overall development of people's livelihood must be comprehensively improved. The ethnic minority areas in southwest China have always taken the improvement of people's livelihood as the fundamental purpose of development. By utilizing their own development advantages, they attach equal importance to economic development and ecological and environmental protection. Promoting the positive interaction between development and enrichment and resource integration, measures such as the integrated development of characteristic tourism and modern industries have made important achievements in improving people's livelihoods in ethnic minority areas in southwest China.

Second, people's livelihood issues related to the integration of urban and rural areas must be effectively resolved. The improvement of people's livelihood in ethnic minority areas in southwest China still has unbalanced development aspects.

It is necessary to further deepen reform and opening up, solve development problems in a timely manner, take supply-side structural reform as the main line, further promote rural reform, further explore the tourism-driven small town development model, and promote innovation in the grassroots governance system, so as to promote the healthy development of Bama. The policy of prioritizing employment should be fully implemented. We will provide opportunities to ensure employment and stimulate the local surplus rural labor force, and increase household economic income. With the improvement of people's livelihood, Bama has further improved its governance system and governance capacity. Putting people at the center, addressing people's concerns in a timely manner, and committing to improving people's livelihoods are important starting points for the rural revitalization of Bama in the new era.

Third, the people's livelihood in urban and rural development must be fully improved. There is still much room for improvement in people's livelihoods in ethnic minority areas in southwest China. We will increase preferential policy support and strengthen projects to improve people's livelihood.

Conclusion to Chapter 2

In summary, based on the empirical research on the unbalanced development of ethnic minority areas in southwest China, Chapter 2 draws the following conclusions, which lays an empirical foundation for the research on the path and countermeasures in Chapter 3. The conclusions are as follows:

Section 1: The author makes an empirical analysis of the characteristic structure of unbalanced development in Southwest China's ethnic minority areas, and finds that the characteristics of unbalanced economic and social development in Southwest China's ethnic minority areas are as follows: From 2010 to 2020, the unbalanced development of Southwest China's ethnic minority areas has improved, but with the deepening of economic development, the improvement of social construction, the construction of ecological civilization and the improvement of

people's well-being, the unbalanced development has penetrated into all aspects of the four major areas. Moreover, the development level of cities is higher than that of rural areas, but the degree of unbalanced development of cities is higher than that of rural areas. The areas of unbalanced urban development are mainly concentrated in the economic areas of Guangxi Zhuang Autonomous Region, Sichuan Province, Chongqing Municipality of Sichuan Province (high development level) and Guizhou Province, Tibet Autonomous Region and Yunnan Province (low development level). The unbalanced development of rural areas is mainly concentrated in the social areas of Guangxi Zhuang Autonomous Region, Sichuan Province and Yunnan Province (high development level) and Chongqing Municipality of Sichuan Province, Guizhou Province and Tibet Autonomous Region (low development level).

Section 2: Based on the characteristics of unbalanced development in Section 1, this section conducts a comprehensive measurement of the development level of ethnic minority areas in Southwest China and an analysis of the differences in various fields, tries to analyze the root causes of the development differences in ethnic minority areas in Southwest China, and draws the following conclusions: First, the research finds that the development level of urban and rural areas in Southwest China is relatively high, and the comprehensive development level of cities is lower than that of rural areas; Second, the analysis finds that the differences in urban positioning, urban planning, positioning of the three major industries, development of characteristic industries, differences in statistical standards, differences in policy intensity and other factors will cause changes in the three levels of indicators, and then interact with each other in the fields of economy, society, ecology, people's livelihood and other fields. This leads to the development of ethnic areas in southwest China, there are great differences.

Section 3: under the research of the unbalanced characteristics and comprehensive level of the development of southwest China's ethnic areas, this section based on the spatial and temporal heterogeneity of the development of southwest China's ethnic areas, and the concept of time and space for the

sustainable development of southwest China's ethnic areas to carry out an analysis of the influencing factors. In the model fitting effect, it is found that the present value and predicted value of urban balanced development index are lower than those of rural balanced development index. From the perspective of time and region, it is found that there are serious urban-rural development differences in southwest China's ethnic areas. In the analysis of impact factors, based on the existing problems of urban-rural development differences, the impact factors in the fields of economy, society, ecology and people's livelihood and their future impact status are deeply analyzed, which provides an empirical analysis basis for the study of multi-center governance path and sustainable development countermeasures in southwest China's ethnic areas.

CHAPTER 3. THE PATH AND COUNTERMEASURES OF THE UNBALANCED DEVELOPMENT OF ETHNIC AREAS IN SOUTHWEST CHINA

In the first section, based on the theory of polycentric governance, as well as the characteristics of the imbalance in Southwest China's nationalities' development and the comprehensive evaluation, the study of polycentric governance based on regional coalition government is carried out, and the path of polycentric governance in the ethnic regions of Southwest China is proposed.

In the second section, based on the theory of regional sustainable development, the countermeasures for the sustainable development of the ethnic regions of Southwest China in economic development, social construction, ecological civilization, and people's livelihood projects are examined under the analysis of the characteristics of the uneven development of the ethnic regions of Southwest China and the factors affecting them.

3.1. The multi-center governance path of unbalanced development of ethnic areas in Southwest China

Diversified institutional innovation can guide the healthy development of institutional transformation and avoid the welfare loss and resource waste caused by institutional solidification. With the development of the economy and society and the continuous improvement of people's living standards, the main contradiction facing Chinese society in the new era has become the contradiction between unbalanced and inadequate development and people's ever-increasing demands for a better life. To solve the problem of unbalanced and inadequate development, in essence, is to redefine the relationship between fairness and efficiency, and promote the equal development of basic public services is the choice of The Times to comprehensively address the problem of unbalanced and inadequate development. The development of the new economic system advocates

a diversified supply mechanism, and the development direction of the public service supply system in the minority areas of southwest China is bound to be a diversified and coordinated supply pattern.

The market-oriented development of the public service delivery system has a huge impact on China's traditional regional economic system. Between the three poles of government, enterprises and residents, the pattern of regional governments monopolizing the public economy will shift to a "three-pillar" situation. Corporate governance, democratic participation, administrative decentralization and democratic oversight will gradually delegate the power of regional governments. A multi-level regional public governance structure will be formed.

On the one hand, the multi-center development of the main supply structure will help stimulate market vitality and relieve the financial pressure on the government; on the other hand, it can more effectively utilize the advantages of the private sector in experience, technology, innovation, efficiency, capital and management, improve the quality and efficiency of regional public services, and achieve a win-win situation for the government, enterprises and residents. However, at the same time, the multi-center cooperative supply structure is more conducive to promoting the reform of national and regional governance models, changing the traditional concept, system and mechanism of public service supply, leading to a fundamental transformation of government functions, and reorganizing and clarifying the legal relationship between government, enterprises and society (Wu Lixiang et al., 2018).

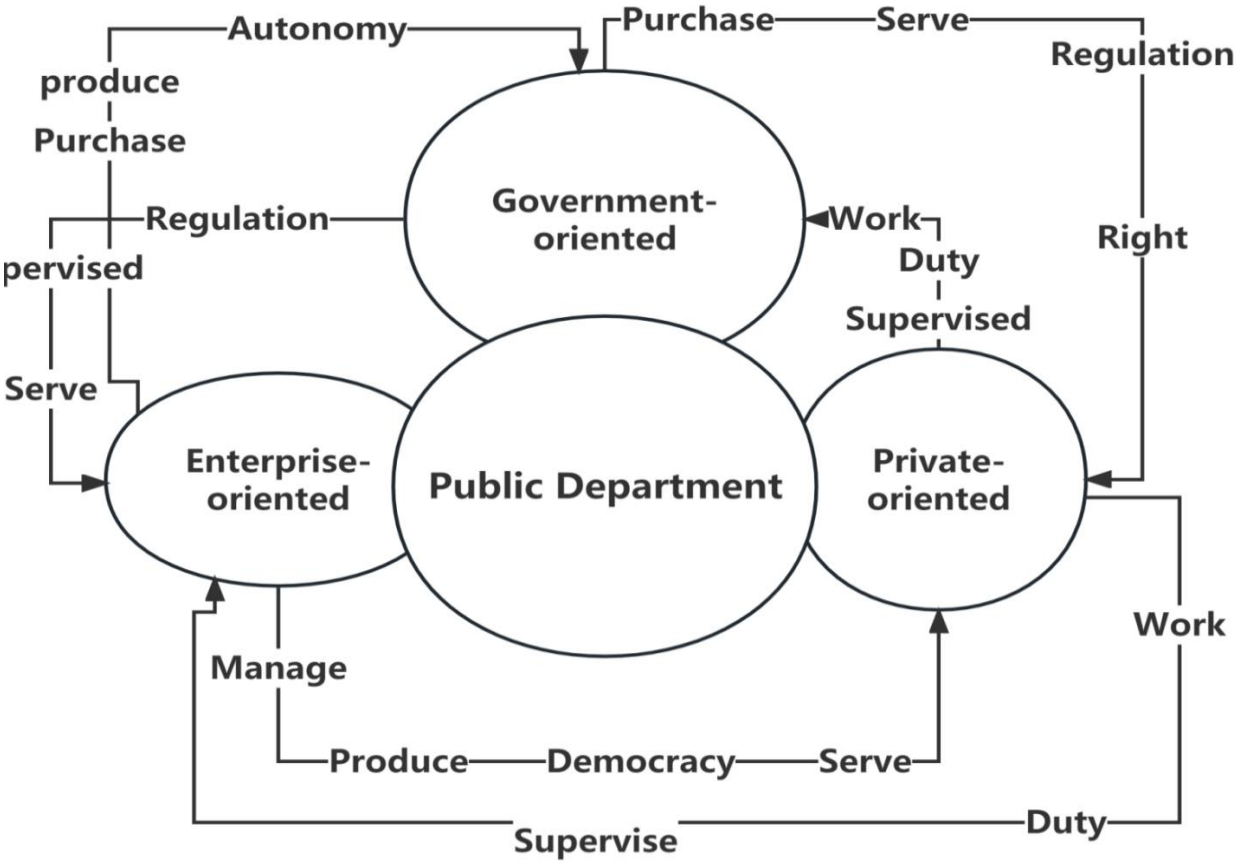

Figure 3.1- Framework diagram of polycentric governance in the regional public sector

Source: author`s research

Note: The round box of the triangle in the figure is the government, enterprise, and private sector, and the overlap in the middle of the three indicates the regional public sector, and the path indicates the path relationship of the polycentric governance function under the premise of the regional public sector, and the path of synergistic governance in the economic, social, ecological, and livelihood fields in the regional public sector (Hao Di, 2023).

In China, the traditional relationship between regional governments, enterprises and residents is actually a bipolar relationship between the government and residents. Regional governments have great political influence and economic control. They are not only responsible for the application and implementation of national laws, the formulation of regional regulations, and the formulation of

regional development plans. They are also responsible for the management of regional state-owned enterprises, the establishment of medical and educational institutions, the construction of transportation infrastructure, water supply and drainage networks, etc.

After the reform and opening up, China has carried out great reforms in the field of public economy through the separation of government administration and enterprise, the enterprise of public institutions, the introduction of foreign capital and private capital, and so on. Enterprises have gradually become independent of the government. However, with the implementation of decentralization, the leading role of regional governments in the regional public sphere has not been weakened. However, the right of regional residents to participate in regional public affairs has not been improved accordingly, so the regional government is still the only leader in providing regional public services.

Under the system of diversified regional public service provision, regional governments must get rid of most regional public affairs, transfer the production function of public services to private enterprises, and withdraw the right to intervene in the daily business activities of enterprises, so as to let the autonomous ability of enterprises and the automatic regulatory mechanism of the market play a full role. They become a "collective consumer unit" that expresses and synthesizes the needs of local residents, obtains public service fees by collecting taxes and other means, pays enterprises that produce local public services, and supervises the performance of enterprises, thus transforming into an enabling state (Bogumil 2001; Gapski et al., 2000).

The main difference between polycentric cooperative provision and the traditional bipolar "government-business" relationship is that residents not only act as consumers of regional public services, but also participate in shaping public life as part of the regional government. Through the establishment of the third sector and democratic oversight, they become the other pole in the regional public service delivery system besides the regional government and enterprises. In the multi-center governance system, more emphasis is placed on the combination of

"heteronomy" and "self-discipline", that is, the combination of state regulation and social self-regulation. Social self-regulation mainly means that individuals or groups, while fully enjoying their own private interests and fundamental rights, will also fully participate in the autonomy of regional public services and serve the public service system. Therefore, social self-regulation is an important complement to the external "heterology" of state regulation. Through internalized social self-regulation, it stimulates the motivation of "individuals" to spontaneously assume public obligations.

At the same time, in regional multi-center governance, a vertical regional public service system should be established on the government side in the traditional "government-enterprise-residents" triangular co-governance relationship, in order to adapt to the development of regional conditions and meet the public service demands of enterprises and residents. Vertical regional public service system refers to the establishment of a vertical regional public service system of "central-regional joint - local - social autonomy" under the original "central-local" service system, and the establishment of regional joint government departments on top of local governments in key economic belts under the guidance of the central government, specializing in dealing with the public affairs of the economic belt. Build construction-oriented regional governments to actively participate in and manage the public affairs arising from the construction of the economic belt. At the same time, in order to improve the government's service performance, social self-governing organizations with geographical and close ties to the region should be included in the regional coalition government as the forerunners of regional public services.

According to the triangular structure of multi-center cooperative supply, under the supply system, the roles that local governments should play in the provider-producer transaction area are: (1) government procurement, that is, paying enterprises to purchase the required local public services; (2) government regulation, that is, through laws, regulations, policies and other formal systems to regulate the operation of local public service production enterprises; incentives and

subsidies - providing tax relief, financial subsidies, land and other policy support to enterprises participating in local public service production; (3) information supervision, that is, requiring production enterprises to report their operations to the government and collect and make statistics, so as to curb their bad business behaviors; (4) Regional service, that is, the regional coalition government should serve the construction of public service affairs such as economic belt, economic development new area, free trade zone park, development zone and public project construction in the region, and become the link between the government and enterprises, the government and residents, and residents and enterprises in each key region, promote regional competition and cooperation, and promote the free flow of production factors in the region.

The role of enterprises in the provider-producer transaction domain is to participate in the provision of local public services through public-private cooperation, such as franchising, contracting, acquisition or equity participation, to alleviate the shortage of government investment, to form a competitive situation with other producers, and to promote the improvement of efficiency. In the provider-consumer transaction field, local governments, as the service organizations of local residents, should meet the public's demand for public goods and services, and disclose producers' information to the public. In addition, they should empower residents to spontaneously form a "third sector" to participate in the production of local public services, give play to the function of spontaneous governance of residents, and finally actively promote policies.

Change the traditional concept and promote the application of more efficient institutional arrangements; and residents play the dual role of participants and consumers in democratic decision-making, expressing and providing feedback to local governments. Through democratic supervision, residents will participate in decision-making on the price and level of local public services. At the same time, non-profit organizations, associations, autonomous committees, and other organizations will be organized to participate in the provision of local public services and to exercise the duties of social citizens to maintain, monitor, and

manage public goods.

In the producer-consumer transaction domain, enterprises should provide consumers with a certain quantity and quality of services. At the same time, enterprises should proactively disclose their production information to consumers and fulfill their social responsibilities in terms of labor standards, human rights and freedoms, and environmental impact. In addition to paying user fees to selected local public service producers, residents should also actively feedback accurate demand and preference information, and be able to directly monitor the price and service level of enterprises, and actively fulfill their obligations in collaborative production, play a role in protecting the public environment, and coordinate conflicts between demand and preference.

The Fifth Plenary Session of the 18th Central Committee of the Communist Party of China (CPC) established the five development concepts of innovative, coordinated, green, open and shared development. The provision of regional public services is not only an important support for achieving higher quality, more efficient, fairer and more sustainable development, but also an important link in building a regional governance system. The reform of China's regional public service delivery system should be guided by the five development concepts and continuously deepened, play a multi-centered governance role in promoting the balanced economic and social development of southwest ethnic minority areas, and achieve a comprehensive and balanced new development situation of high-quality economic growth, a guaranteed social construction system, a sustainable ecological civilization and improved people's livelihood. On this basis, this study puts forward the following four ways of coordinated development in various fields to promote coordinated regional development:

Path 1: Innovation-driven human capital flow ADAPTS to economic restructuring. In the economic governance of the southwest minority areas, the regional government should resolutely play the role of multi-center governance. First, innovate the government function construction system to improve the efficiency of public services; Second, implement regional incentive policies to

promote innovation and entrepreneurship of public actors in enterprises and drive the flow of human capital in the region; The third is to encourage residents in the region to carry out digital technology innovation to improve the quality of human capital, so as to adapt to the upgrading and adjustment of the national economic structure. In the development process of regional public service delivery system, giving full play to the embedding and correlation role of information can effectively promote the system design of local public service delivery to conform to the people-oriented.

China should make full use of the opportunity of digital economy innovation, promote the construction of human capital stock and quality in the whole society, and provide higher quality human capital services for the economic restructuring of southwest minority areas. In order to promote the joint construction of the regional coalition government under the cooperation of various fields, the following three aspects should be achieved:

First, through legislation, clearly define the rights and responsibilities, rights and duties of the government, enterprises and residents in the region, standardize the information disclosure obligations of the government and utility companies, and clarify the public's right to obtain information on the planning, construction and operation of public services.

Second, rely on the digital government to promote innovation-driven incentive policies, improve the incentive mechanism of the government to provide public services to enterprises and residents, and provide a good regional policy environment for enterprises and residents to innovate and start businesses.

Third, reasonable proposals and requirements for residents should establish coordination channels, and use autonomous organizations to set up regional resident affairs handling offices.

Path 2: The construction of infrastructure is the guide to ethnic autonomy and the simultaneous development of ethnic culture. In the social governance of ethnic areas in southwest China, the multi-center governance role of regional governments should be resolutely brought into play.

In the construction of infrastructure in the region, the introduction of democratic self-government mechanism to promote the sharing of public services; the second is to realize democracy and autonomy in ethnic areas, to integrate multi-ethnic cultural characteristics, to realize multi-subject identity of public service provision from the perspective of cultural identity, in order to improve the infrastructure construction in southwest ethnic areas. With the development of the trend of ethnic integration and administrative decentralization, the non-state self-governing system has become the third important public governance mechanism along with state governance and market governance. In order to give full play to the role of ethnic autonomy mechanism in the field of regional public services in China, we should start from four aspects:

First, the government should enact laws to grant residents in ethnic areas the right to self-organize their own governance, and reasonably formulate rules for the democratic participation of infrastructure stakeholders in decision-making on infrastructure construction, as well as rules for joint supervision of implementation.

Second, stakeholder participatory governance should be implemented in the important decision-making process of regional public service provision, so that both ordinary people and government officials affected by specific issues can participate, so that social members can have a say in management decisions, and improve the responsiveness and effectiveness of ethnic governance.

Third, social organizations should be encouraged to participate in the construction of regional coalition governments to ensure the production, supply and expression of will of public goods for infrastructure construction.

Path 3: Coordinate development contradictions to promote economic normalcy and ecological civilization. In the ecological governance of ethnic areas in southwest China, it is necessary to resolutely give play to the multi-center governance role of regional governments.

First, it is necessary to coordinate the contradictions of personal real estate and promote the formation and development of the new normal of the economy; second, it is necessary to establish an ecological civilization construction system

compatible with the new normal of the economy and promote the multi-center governance of ecological civilization construction. The diversified and coordinated provision of regional public services in China mainly involves changing the interests of three groups: first, the administrative power of government personnel.

Second, it is necessary to establish an ecological civilization construction system that is compatible with the new normal of the economy, and promote the multi-center governance of ecological civilization construction. The diversified and coordinated provision of regional public services in China mainly involves changing the interests of three groups: first, the administrative power of government personnel; second, social actors, including relevant enterprises and citizens; third, construction actors, including construction units and institutions.

In order to coordinate the vested interests of groups in ecological civilization services, we must coordinate the fundamental contradictions of people's real estate, and fully release the production capacity of ecological value, we must do the following: First, take advantage of the unbalanced development of ethnic minority areas in southwest China to promote the differentiated distribution of ecological and economic functions in these areas, and assign horizontal decentralization and power determination to local governments, delegate the power of ecological civilization construction to geographical regions with relatively fragile ecology, and delegate the power of economic supervision and service to regions with relatively weak economic development. Introduce the market competition mechanism in ecological civilization construction and economic new normal construction, so as to improve the quality and efficiency of ecological civilization construction in southwest ethnic areas; Second, make use of the nationality and regionalism of the development of southwest China's ethnic minority areas, in the division of regional land resources, develop unique ecological civilization construction projects according to ethnic and regional characteristics, improve the living standards of people inside and outside the region, so that the construction of economic new normal and ecological civilization promote each other.

Path 4: Optimize the distribution structure and promote the social

security system to benefit people's livelihood projects. In the ecological management of the southwestern minority areas, the multicenter management role of the regional government should be resolutely put into practice.

First, we should optimize the financial distribution structure and pay more attention to the value restoration project of the social security system.

Second, we will improve the distribution structure of social security funds and promote the development of education, medical care and other livelihood projects. In terms of the structure of government revenue and expenditure, the central government is responsible for spending on nationwide public goods and services that benefit all citizens, while regional governments are responsible for providing local public goods that are strong in their regions and closely related to people's daily lives. Among the financial expenditures of regional governments, education, health, road infrastructure, medical care, public security, fire protection and public welfare have become important aspects of the financial expenditures of local governments. However, as a local coalition regional government, the financial revenue of the regional government comes from the value restructuring project of the government's polycentric public service system, among which the value restructuring system of social security is an important source of financial revenue of the regional coalition government.

In order to give play to the role of value reconstruction for the benefit of people's livelihood, first, the coalition government of Southwest China's minority areas should promote the establishment of regional joint social security system, such as the undifferentiated establishment of social security system in Southwest China's Chengdu-Chongqing area, so as to release value space for the promotion of value reconstruction; Second, education, medical care, old-age care, childbirth, work-related injury, unemployment and the equivalent value of the provident fund should be exchanged equally according to the proportion of contributions, so as to realize the internal transformation of the social security system of five insurgencies-one fund.

Third, we should give full play to the role of the provident fund as a social

stabilizer, give full play to the role of the provident fund in promoting education, medical care, childbirth, elderly care, employment and income, establish a democratic and self-governing mechanism so that citizens participating in the social security system can decide the proportion of the provident fund can be used independently, and use the value of the social security system to rebuild the construction of projects benefiting people's livelihood.

3.2. Sustainable Countermeasures for the Development of Ethnic areas in Southwest China

-The report of the 20th National Congress of the Communist Party of China pointed out that sustained economic growth is a prerequisite for improving people's living standards and a basic guarantee for enriching people's material and spiritual lives. Therefore, to promote the high-quality socioeconomic development of the ethnic minority areas in southwest China and promote the coordinated development of the region and beyond, it is necessary to open up the capital circulation of the economy in southwest China and reconstruct the pattern of high-quality economic development. The following three points must be achieved (Table 3.1).

First, use digital technology to drive the urban-rural cycle of the three industries. In order to smooth the economic development channel in southwest China's ethnic areas and reconstruct the economic pattern, digital innovation should be used to drive the integrated development of the three industries in urban and rural areas. According to the statistics of Chongqing Bureau of Statistics in 2020, the industrial internal structure of heavy industry accounted for 54.1%, while the light industry accounted for 45.9%, the proportion of "third-line" enterprises and military enterprises in heavy industry is quite large, the adjustment of product structure is difficult, the amount of stock assets is large, but the poor ability to revitalize is an important factor limiting the sustainable development of southwest China's ethnic areas.

Table 3.1 - Basic Performance of Reconfiguring the Southwest's High-Quality Economic Development Landscape

Type	Manifestations	References
Utilizing digital technology to drive the urban-rural cycle of the three major industries	(1) Utilizing digital technological innovation to drive the extension of light and heavy industries; (2) Transferring the third service industry to the combined urban and rural areas and establishing service centers for the three industries; (3) Utilizing the digital technology of the Internet to drive the development of agriculture in the countryside and the integration of heavy industry in the city.	Ren Baoping & Chi Kehan, 2023; Li Yueru, 2023; Akash & Kulkarni Prasanna, 2021
Improvement of the transportation network and the regional cycle of economic restructuring	(1) Joint construction of road transportation and related infrastructure, and construction of a sound and complete transportation network; (2) Promoting the regional flow of production factors and joint solutions to industrial development problems for industries in individual administrative territories.	Li, Xiaopeng, 2019; Liu, Xinyu, & Yang, Minghong & Wu, Xiaoting, 2022
Construction of infrastructure for the development of international and domestic economic double cycle	(1) First of all, it is necessary to open up the shipping channel between the Yunnan-Guizhou Plateau section of China and the inland areas, and to build a perfect shipping infrastructure; (2) Not only should we develop the industries along the inland waterways, but we should also utilize the hydropower resources of the Yunnan-Guizhou Plateau to build the channel and serve the infrastructure construction of the river source convergence of the Pearl River and Yangtze River in the Yunnan-Guizhou Plateau section.	Zhang, Mingyuan, 2023; Zhao, Xia & Gao, Chenrui, 2023

Source: author`s research

And industrial enterprises China has a large number of large enterprises, large scale, but the created industrial added value is low. The contradiction of industrial structure is a prominent manifestation of the imbalance of the third industrial structure, the light and heavy industrial structure, the ownership structure and the industrial technology structure. To adjust the structure of the three industries, the first is to use digital technology innovation to promote the transfer of the third

service industry extended by light industry and heavy industry to the urban-rural integration area, establish the service center of the three industries, and use the digital technology of the Internet to promote the rural agricultural development and the integrated development of urban heavy industry. Therefore, the use of digital technology center to establish a service center, promote the three industries in urban and rural circulation, to build the economic development of ethnic areas in southwest China urban-rural pattern.

Second, enhance the transportation network to adjust the regional circulation of economic structure. To smooth the economic development channel in the ethnic areas of southwest China and reconstruct the economic pattern, it is necessary to adjust the regional circulation of the economic structure of the transportation network. The economic structure of ethnic minority areas in Southwest China is extremely unbalanced, and different regions have different development priorities, but due to regional restrictions, it is difficult to realize the transfer and reconstruction of key industries within the region.

The industrial enterprises in Chengdu-Chongqing area of Southwest China are large in number and scale, with good economic foundation, but the industrial value added is low; the light industry in the south-central region of Guizhou (Guizhou) of China is more developed, and the tertiary industry and agriculture are well developed; the coastal economic foundation of Beibei Bay area of Guangxi is better. In the existing administrative regional resources, the development of each economic region is relatively mature, but there are different degrees of development problems. In order to solve the problem of industrial circulation in Southwest China's minority areas within the region, the coalition government of Southwest China's minority areas should jointly build road transportation and related infrastructure, build a sound and perfect transportation network, promote the flow of production factors of industries in a single administrative area within the region, jointly solve the problem of industrial development, and promote the circulation of the three major industries within the region. To build the regional pattern of economic development in the southwest ethnic areas.

Finally, build infrastructure to develop international and domestic economic circulation. In order to smooth the economic development channel in the ethnic areas of Southwest China and reconstruct the economic pattern, it is necessary to build infrastructure to open the channel of international domestic and external circulation. Most of the ethnic minority areas in southwest China are located along the sea and rivers.

They not only have inland waterways, but also have excellent harbors. As a gateway and an important window to the outside world, how to use inland navigation and coastal ports to fully play the role of ethnic areas in southwest China as a window to the outside world and coordination with the inside world is a key issue for the balanced development of ethnic areas in southwest China.

To realize the double circulation of China's inland waterways and coastal ports, it is necessary to first open up the navigation channels in the Yunnan-Guizhou Plateau and inland areas and build a perfect navigation infrastructure. It is necessary not only to develop industries along the inland waterways, but also to utilize the hydropower resources in the Yunnan-Guizhou Plateau to build canals to serve the Yangtze River source convergence infrastructure construction in the Yunnan-Guizhou Plateau.

It is also necessary to solve the inland navigation channel of China's Yunnan-Guizhou Plateau segment and the infrastructure channel of southwest coastal ports, promote the circulation of economic resources and factors, and build the international and domestic economic pattern of economic development in southwest China's ethnic areas.

-The report of the 20th National Congress of the Communist Party of China pointed out that societal stability is an important part of the people's need for a better life and to enhance their sense of gain. Therefore, in order to enhance the quality of economic development in the ethnic areas of Southwest China, it is necessary to meet the material and spiritual needs of the people, build ethnic industries in urban and rural areas, and promote social harmony, stability and healthy development (Table 3.2).

Table 3.2 - Basic Performance of Social Construction in Southwest Ethnic Regions

Type	Manifestations	References
Integration and Development of Ethnic Cultural and Tourism Industries	(1) Markets should be further liberalized, with general commodity and factor trading based in towns and cities in the southwestern ethnic regions; (2) Exchanges and cooperation between local and mainland business organizations and foreign businessmen should be comprehensively promoted; (3) Comprehensively promote the development of barter trade, commodity trade, border trade and other kinds of foreign trade, so as to make the commerce and trade industry another pillar industry for the sustainable growth of the regional economy.	Ma, Feng, 2022; Wang, Weixia, 2022; Wang, Kai, Li, Xian & Gan, Chang, 2022
Strategic development of the social security system	(1) Reconstructing the economic dynamics of the third fiscal distribution on the basis of fiscal transfers; (2) Unifying the social security system for urban and rural residents and continuously expanding social security coverage.	Zhang, Siping, 2022; China Finance, 2022
Industrial integration of the social security system	(1) The main use of special fiscal transfers for expanding financial expenditure on recurrent items; (2) Focusing on the cultivation of "blood-forming" cultural and tourism industries and related infrastructure development.	Zhou, Meiduo & Zhang, Peng, 2016; Jin, Hui & Li, Chungen, 20

Source: author`s research

First of all, the integrated development of ethnic tourism industry. In order to realize the integrated development of ethnic industries in urban and rural areas, it is necessary to promote the construction of social security system, and realize the integrated development of ethnic cultural industries in southwest China's ethnic areas to adapt to the social security system. Tourism and cultural industry are the characteristic industries of ethnic minority areas. The rich and distinctive cultural tourism resources and achievements in the region have laid a solid foundation for the accelerated development of the cultural tourism industry.

Meanwhile, the development and construction of the urbanization process is also continuously promoting the construction and development of supporting facilities for cultural tourism. As long as the urban-rural integration measures are appropriate, the supporting services are coordinated, and the number of tourists is properly controlled, it is bound to realize the rapid and efficient growth of cultural tourism industry while maintaining the regional ecological environment, and

become the pillar industry for the development of ethnic regions in southwest China. With the enhancement of people's living standards and the development of infrastructure for opening up in Southwest China, the development of foreign trade of cultural tourism in Southwest China has also opened up a good development opportunity. In the future development, the market should be further opened up, the general commodity and factor trade should be based on the cities in the southwest minority areas, the exchange and cooperation between local and inland commercial institutions and foreign businessmen should be fully promoted, and the development of barter trade, commodity trade, border trade and other foreign trade should be fully promoted, so that the business and trade industry can become another pillar industry for the sustainable growth of the regional economy.

Second, the strategic development of the social security system. In order to realize the integrated development of ethnic industries in urban and rural areas, it is necessary to promote the construction of the social security system and realize the strategic development of the social security system in the ethnic areas of southwest China. Social security is a basic institutional guarantee for securing and improving people's livelihood, maintaining social justice and improving people's well-being.

On the basis of optimizing the structure of financial transfers, the value of the social security system should be regenerated, the economic basis for the third financial distribution should be laid, more people should be included in the social security system, and more reliable and adequate security should be provided for the broad masses of the people.

The CPC Central Committee stressed that the strategic plan for social security will mainly focus on unifying the basic old-age insurance system for urban and rural residents, integrating the old-age insurance systems of government organs and public institutions with those of enterprises, and establishing a centralized system for adjusting the basic old-age insurance funds for enterprise employees; integrating the basic medical insurance system for urban and rural residents, fully implementing the critical illness insurance for urban and rural residents, and establishing the National Medical Security Administration.

We will vigorously develop social welfare programs such as old-age care, child care and assistance for the disabled, so that people, regardless of urban or rural areas, regions, sex or occupations, have adequate institutional protection against the risks of old age, illness, unemployment, work-related injury, disability and poverty. China's social security coverage has continued to expand, the level of social security has steadily enhanced, institutional reform has continued to advance, and remarkable results have been achieved in all aspects of work.Finally, the industrial integration of the social security system.

Finally, Promoting the construction of social security system. In order to realize the integrated development of China's ethnic industries in urban and rural areas, it is necessary to promote the construction of social security system, and realize the strategic development of social security system in Southwest China's ethnic areas into the practice of integrated development of cultural and tourism industries in Southwest China's ethnic areas. The adjustment of the financial distribution structure is the driving force to promote the integrated development of cultural and tourism industries.

The structure of transfer payments can be adjusted. In addition to a part of the increase in financial expenditure for current accounts, special financial transfer payments should be mainly adopted, focusing on the cultural and tourism industries that have the "blood-forming" function and related infrastructure construction, such as the construction of the Kao-Tibet Railway and the Yunnan-Tibet Railway, and the construction of infrastructure for opening up to the outside world. Build transportation channels for cultural and tourism industry resources. Give full play to the characteristics of ethnic industries in the southwest ethnic areas, and promote the value reconstruction of the social security system.

-The report of the 20th National Congress of the Communist Party of China points out that the integration of ecological progress into all aspects and the whole process of economic, political, cultural and social development is an important guarantee for achieving balanced socioeconomic development and meeting the people's needs for a better life.

Therefore, in order to promote the sustainable development of ecological civilization in the ethnic minority areas of southwest China, it is necessary to coordinate the relationship between people and real estate, and to achieve balanced socioeconomic development and meet the needs of the people for a better life, we must do the following three things (Table 3.3).

Table 3.3 - Basic Performance of Ecological Civilization in Southwest Ethnic Regions

Type	Manifestations	References
Harmonize the relationship between people and land	(1) "One retreat, three retreats": returning farmland to forests, returning farmland to grassland, and returning farmland to lakes; (2) Focus on resource reuse; (3) Refined development patterns and value-added resources within ecological thresholds.	Mei, Ziyu & Zhang, Yaru & Liu, Zhicheng, 2023
Important links in coordinating the construction of ecological civilization	(1) Breaking through the rigid constraints of administrative boundaries; (2) Geographical division of labor and collaboration.	Wang Juan & Ming Qingzhong, Qin Lin & Wang Shijin, 2022
Sustainable development of ecological civilization	(1) Take watershed management as the main line, from tributaries to main streams, from upstream to downstream, implement step by step and build in zones; (2) Apply technical concepts of high-tech agro-ecological economic zones in facility horticulture, intensive farming, and optimization of agricultural product quality.	Zou, Lilin & Zhang, Lijun & Liang, Yifan & Wen, Qi, 2022

Source: author`s research

First, the contradiction between ecological environmental protection and economic development is the main problem in the relationship between man and real estate. The ecological environment is the basic condition for human survival and development, and the foundation for economic and social development. Influenced by history, population, development mode and other factors, the ecological environment in the southwestern ethnic areas has made slow progress, the ecological environment is still very fragile, and the trend of ecological environment deterioration has not yet been alleviated.

The main manifestations are low effective irrigation area, serious soil erosion, frequent natural disasters, and low effective utilization rate of arable land resources. According to the National Bureau of Statistics "City Statistical Yearbook", Chengdu City, Sichuan Province, the city's soil erosion area accounted for 26.63% of the total area, especially Jintang County, Pujiang County, Longquanyi County. 59.3%, 56.8% and 51.1%.

The city suffers from serious soil erosion, and the forest coverage rate is 20.9%, which is slightly higher than the national average. However, water resources are scarce and catastrophic weather is particularly prominent in the mountainous areas of Chongqing, Sichuan Province, China. The disappearing area accounts for 60.2% of the country's land area, river water pollution is becoming increasingly serious, and human activities are more frequent in the outskirts of the main city, so that the ecological environment is facing greater challenges. While improving the ecological environment, to a certain extent, it will exacerbate the human-land conflicts in the region, leading to more acute conflicts between development and ecological environmental protection, and it is necessary to harmonize human-land relations.

Secondly, coordinate the important links of ecological civilization construction. Breaking through the rigid constraints of administrative boundaries is the most important thing in the ecological sustainable development of ethnic areas in southwest China, and it is also the difficulty to highlight the regional division of labor and cooperation in ecological construction of ethnic areas in southwest China.

Thirdly, the protection and construction of an ecological civilization and the implementation of a sustainable development strategy are basic guidelines that must always be adhered to in the modernization of China. The pressure on the ecological environment brought about by frequent human activities and prominent human-land conflicts in the southwestern ethnic areas determines the role and significance of placing ecological restoration and construction at the forefront of the region's sustainable development.

First of all, from the point of view of water environment, it should be concentrated in the source of three rivers in China, that is, it is the birthplace of Yangtze River, Yellow River and Lancang River, which is the region with the highest elevation, the largest area and the richest wetland reserve, and it is known as "China's "water tower" and "Asia's water tower ". In the construction of the downstream water source protection area, must take positive measures to strengthen the downstream discharge restrictions and key sources of pollution management, especially afforestation and expansion, as well as to strengthen soil and water protection, the ecosystem towards a positive balance.

Taking watershed management as the main line, from tributaries to main streams, from upstream to downstream, step-by-step implementation and zoning construction. At the same time, the depth development and ecological restoration of ecological projects are actively carried out, and protection belts are constructed along the river urban water network, setting up spatial corridors for water and land networks and ecological environment along the river (river), increasing the comprehensive capacity of urban sewage discharge, decontamination and pollution control.

Secondly, the establishment of urban-rural integration ecosystems, especially the construction of agro-ecological economic zones embodying high-tech-oriented, through ecological and economic integration, should be put in the first place. Plain area ecological environment construction, the main focus on the control and prevention of agricultural pollution, the construction of water conservancy facilities, high-efficiency and high-quality agriculture, farmland ecological network, the construction of ecological settlements and other directions; hilly areas, the main focus on small watersheds in the area of integrated management and water supply project construction, strengthen the sub-river water pollution remediation, strengthen the transformation of sloping arable land, the development of water-saving, dry-crop farming and improve the structure of rural energy.

Agricultural natural resources and natural conditions in the southwestern ethnic minority areas have unique advantages, and in order to develop relatively

backward areas, especially those close to metropolitan areas, it is necessary to place agricultural development in an important position in the choice of economic strategy. However, traditional agriculture does not drive economic growth, nor can it fundamentally reduce the pressure of population on land. The most direct and effective way to alleviate this prominent contradiction is to realize technological progress, accelerate the value-added of the land, improve the efficiency of land use, increase economic income, and thus reduce people's dependence on the land and its over-exploitation, which is the construction of high-tech agro-ecological economic zones. While promoting ecological mechanization and intelligence, it also promotes the sustainable development of the ecological environment.

-The report to the 20th National Congress of the Communist Party of China pointed out that ensuring and improving people's well-being is the fundamental purpose of development, and the transformation of the principal contradiction in Chinese society requires better implementation of the philosophy of people-centered development. Therefore, in order to achieve the fundamental goal of ensuring and improving the people's livelihood in the ethnic minority areas of southwest China, it is necessary to coordinate the development of various fields and build welfare projects for the people's livelihood, and we must do the following three things (Table 3.4).

First, the construction of ecological resources benefits people's livelihood. In order to promote the balanced development of people's livelihood in the ethnic minority areas of southwest China, it is necessary to explore the ecological value, cultivate new economic growth points, and lay the economic foundation for people's livelihood construction projects in coordination with the development of multiple fields. In order to explore the ecological value and promote the enhancement of people's livelihood in the ethnic minority areas of southwest China, first of all, we should build a transportation artery through the region to become an important part of the national transportation network, solve the common transportation between China's Sichuan Province and neighboring areas and the Yangtze River and Pearl River, and open up the southwest China passage.

Table 3.4 - Basic Performance of People's Well-being in Southwest Ethnic Regions

Type	Manifestations	References
Ecological resources construction for the benefit of people's livelihood	(1) Construction of transportation arteries through the region, becoming an important part of the national transportation network, solving the intermodal transportation between China's Sichuan Province and bordering regions and the Yangtze River and Pearl River shipping, and opening up China's southwestern corridors; (2) Use the transportation network to build a number of advantageous industries and products trade centers to attract domestic and foreign merchants. For example, hydropower, ingot mining industry, famous wines, special local specialties, natural medicines, animal husbandry products, tourism, etc., can be developed into a central market of specialized products with national or regional influence; (3) Developing mountainous comprehensive business and trade zones, establishing provincial and municipal border trade and collaboration, breaking down administrative barriers between provinces and cities, gradually forming subtropical mountainous comprehensive business and trade zones featuring border areas, and turning border barriers into intensive inter-provincial circulation zones.	Feng, Liujian & Ma, Xuemei, 2021; Wang, Binglin & Zhang, Sweetie, 2021
Human capital building for people's livelihood	(1) Introducing market competition and cooperation mechanisms with ethnic and regional characteristics; (2) Upgrading the level of human resources education in the ethnic regions of Southwest China.	Sun Jie, 2022
Social equity development to benefit people's livelihoods	(1) Promote social equity in the third fiscal income distribution and livelihood projects such as employment and housing; (2) In terms of employment, fiscal redistribution should focus on supporting the development of small and medium-sized enterprises, and policy resources should favor human capital building in large enterprises; (3) In terms of residence, the temporal and spatial heterogeneity of provident fund housing and home-buying policies should be brought into play, and the social security system should be utilized to re-engineer the value of residence.	Yang, Ciaran & Cui Dan, 2022; Hu, Yuhong, 2023

Source: author`s research

we should take advantage of the transportation network to build a series of advantageous industries and product trading centers to attract domestic and foreign traders. Such as water and electricity, ingot mining, famous wine, special local

products, natural medicines, animal husbandry products, tourism and so on, can be developed into a national or regional influence of the professional product center market. Third, develop a comprehensive economic zone in mountainous areas.

Establish provincial and municipal border trade and cooperation, break down the administrative barriers of different provinces and cities, gradually build a subtropical mountain comprehensive economic zone with the border area, and transform the border barrier into a cross-provincial traffic-intensive area. In this way, the ecological value of the ethnic areas in southwest China should be brought into full play, and the ecological advantages should be fully utilized to promote local economic development, increase local employment and income, and enhance people's sense of achieving a happy life.

Second, human capital construction promotes people's livelihood. In order to promote the balanced development of people's livelihood in the ethnic minority areas of southwest China, it is necessary to enhance the quality and stock of human capital and build livelihood projects such as education and medical care that benefit all people. Although the operation system of people's livelihood in the ethnic minority areas of Southwest China still needs the full support of the state, it is necessary to carry out institutional innovation in the operation mechanism of the market economy in the human capital construction mechanism, introduce market competition and cooperation mechanisms with ethnic and regional characteristics in the human capital construction, and enhance the level of human resource training in the ethnic minority areas of Southwest China in different ways. On the one hand, it can continue to provide specialized talents for ethnic minority enterprises and reduce the cost of human resources; on the other hand, it can enhance the quality of human resources in ethnic minority areas, promote the employment and income of residents, and truly train and cultivate a large number of local ethnic minority talents to promote regional economic development, so as to promote the practical implementation of regional modernization.

Finally, social development is fair and benefits the people. In order to promote the balanced development of people's livelihoods in the ethnic minority

areas of southwest China, it is necessary to promote social justice in the third fiscal income distribution (different from the primary distribution and redistribution, the third distribution is mainly distributed by high-income groups on a voluntary basis, through charitable and public welfare means such as fundraising, donation and financing, which is a useful complement to the primary distribution and redistribution. It is conducive to narrowing the social gap and realizing more rational income distribution. And the development of livelihood projects such as employment and housing.

As for the third distribution, we should use fiscal transfers to restore the value of people's livelihood, and give full play to the role of fiscal transfers in promoting economic development and building a welfare system for people's livelihood. In terms of employment, fiscal redistribution should pay attention to supporting the development of small and medium-sized enterprises, and policy resources should be directed to building the human capital of large enterprises, so as to maintain the healthy operation of the national economy, generate employment demand, promote the development of employment, reduce the employment pressure, and promote the expansion of consumption demand of the middle and low income groups. In the field of housing, it is necessary to give play to the spatio-temporal heterogeneity of the housing and housing purchase policies of the provident fund, adjust measures according to time and place, give play to the value reconstruction role of the social security system in housing, and realize the inclusive construction of people's livelihood in a wider range of areas.

3.3. Countermeasures for Balanced Development of Ethnic Areas in Southwest China

As an important frontier region of China, the ethnic minority areas in southwest China have a very important strategic position, but there are also problems of unbalanced spatial development. The government needs to take corrective measures to address the unbalanced social and economic development in

the ethnic minority areas in southwest China for comprehensive treatment.

3.3.1 Countermeasures for balanced economic development in the ethnic minority areas of Southwest China.

Based on the measurement and evaluation results of unbalanced and inadequate economic development in southwest ethnic minority areas, this study formulated the following countermeasures from the five perspectives of economic benefits, economic structure, innovation-driven, infrastructure and human capital to promote balanced economic development in southwest ethnic minority areas.

Countermeasure 1： To balance the process and result of economic benefits, we need to further optimize the resources of the three major industries and improve the success rate of industrial resource sharing.

1 - with an inclusive and open development mentality, we should do a good job in laying the foundation for agricultural science and technology innovation: introduce and utilize the results of agricultural technology research and development, fully popularize agricultural science and modern agricultural technology among farmers, and provide financial and technical support to improve the efficiency and quality of agricultural production.

2 - introduce the concept of urban planning into agricultural production, improve the process effect of the development of agricultural science and technology, do a good job in agricultural breeding and seedling, do a good job in agricultural industrial planning and management, do a good job in marketing agricultural products, improve the process economic benefits of agricultural industry development and scientific and technological innovation, and reduce the risk of traditional family small-scale farming economy.

3 - strengthen agricultural industrialization, large-scale management, and promote agricultural modernization. We will strengthen the marketing of agricultural products and develop domestic and overseas markets. For example, government-business cooperation has actively built exhibition and sales platforms for agricultural products, using new retail to increase the total volume of commercial transactions, and improve product visibility and sales.

Countermeasure 2： Market entities and government entities should interact to promote the development of the economic structure towards marketization, manufacturing, internationalization and competition.

1 - encourage private capital to enter the third-party service industry through the government platform to enhance the visibility of the third-party service industry.

2 - strengthen the coordinated development of high-tech service industry and manufacturing industry. The service industry and the manufacturing industry are interdependent. We should strengthen their coordinated development to improve the service level of the manufacturing industry. At the same time, we should support the development of the service industry through the development of the manufacturing industry.

3 - we should innovate the international development mode and channel of retail service industry, and adopt direct investment + channel development to realize retail goods going abroad.

Countermeasure 3： Cross-provincial enterprises should make use of regional resource integration and in-depth mining to promote the innovative development of business activities.

1 - the government should issue corporate bonds on behalf of enterprises to enhance their economic viability.

2 - we should strengthen cooperation between enterprises, universities and research institutes, so that enterprises can promote the scientific research achievements of universities and universities can help enterprises in marketing.

3 - the government can establish an innovation and entrepreneurship incubation platform to provide innovative and entrepreneurial enterprises with site, capital, technology and management support to promote their growth and development.

Countermeasure 4：All sectors of society should enhance the connectivity of regional infrastructure and provide the support of modern transportation

facilities such as highways, railways and airports for economic development.

1 - increase the financial allocation and guide the social capital investment to increase the capital input in infrastructure construction and ensure the transparency of fund utilization.

2 - the government can make comprehensive plans for infrastructure construction, taking into account local conditions and needs, and make overall plans for the construction of telecommunications, energy, water conservancy, communications and other fields to avoid wasting resources.

3 - the government should actively promote cooperation and common development between Southwest China and surrounding areas, jointly develop and utilize infrastructure resources in the region, and improve the overall infrastructure level of the region.

4 - the government can strengthen the supervision and management of infrastructure construction to ensure the quality of the construction process.

Countermeasure 5： The government and education sector can provide regional guarantee for human capital development and introduce high-quality talents.

1 - the government can increase the educational input to the southwest minority areas to improve the quality and quantity of educational resources.

2 - the government can encourage and support enterprises to set up local vocational skills training centers to provide local residents with vocational skills training and improve their employment competitiveness.

3 - the government can strengthen employment and entrepreneurship services, providing local residents with employment information, career guidance, industry support and other services to help them improve the quality of employment and the success rate of entrepreneurship.

4 - local residents should be encouraged to participate in scientific and technological innovation activities to improve their ability to innovate and practice.

3.3.2 Countermeasures for balanced development of social fields in ethnic minority areas of Southwest China

Based on the measurement and evaluation results of the unbalanced and inadequate social development in the southwest minority areas, this study promotes the balanced development of the southwest minority areas from the perspectives of social equity, governance, security, civilization and security, and the following countermeasures should be adopted.

Countermeasure 1： Solve the equity problem of social construction from the regional level, and improve the coordination degree of resource construction in southwest ethnic areas.

1 - the government can strengthen regional coordination and overall planning, and promote the coordinated development of infrastructure construction.

2 - we should increase support for scientific and technological innovation services, and encourage scientific and technological enterprises to invest in infrastructure.

3 - support and promote the flow and exchange of talents in ethnic minority areas, encourage outstanding talents to work and live in backward areas, promote the balanced allocation of human resources, and provide various incentives and support, including housing subsidies, children's education subsidies, and tax deductions.

4 - strengthen the research and practice of education and cultural reform in ethnic minority areas, and actively promote the modernization, scientific and international of education and culture to meet the requirements of the times.

5 - strengthen the protection and inheritance of traditional culture in ethnic minority areas, promote the innovation and development of culture in ethnic minority areas, and let more people understand and identify with the culture of ethnic minority areas.

6 - strengthen cultural exchanges with other regions and countries, learn from the excellent experiences and practices of other regions and countries, and promote cultural exchanges and integration in ethnic minority areas.

Countermeasure 2：Positioning the regional social governance system in an all-round way, and establishing a hierarchical governance system based on administrative regions.

1 - establish and improve the mechanism of regional coordinated development, formulate and implement regional development plans to ensure coordinated and consistent development of all regions. The government should take into account the actual conditions and characteristics of different regions in the formulation of regional development plans and policies, coordinate the interests of different regions, and ensure coordinated and consistent regional development.

2 - through the establishment of information sharing platform, we can timely understand the regional development situation and needs, and provide more accurate data and information for the formulation of regional development planning.

3 - we must promote inter-regional cooperation. The government should introduce policies to encourage more cooperation among different regions to jointly promote regional development.

4 - the government should strengthen regulation through tax incentives and financial subsidies to promote environmental protection, resource conservation and sustainable economic development, guide enterprises to invest in green technology and environmental protection facilities, reduce energy and resource consumption, and reduce pollution and waste emissions.

5 - strengthen scientific and technological research and development in the field of environmental protection and resource management, promote scientific and technological innovation and industrialization of environmental protection, develop clean energy and renewable resources, improve resource utilization efficiency, and reduce environmental pollution.

6 - strengthen the construction of the rule of law in ethnic minority areas, improve the judicial system, and protect the legitimate rights and interests of citizens in ethnic minority areas.

Countermeasure 3： Build a regional security system to guarantee the

safety of people's lives and property in an all-round way.

1 - to strengthen public security, we can strengthen the police force, increase patrol and surveillance facilities, improve emergency plans, and enhance the ability to respond to emergencies.

2 - we can strengthen border patrol and customs inspection to improve border prevention and control capacity.

3 - we can strengthen the management of public security, improve the social credit system, strengthen the management of social organizations, and improve the capacity of social management.

4 - in terms of cultural security, we can strengthen the management of cultural industries, protect cultural heritage, strengthen the management of cultural industries and cultural markets, and improve the ability to guarantee cultural security.

5 - strengthen law and criminal justice, crack down on all kinds of illegal and criminal activities, and maintain social harmony and stability.

Countermeasure 4： Strengthen the overall sense of social civilization in the region and establish a regional multicultural system.

1 - strengthen cultural education in minority areas, strengthen the protection and inheritance of culture in minority areas, so that people can better understand and know their own culture and have more confidence in their own culture.

2 - establish various forms of cultural exchange platforms, such as cultural festivals, art performances, cultural exhibitions, etc., so that people from different regions and ethnic groups can understand each other's cultures and enhance their knowledge and understanding of different cultures.

3 - through cultural tourism and exchange activities, people from different regions and ethnic groups should understand and learn from each other, so as to promote cultural exchanges and integration.

4 - we should develop the cultural industry, promote the creation and promotion of cultural and creative products, and make the cultural industry an important force in promoting cultural exchanges and integration.

5 - establish a cross-regional and cross-ethnic cultural exchange mechanism, strengthen the standardization, institutionalization and sequencing of cultural exchanges, and give strong support to cultural exchanges and harmony.

6 - promote spoken and written languages Strengthen the promotion and inheritance of the spoken and written languages of our own ethnic groups, so that citizens can better master their own languages and enhance their sense of cultural identity and cultural quality.

Countermeasure 5：Improve the social security and assistance system and improve the standard of social living.

1 - the government must formulate more perfect social security policies, including medical insurance, pension insurance, unemployment insurance, etc. At the same time, it must also strengthen the assistance and security for poor families, the disabled, the unemployed and other vulnerable groups.

2 - increase investment in medical security, improve the level of medical facilities and health, so that more people can enjoy high-quality medical services.

3 - the government must strengthen industrial poverty alleviation efforts in ethnic minority areas, through the development of local competitive industries, improve the income level of local people, but also can promote the development of local economy.

4 - improve the emergency rescue system, improve the emergency rescue teams and material reserves at all levels, and improve the emergency rescue capacity.

5 - strengthen publicity and education to improve people's awareness of disaster prevention and their ability to save themselves and each other.

6 - strengthen the earthquake, typhoon and flood resistance of buildings, and improve the disaster resistance of transportation, communication and other infrastructure.

7 - we should strengthen research on disaster prevention and mitigation technologies in post-disaster reconstruction, improve the quality and efficiency of post-disaster reconstruction, and promote the application of disaster prevention and

mitigation technologies.

3.3.3 Countermeasures for balanced ecological development in ethnic minority areas of Southwest China

Based on the measurement and evaluation results of the unbalanced and inadequate development of the ecological environment in the southwestern ethnic minority areas, this study formulated the following countermeasures from the five perspectives of air quality, water resources, land planning, environmental quality and ecological protection to promote the balanced development of the ecological environment in the southwestern ethnic minority areas.

Countermeasure 1: Control the pollution from the source and fundamentally improve the air development quality.

1 - enterprises should adopt cleaner production technology to reduce the emission of pollutants in the industrial production process and reduce the risk of pollution.

2- the government can encourage enterprises and individuals to use clean energy, such as solar energy and wind energy, through fiscal and tax policies.

3 - strengthen traffic management, establish an air quality monitoring system, strengthen regulation of vehicle exhaust emissions, formulate stricter emission standards, and punish vehicles that fail to meet the standards.

4 - establish air quality monitoring stations to monitor air quality in real time, and make the monitoring data public, formulate air quality standards, and take appropriate measures to the areas that fail to meet the standards.

5 - strengthen education and publicity is an effective means to raise public awareness of environmental protection and promote social co-governance. Social organizations can make full use of their advantages, organize various environmental protection activities, attract public participation, and create a good environment for environmental protection.

Countermeasure 2： Detect the trend of water resources in the whole process, and rationally plan and allocate water resources.

1 - establish a sound water resources management system and supervision

mechanism to strengthen the protection and management of water resources.

2 - strengthen the monitoring and evaluation of water resources. Establish a water resources monitoring network to grasp the status and changes of water resources in a timely manner, and conduct scientific assessments to provide a scientific basis for water resources management decisions.

3 - formulate standards and management measures for the delineation of protected areas, establish water resources protection areas, protect key water resources areas of water sources, lakes and rivers, and ensure the sustainable use of water resources.

4 - strengthen publicity and education, promote water-saving technologies and facilities, and improve public awareness of water conservation and efficiency of water resources utilization.

5 - explore a variety of water resources utilization methods, such as reuse of water resources, seawater and natural gas water mixture, etc., to achieve comprehensive utilization of water resources and sustainable development.

Countermeasure 3: Classify and document land resources, reasonably release land planning restrictions, and scientifically realize the overall planning of land resources.

1 - The government should give priority to ecological environmental protection in land planning, rationally plan land use, and protect the natural ecological system and environment.

2 - the government should establish an ecological restoration mechanism to repair and restore damaged ecosystems and promote their steady and healthy development.

3 - through policy guidance, the government can encourage enterprises to adopt green production methods, promote green products, and encourage the public to consume in a low-carbon and environment-friendly way.

4 - improve the land use system, establish a sound land approval and supervision mechanism, and strictly control the approval and use of all kinds of land.

5 - strengthen the investigation and supervision of land resources, timely grasp the situation of land use, and promptly deal with problems.

6 - promote the concept of economic and intensive land use, promote the rational use of space, and improve the efficiency of land use.

Countermeasure 4：Implement environmental governance at the regional level to achieve efficient use of resources.

1 - strengthen the research and development of environmental monitoring technology to improve the accuracy and precision of environmental monitoring.

2 - the establishment of environmental pollution source supervision, including enterprise environmental management, environmental protection department supervision and social supervision, the establishment of environmental pollution source supervision system, forming a long-term mechanism of environmental protection work.

3 - strengthen the law enforcement of environmental protection, improve the environmental law system, improve the efficiency and quality of law enforcement and strictly crack down on environmental violations.

4 - adopt the concept of green development, accelerate the development of green industry and low-carbon economy, and reduce the degree of environmental pollution and ecological damage.

Countermeasure 5: Implement the ecological protection system scientifically, and find the road of sustainable development from ecological protection.

1 - we should set up ecological protection areas, draw ecological red lines, and strictly restrict development and construction activities to protect biodiversity and the natural ecological environment.

2 -we should promote ecological restoration, strengthen ecological environmental management and restoration, and promote the restoration and reconstruction of ecological systems through afforestation, grassland restoration and wetland protection.

3 - we should strengthen ecological environmental monitoring, establish a

sound monitoring system to keep pace with changes in the ecological environment, and provide a scientific basis for the protection and restoration of the ecological environment.

4 - an ecological compensation mechanism should be established to provide punitive compensation for acts that damage the ecological environment, and to reward and compensate contributors to the ecological environment, so as to encourage all parties to actively participate in ecological protection.

5 - develop ecotourism that can promote the protection of wildlife and ecological balance, the government should actively develop ecotourism, so as to better understand the value and conservation significance of wildlife, and at the same time bring new opportunities for local economic development.

3.3.4 Countermeasures for balanced people's livelihood development in ethnic minority areas of Southwest China

The southwest ethnic minority area is one of the areas where many ethnic groups live in compact communities, and it is also one of the areas where economic development is relatively backward. In order to promote the balanced development of people's livelihoods in the southwest ethnic minority areas, we can propose the following countermeasures from the five perspectives of income, housing, employment, education and medical care.

Countermeasure 1： Promote income equity and raise income level from the regional level.

The southwest ethnic minority area is one of the areas where many ethnic groups live in compact communities, and it is also one of the areas where economic development is relatively backward. In order to promote the balanced development of people's livelihoods in the southwest ethnic minority areas, we can propose the following countermeasures from the five perspectives of income, housing, employment, education and medical care.

Countermeasure 2： Promote the construction of low-income housing projects and reduce housing costs.

1 - the government can increase funding for the construction and maintenance of public housing, formulate relevant policy on taxation, and encourage enterprises and individuals to participate in housing construction.

2 - enterprises can actively participate in housing construction and security work, such as donating funds, providing technical support, participating in public housing construction and other ways to make contributions to society.

3- all sectors of society can strengthen publicity and education, draw people's attention to housing security, and encourage people to actively participate in housing construction and security work.

4 - the government can strengthen housing security for income groups, such as providing public rental housing and subsidizing housing rent to help low-income families solve the housing problem.

5 - the government can strengthen supervision of the real estate market, control housing prices, protect consumers' rights and interests, and promote the healthy development of the housing market.

Countermeasure 3 ： Increase support for employment and entrepreneurship by mobilizing regional business resources.

1 - strengthen the construction and development of vocational colleges, expand the teaching content and form of vocational education, and improve the relevance and practicality of vocational education.

2 - strengthen the training and professional development of vocational teachers, improve their teaching level and practical ability, and enhance the attractiveness and competitiveness of vocational education.

3 - strengthen the support and participation of enterprises in vocational education, and cooperate with vocational education institutions to carry out practical and hands-on activities to improve students' employment competition.

4 - establish a sound vocational skills certification and evaluation system, and give preferential policies and support to workers who pass the certification and evaluation. Through the above measures, the qualification level of the labor force can be improved, employment opportunities can be increased, and economic

development can be promoted.

Countermeasure 4： Make use of regional governance system, fully mobilize regional educational resources, and realize the fair allocation of educational resources.

1 - the government should increase the input of education funds to provide better educational facilities and resources, and encourage enterprises and individuals to donate to education.

2 - the government should improve the salary of teachers, attract more high-quality talents to work in education, and improve the teaching level of teachers.

3 - promote information technology education Information technology is the core of modern society, information technology education should be integrated into the education system, improve students' information technology level, in order to adapt to the future development of society.

4 - the construction of basic education should be strengthened to improve students' basic knowledge and skills.

5 - educational innovation is an important driving force for the development of education, and the government should encourage and support educational innovation to promote the development and reform of education.

Countermeasure 5： Use regional coordination system to optimize the allocation of medical resources and improve the quality of medical services.

1 - the government can increase financial support for the medical system to improve medical facilities and equipment and raise the level of medical services.

2 - the government can provide training and teaching opportunities to train more doctors, nurses and other medical professionals.

3 - the efficiency and accuracy of medical services can be improved by introducing new technologies such as telemedicine and smart medical devices.

4 - the quality and efficiency of medical services can be improved by improving medical management, such as optimizing medical procedures and

enhancing the standardization of medical services.

5 - the government can promote cooperation and exchanges among medical institutions to improve the level of medical services with experience and resources.

6 - strengthen the integration of medical resources. Strengthen the integration of medical resources, optimize the process of medical service, improve the efficiency and quality of medical service, and provide a better development environment for the integration of traditional Chinese and Western medicine.

Conclusion to Chapter 3

In summary, based on the research on the path and countermeasures of balanced development of ethnic areas in southwest China, the third chapter draws the following conclusions and summarizes the comprehensive management research on the balanced development of ethnic areas in southwest China. The conclusions are as follows:

Section 1: This study demonstrates the multi-center governance path for the balanced development of ethnic areas in Southwest China and finds that the balanced economic and social development of ethnic areas in Southwest China has a governance logic of multi-level, multi-subject and multi-field co-governance, that is, under the multi-center triangular governance structure of the regional coalition government, Four areas are proposed to promote the balanced development of economy and society in Southwest China's ethnic minority areas, namely: First, the innovation-driven human capital flow is compatible with economic restructuring; Second, infrastructure construction leads to democracy, autonomy and the development of ethnic culture; Third, the contradiction between coordinated development helps promote economic normality and ecological civilization. Fourth, we must improve the distribution structure and ensure that the social security system serves people's livelihood.

Section 2: Based on the balanced development path of ethnic minority areas in Southwest China studied in Section 1, this section carries out countermeasures

for the sustainable development of ethnic minority areas in Southwest China, studies the relevant contents of diversified industrial integration in this region, studies the basis for the reconstruction of the economic pattern in ethnic minority areas in Southwest China, and explores the social basis for the development of urban-rural integration. It also explores the economic basis for coordinating regional development contradictions and promoting regional ecological civilization construction, and puts forward balanced and sustainable development countermeasures and proposals for multi-field coordinated development. In other words, firstly, using digital innovation, transportation network construction, infrastructure construction to study the connotation and correlation of urban and rural, regional and international in southwest China's ethnic areas; secondly, based on the strategic planning of social security system, it explores the integrated development model of ethnic culture and tourism industry; thirdly, coordinate and solve the major contradictions of human real estate to promote the sustainable development of ecological civilization; fourthly, coordinate ecological, human and political resources to benefit people's livelihood construction projects.

Section 3: Based on the measurement and evaluation results of the unbalanced and insufficient economic progress in the ethnic regions of southwest China, strategies are formulated to achieve spatially balanced economic and social development in these regions. This is achieved by integrating three-level indicators of balanced development in four dimensions: economic, social, ecological and people's livelihood. First, the countermeasures for balanced development in the economic domain are analyzed from five perspectives, including economic efficiency, economic structure, innovation drivers, infrastructure, and human capital. Second, the countermeasures for balanced development in the social domain are explored through the lens of equity, governance, security, civilization, and welfare. Third, the countermeasures for balanced development in the environmental domain are examined in terms of air quality, water resources, land planning, environmental quality, and ecological conservation. Finally, the countermeasures for balanced development in the field of people's livelihood will

be examined in terms of income, housing, employment, education and health care. These comprehensive strategies aim to promote the balanced economic development of the ethnic regions in southwest China.

CONCLUSIONS

This dissertation study is devoted to the management of socio-economic development of the southwestern provinces of China and focuses on the study of differences in economic, social, and environmental aspects between urban and rural areas in the ethnic regions of Southwest China through theoretical and empirical analysis. The main conclusions of the study, obtained by the author personally, are:

1. Unbalanced regional economic and social development is a necessary process in the development process of any region. In the early stage of industrialization, due to the difference in resource endowment of different regions, some regions will inevitably develop first and get rich first. With the progress of industrialization, this imbalance gap will be gradually reduced, which is an inevitable phenomenon in the process of economic and social development of different regions. As an important factor contributing to national economic development, regional coordinated development is conducive to promoting the all-round development of society. The characteristics, comprehensive level and influencing factors of unbalanced economic and social development in ethnic minority areas in southwest China are studied, a multi-center governance mechanism is established, and countermeasures for regional sustainable development are proposed. It is of great significance in narrowing the development gap between regions and between urban and rural areas and building a harmonious society.

2. The theoretical study of unbalanced regional development is the focus of scholars at home and abroad. The unbalanced economic and social development of ethnic minority areas in southwest China is rooted in the major social contradictions in China at present, as pointed out in the report of the 19th National Congress of the Communist Party of China. The theory of polycentric governance provides a theoretical reference for the transition from unbalanced to

balanced economic and social development in the ethnic minority areas of southwest China, and the spatio-temporal concept of regional sustainable development provides a spatio-temporal research paradigm for high-quality economic and social development in the ethnic minority areas of southwest China.

3. The characteristics of the unbalanced economic and social development of ethnic areas in southwest China are as follows: from 2010 to 2020, the unbalanced development of ethnic areas in southwest China has improved, but with the deepening of economic development, the improvement of social construction, the construction of ecological civilization and the improvement of people's well-being, the unbalanced development has penetrated into all aspects of the four major areas. The areas of unbalanced urban development are mainly concentrated in the economic areas of Guangxi Zhuang Autonomous Region, Sichuan Province and Chongqing (high development level) and Guizhou, Tibet Autonomous Region and Yunnan Province (low development level). The unbalanced development of rural areas is mainly concentrated in the social areas of Guangxi Zhuang Autonomous Region, Sichuan and Yunnan Provinces (high development level) and Chongqing, Guizhou and Tibet Autonomous Region (low development level).

4. The development levels and differences of ethnic areas in Southwest China are as follows: The development level of urban and rural areas in Southwest China is relatively high, and the comprehensive development level of urban areas is lower than that of rural areas; factors such as differences in urban positioning, urban planning, positioning of three major industries, development of characteristic industries, differences in statistical standards and differences in policy intensity will cause changes in the three levels of indicators, which will then interact with the chain reaction in all aspects of economy, society, ecology, people's livelihood and other fields, resulting in great differences in the development of ethnic areas in Southwest China.

5. In the GTWR adjustment effect, the present value and predicted value of the urban balanced development index are lower than those of the rural

balanced development index. From the perspective of time and region, it is found that there is a serious difference between urban and rural development in the ethnic areas of southwest China. In the analysis of the influencing factors, it is found that urban and rural innovation and integrated development factors in economy, ethnic problems and social security factors in society, ecological problems and comprehensive development factors in ecology, and inclusive project construction factors in people's livelihood are important factors influencing the economic and social development imbalance in Southwest China's ethnic areas.

6. In researching the path and countermeasures of unbalanced economic and social development in southwest China's ethnic minority areas, the following viewpoints are derived from the logic of multi-center governance and the concept of sustainable development:

（1）- Multi-center governance path of unbalanced development in southwest China's ethnic minority areas is a governance logic of multi-level, multi-subject and multi-domain co-governance in the balanced economic and social development of southwest ethnic minority areas, that is, under the triangular governance structure of regional coalition government, four multi-domain cooperative paths are obtained to promote the balanced economic and social development of southwest ethnic minority areas, namely: innovation-driven human capital flow is compatible with economic structural adjustment; infrastructure development leads to democracy, autonomy and the development of national culture; the contradiction of coordinated development helps promote economic normalization and ecological civilization; need be improved the distribution structure and ensure that the social security system benefits the people.

（2）- Countermeasures for sustainable development in Southwest China's ethnic minority areas is the economic pattern of multi-industry integration in Southwest China's ethnic minority areas, explores the social basis for urban-rural integrated development, and explores the economic basis for coordinating development contradictions and promoting ecological civilization construction,

and provides countermeasures and suggestions for balanced and sustainable development in multiple fields of coordinated development: digital innovation, transportation network construction and infrastructure construction are used to study the connotation and correlation of urban and rural, regional and international development in Southwest China's ethnic areas; based on the strategic planning of social security system, it explores the integrated development model of ethnic culture and tourism industry; to coordinate and solve the key contradictions of human real estate to promote the sustainable development of ecological civilization; will be coordinated ecological, human and political resources to benefit people's livelihood.

（3）- Based on the assessment and evaluation results of the uneven and insufficient economic progress in the ethnic regions of southwest China, a comprehensive framework for promoting balanced spatial development of economic and social sectors is formulated. This framework involves the integration of three levels of balanced development indicators in four dimensions: economic, social, environmental and livelihood: policies to promote balanced development in the economic domain are examined from the perspectives of economic efficiency, structural composition, innovation driving force, infrastructure, and human capital; measures to promote balanced development in the social field are examined from the perspectives of equity, governance, security, civilization and stability; measures to promote balanced development in the environmental field are examined in terms of air quality, water resources, spatial planning, environmental quality, and ecological conservation; measures to ensure balanced development in the area of livelihoods are outlined, based on income, housing, employment, education, and health care - five key indicators that shape the overall well-being of the population.

REFERENCES

[1] Zhao Min & Chu Pepe (2022). Spatial convergence and differentiation characteristics of rural industrial integration level In China, the Resources and Industry. Doi: 10.13776 / j.carol carroll nki resourcesindustries. 20220915.001.

[2] Sun Jiuwen & Jiang Zhi (2022). The strategic framework and path conception of the regional coordinated development under the new development pattern. Journal of the Party School of the CPC Central Committee (National Academy of Governance) (4), 78-87. Doi: 10.14119 / j.carol carroll nki ZGXB. 2022.04.014.

[3] Wei Houkai (2022). We will further implement the Three Strategies to promote coordinated development between urban and rural areas and between regions. Chinese Journal of Social Sciences, 002.

[4] Wang Yu (2022). The strategic points of development and policy shift of coordinated development under the vision of common prosperity. Xinjiang Social Science.

[5] Zhao Minggang (2007). Circular Economy Research on Sustainable Development in the Western Region (Master's dissertation, Northwestern University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD2007&filename=2007129393.nh

[6] Zhou Zhaojun (2007). The China Development Index was released for the first time. Consumer Daily News, A01.

[7] Wu Nan (2022). We will deepen research on strategies for coordinated regional development. Chinese Journal of Social Sciences, 001.

[8] Lian Yuanhao & Liu Zhaofeng (2022). A Comparison between The German Ideology and Das Kapital's view of World History. Research on Ideological Education (06), 60-66.

[9] Li Feng, Liu Tian, Wu Wenhua & Pan Tao lue (2022). Policy

interpretation of the 2022 Government Work Report. Agricultural Development and Finance (06), 46-51.

[10] Xue Jiaqi & Qian Zhiyong (2022). Study on the thought of common prosperity in Das Kapital. Contemporary Economic Management (08), 1-5. Doi: 10.13253 / j.carol carroll nki DDJJGL. 2022.08.001.

[11] Wang Xiaoxin (2022). Research on urban economic development differences and influencing factors in central China (master's thesis, Anhui University of Finance and Economics). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022507382.nh

[12] Jiang Xiaolan (2022). Research on the Impact of Digital Economy on high-quality Development of regional Economy (master's thesis, Guangxi Normal University).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022564722.nh

[13] Huang Ruyi (2022). The impact of foreign direct investment on regional economic resilience (master's thesis, Huaibei Normal University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022597186.nh

[14] Feng Xin (2022). Research on the influence of technology correlation and complexity on the industrial Development of the Economic and Technological Development Zone of the Yellow River Basin (Master's thesis, Henan University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022630696.nh

[15] Liu Yujia (2022). Research on the spatial Structure and spatial effect of China's Digital Economy (doctoral dissertation, Jilin University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDTEMP&filename=1022525776.nh

[16] Liu Wenge & Jia Weiping (2022). Research on Structural Transformation and Economic Growth Based on Data Fements. Industrial Technology and Economy (06), 10-17.

[17] Wang Xiting (2022). Research on the triple opening level measurement and its influence on high-quality economic development under the new development pattern (master's thesis, Lanzhou University of Finance and Economics).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022559883.nh

[18] Li Zhenzhen (2022). Research on the comprehensive evaluation and influencing factors of inadequate and unbalanced economic development in western China (master's thesis, Lanzhou University of Finance and Economics). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022559903.nh

[19] Hao Jiaming (2022). On on Rural Revitalization Strategy Research under the Collective Theory of Das Kapital. Heilongjiang Human Resources and Social Security (14), 51-53.

[20] Xie Mengqin (2022). Transparency is based on the theory of system symbiosis. China Sankei Industry (06), 40-42.

[21] Wei Houkai (2022). We will continue to promote the integrated development of rural industries with high quality. Rural Work Communications (05), 30-32.

[22] Sarah Johnson. (2022). Farewell to The German Ideology. The Journal of The History of Ideas. (1) doi: 10.1353 / JHI. 2022.0006.

[23] Cox Kevin R.(2022).Uneven development: Convergence and divergence and politics says. Cambridge Journal of Regions, pa and Society (1) doi: 10.1093 / CJRES/RSAB030.

[24] Chen Yong (2022). The influencing factors and countermeasures of the imbalance of Yangtze River Delta. Business Pa (02), 14-16. Doi: 10.19905 / j.carol carroll nki syjj1982.2022.02.007.

[25] Botta Alberto & Tippet Benjamin (2022).Secular stagnation and core-periphery uneven development in post-crisis Eurozone.Com petition & Change (1). Doi: 10.1177/10245294211003864.

[26] Zhao Jian, Li Hongyu & Zhao Yunyi (2022). Economic growth, division

of labor, system, innovation and the city. Journal of Beijing Jiaotong University (Social Science edition) (01), 44-68. doi:10.16797/j.cnki.11-5224/c.20211228.001.

[27] Li Ming, Yao Gary, Zhang Jian & Tan Qianyi (2021). The rural revitalization in southwest ethnic minority areas as an example. Guizhou Ethnic Studies (6), 96-101. The doi: 10.13965 / j.carol carroll nki gzmzyj10026959.2021.06.013.

[28] Yi Xin, Yin Xiang & Wang Sijia (2021). The current situation, challenges and countermeasures of the integration into the southbound "Belt and Road" economic corridor. Ethnology Journal (12), 38-49.

[29] Xie Mengqin (2021). Exploring the Difficulties of economic Development in Southwest Ethnic Region. Quality and Market (23), 13-15.

[30] Leyshon Andrew (2021).Economic geography I: Uneven development, 'left behind places' and 'levelling up' in a time of crisis.Progress in Human The Geography (6). Doi: 10.1177/03091325211011684.

[31] Cao Yingqi, Jiao Xiaosong & Liao Wangke (2021). Role positioning, dynamic mechanism and promotion path of digital economy development in southwest ethnic minority areas. Contemporary economy (11), 90-94.

[32] Chen Chibo, Li Shuo & Tian Yun (2021). Statistical evaluation of the development level of rural industry integration. Statistics and Decision Making (21), 164-169. The doi: 10.13546 / j.carol carroll nki tjyjc. 2021.21.034.

[33] Khan Muhammad Salar & Siddique Abu Bakkar (2021). Spatial Analysis of Regional and Income Inequality in the United States. Economies (4). Doi: 10.3390 / ECONOMIES9040159.

[34] Zhang Guowang (2021). Regional Differences and Its Influencing Factors. Administration and Law (09), 1-14.

[35] Yang Su (2021). Development status and optimization countermeasures of rural social organizations in southwest ethnic areas under the perspective of rural revitalization. Economic Research Guide (24), 19-21.

[36] Huang Jikun, Chen Bin, Deng Xiangzheng, Fang Debin, Huang Haijun, Li Haizheng (2021). Analysis of the coordinated development and management of

regional Social economy. Journal of Management Science (08), 163-170. The doi: 10.19920 / j.carol carroll nki JMSC. 2021.08.018.

[37] Xu Xianchun, Ren Xue, Zhang Zhongwen & Zhou Rong.(2021). The analysis of China's Balanced Development Index. Financial Research (08), 3-15. doi:10.19477/j.cnki.11-1077/f.2021.08.008.

[38] Wei Houkai (2021). We will comprehensively build a leading area for the coordinated development of both urban and rural areas. People's Daily, 012.

[39] Tarcus Horacio (2021). The Communist Manifesto in Chile: Circulation and Edition. ANUARIO COLOMBIANO DE HISTORIA SOCIAL DE LA CULTURA Y (2), doi: 10.15446 / ACHSC V48N2. 95655.

[40] Shi Yue (2021). Research on the estimation and application of the nuclear coefficient regression model (master's thesis, Xinjiang University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202202&filename=1021800229.nh

[41] Xu Yingzhao (2021). Analysis of the coordinated development level of regional logistics and regional economy in the Yangtze River Delta (master's thesis, Shanxi University of Finance and Economics). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202102&filename=1021058686.nh

[42] Wang Haiyun & Liu Yu (2021). Countermeasures of Sustainable Development Education Concept on Promoting Regional Education Development. Teacher (16), 113-114.

[43] Wang Zhang (2021). Analysis of the spatial and temporal evolution of prefectural regional economic resilience and its influencing factors (master's thesis, Jishou University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1021162319.nh

[44] Wang Yanan (2021).Research on the Statistical Measurement of High-quality Economic Development in China (doctoral dissertation, University of International Business and Economics).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDTEMP&filename=1021138373.nh

[45] Fontaine (2021). A Study on the Economic Development of Ethnic Minorities in Southwest China. China Storage and Transportation (06), 199-200. doi:10.16301/j.cnki.cn12.1204/f.2021.06.091.

[46] Guo Mengmeng (2021).Analysis of the Spatial heterogeneity of Economic Growth in Liaoning Province(Master's thesis, Liaoning Normal University).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202102&filename=1021640525.nh

[47] Jinjinxia (2021). Analysis of regional differences and influencing factors in China's financial development(master's thesis, Jiangxi University of Finance and Economics).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202102&filename=1021612742.nh

[48] Chen Jun (2021). How spatial knowledge spillover affects —— theoretical mechanism and empirical evidence. Statistical Research (05), 70-81. doi:10.19343/j.cnki.11-1302/c.2021.05.006.

[49] Zhang Zhipeng (2021). The boundary of the integration of the Yangtze River Delta and its breakthrough of a public governance innovation perspective. East China Economic Management (05), 32.39. doi:10.19629/j.cnki.34-1014/f.201130014.

[50] Zhang Zhi (2021). Regional multi-dimensional development index measure based on different indicators and weights. Science and technology Economic market (04), 65-66.

[51] Llorente Renzo (2021). Class Consciousness and Ideology in the; Communism Manifesto. Critique (1-2). Doi: 10.1080/03017605.2021.1934079.

[52] Kong Rui & Lizhi Ho (2021). Rural Revitalization in Southwest Ethnic Areas: A Comparative Study of Reality and Requirements. The Ethnic Forum (01), 79-86. The doi: 10.19683 / j.carol carroll nki MZLT. 2021.01.010.

[53] Analysis of Economic Differences and Their Impact Factors in the Northeast Three Provinces (2021). Modern Trade and Industry (10), 12.13.

doi:10.19311/j.cnki.1672.3198.2021.10.007.

[54] Linmi (2021). The internal tension of Marxist political economic criticism and its contemporary significance to rethink the —— is based on the unbalanced development problem in Das Kapital and its manuscripts. Chinese University Social Sciences (02), 40-48.

[55] Xu Xianchun, Lei Zekun, Dou Yuanyuan & Liu Shichang (2021). The comprehensive analysis of the "China's Balanced Development Index". The Industrial pa. Of China (02), 5-22. Doi: 10.19581 / j.carol carroll nki ciejournal. 2021.02.011.

[56] Yang Tianyu & Deng Ziwei (2020). The Imbalance between Urban and Rural Development in China from the View of Human Development Index. Journal of Wuxi Commercial Vocational and Technical College (06), 40-46. Doi: 10.13659 / j.carol carroll nki wxsy. 2020.06.007.

[57] Yanhua Liu (2020). China's 2020 Comprehensive Well-off Index: 96.6 Top ten most concerned focus issues: Epidemic prevention and control ranks first. Well-off (34), 50-52.

[58] Yu Tao (2020). Evaluation and analysis of the integrated development of rural primary, secondary and tertiary industries. Macroeconomic Research (11), 76-85. doi:10.16304/j.cnki.11-3952/f.2020.11.007.

[59] Li Lili & Shen Qi (2020). Research on the Sustainable Development of Farmers' Cooperatives. Chongqing University Press, 54 p.

[60] Li Yanfei (2020). Z Community multi-center governance research in Gaoming District, Foshan City (master's dissertation, Guangxi Normal University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202101&filename=1020905800.nh

[61] Ma Huijuan, Liu Jia & Yan Ningna (2020). Transformation practice and Countermeasures of Rujigou Mining Area under policy guidance. Inner Mongolia Coal pa. (11), 62.65. The doi: 10.13487 / j.carol carroll nki imce. 017603.

[62] Gao Angang (2020). Research on the Innovative Space Structure of China Urban Agglomeration and its Quality Effect of Economic Growth (doctoral

dissertation, Guangxi University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2021&filename=1020364795.nh

[63] Liang Jinhao (2020). Research on the Sustainable Development of Marine Fisheries in China. Small and medium-sized enterprise management and Technology (journal) (05), 56-57.

[64] Lu Jie & Yu Mingzhu (2020). Thoughts on the Development of Ethnic Minority Areas in the Southwest Frontier Region. Cooperative pa and Science and Technology (09), 36 to 38, doi: 10.13665 / j.carol carroll nki hzjjykj. 2020.09.015.

[65] Pan Ju. (2020). Analysis of the unbalanced measure and influencing factors of regional economic Development in China(doctoral dissertation, Liaoning University).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2020&filename=1020104446.nh

[66] Yang Tianle (2020). Capitalist Urbanization and Space Criticism (Master's thesis, Shanghai Normal University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202002&filename=1020809269.nh

He Qi (2021). David Harvey's Unbalance Theory Research (Master's thesis, Heilongjiang University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202102&filename=1021063691.nh

[68] Yu Mingzhu & Lu Jie (2020). Study on Economic Development of Minority Areas in Southwest Frontier. Cooperative Pa and Technology (08), 32.33. Doi: 10.13665 / j.carol carroll nki hzjjykj. 2020.08.011.

[69] Xu Xianchun, Ren Xue & Tang Meiwei (2020). On the construction of China's balanced development Index index system. Statistical Studies (02), 3-14. doi:10.19343/j.cnki.11-1302/c.2020.02.001.

[70] Shao Xiaobin, Yang Yuxi, Niu Guangyuan, Zhang Qingxiang & Yao Hong (2020). Research on Countermeasures of Factory Landscape Construction Based on Industrial Tourism. Tour Overview (second half of the month) (04),

11-12.

[71] Linmi (2020). The unbalanced development of urban and rural areas in Marx's vision and its review beyond centered on Das Kapital. Journal of Xiamen University (Philosophy and Social Sciences edition) (01), 34-42.

[72] Wang Peng (2020). Research on the law of unbalanced development of world Economy (doctoral dissertation, Shanghai University of Finance and Economics).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDTEMP&filename=1021150388.nh

[73] Liu reserved & Li Huanhuan (2019). Pingdingshan city as an example...

(eds.) Proceedings of the 2019 Annual Meeting of the Environmental Management Professional Committee of the Chinese Society of Management Science (pp.141-146). Proceedings of the 2019 Annual Meeting of the Environmental Management Professional Committee of the Chinese Society of Management Science.

[74] Runtian Lin (2019).Interpretation of Das Kapital and the Socialist Market Economic Theory with Chinese Characteristics.. (eds.)Proceedings of 2019 International Conference on Emerging Researches in Management, Business, Finance and Economics(ERMBFE 2019)(pp.924-927). Proceedings of 2019 International Conference on Emerging Researches in Management, Business, Finance and Economics(ERMBFE 2019).

[75] Linmi (2019). Das Kapital and its manuscripts. Tianjin Social Sciences (05), 38-44. doi:10.16240/j.cnki.1002.3976.2019.05.006.

[76] Ju Jiao Fei (2019). Research on Sustainable Development of Modern Agriculture in Guangxi Mountain Area. Rural Economy and Science and Technology (16), 190-192.

[77] Dream Dream, Ma Jianzhang, Ji Jianwei, Zhou Xiaorui & Hu Xinxin (2019). Comprehensive evaluation and analysis of the operation of Wildlife Township in China. Forestry Resource Management (03), 30-35 + 65. Doi: 10.13466 / j.carol carroll nki lyzygl. 2019.03.006.

[78] Liu Pengfei (2019). Marxist Theory of Unbalanced Development and

Global Governance reshaping the fair governance logic of the concept of a community with a shared future for mankind. Journal of Fujian Normal University (Philosophy and Social Sciences edition) (04), 12.18 + 44 + 170.

[79] Fu Xiaodong, Wang Jingtian & Cui Xiaoyu (2019). Practice and Theory of Regional Economic Policy since the Founding of New China. The Regional Economic Review (04), 8-24. doi:10.14017/j.cnki.2095-5766.20190717.005.

[80] Chen Xiaoxue & Shi Da Hong (2019). Comprehensive evaluation and differential study of high-quality social and economic development in 30 provinces and cities in China. Journal of The University of Jinan (Social Science edition) (04), 100-113 + 159-160.

[81] Gao Jiedan (2019). Existing problems and countermeasures of regional environmental impact assessment. Residential and Real Estate (20), 56-61.

[82] Harry Magdof .(2019). A Note on the Communist Manifesto. Monthly Review(3).

[83] Chen Sen (2019). Poverty alleviation performance evaluation based on the fuzzy comprehensive evaluation method (master's thesis, Yunnan University of Finance and Economics). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202001&filename=1019060782.nh

[84] Li Jingjing (2019). Research on the growth pattern and mechanism of regional economic imbalance in China based on county and city units (doctoral dissertation, Henan University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2021&filename=1021541856.nh

[85] Xu Xianchun, Zheng Zhengxi & Zhang Zhongwen (2019). The based on the comprehensive analysis of the China Balanced Development Index of Tsinghua University. Manage World (05), 15-28. doi:10.19744/j.cnki.11-1235/f.2019.0063.

[86] Mu Xin (2019). Marx's Unbalanced Development thought and his value research(master's thesis, Jiangsu University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201902&filename=1

019893674.nh

[87] Lu Ping (2019). Compilation and analysis of the livelihood index across China (master's thesis, Southwestern University of Finance and Economics). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202002&filename=1019642450.nh

[88] Lingling (2019). Research on Financing Risk Management of Chongqing China-funded Project Platform based on fuzzy Comprehensive Evaluation method (Master's dissertation, Southwestern University of Finance and Economics). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202002&filename=1019642927.nh

[89] William Outhwaite (2019). The Book review: Das Kapital. Journal of Classical Sociology (1), doi: 10.1177/1468795 x18810581.

[90] Dian & Xie Meiling (2018). Research on the Sustainable Development of Tourism in Ethnic Minority Areas and Its Countermeasures. Tour Overview (second half of the month) (20), 180 + 184.

[91] Liu Gan & Zheng Siyu (2018). Comprehensive evaluation of high-quality development of China. Productivity Research (10), 59-63. doi:10.19374/j.cnki.14-1145/f.2018.10.012.

[92] Han Wenlong & Zhu Shunlian (2018). The theoretical development and realization path of common prosperity in the new Era. Marxism and Reality (05), 31-37. doi:10.15894/j.cnki.cn11-3040/a.2018.05.005.

[93] Sun Wen (2018). Analysis of Sustainable Development of Regional Development. Low Carbon World (08), 190-191. doi:10.16844/j.cnki.cn10-1007/tk.2018.08.123.

[94]Lin Mi & Zheng Chen Zheng (2018). Starts from Harvey's theory of space. Jiangxi Social Science (07), 22.31.

[95] Xu Yang (2018). Das Kapital and its manuscripts are compiled into the Chinese version of the Complete Works of Marx and Engels. Research on Marxist Theory (03), 63-75.

[96] Zhang Li (2018). Research on Yunnan Provincial Government Budget

Performance Evaluation based on fuzzy Comprehensive Evaluation (Master's dissertation,Yunnan University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202001&filename=1018250384.nh

[97] Wang Shanju (2017). Theoretical review and enlightenment of the unbalanced development of regional economy. Journal of Sanmenxia Vocational and Technical College (04), 103-107.

[98] Schweickart David (2017). Das Kapital e Eu. Kalagatos (3), doi: 10.23845 / KGT v14i3. 292.

[99] Foreign CSR dynamics (2017). The WTO Economic Guide (11), 11-13.

[100] Paul Blackledge (2017).Practical Materialism: Engels' s Anti - Duhring as Marxist Philosophy. The Critique (4), doi: 10.1080/03017605.2017.1377927.

[101] Yang Zhang & Liying Zhang (2017).Materialistic Epistemology of Dialectics in Anti-duhring... (eds.)Proceedings of 2017 4th International Conference on Economic, Business Management and Education Innovation (EBMEI 2017)(pp.137-139).Proceedings of 2017 4th International Conference on Economic, Business Management and Education Innovation (EBMEI 2017).

[102] PNUD (2017). Evaluation of Disability Inclusive Development at UNDP.United Nations.

[103] Yang, Zhao Huimin, Li Chang, Chen Jiancheng & Xue Yongji (2016). Fuzzy Comprehensive Evaluation of Underforest Economic Benefit and Its Application. Forestry Resource Management (6), 111-115. The doi: 10.13466 / j.carol carroll nki lyzygl. 2016.06.021.

[104] Boldizzoni Francesco (2016). Post-capitalism? - Does Capitalism Have a Future? The European Journal of Sociology (3), doi: 10.1017 / S0003975616000382.

[105] Yang Yi (2016). Study on geoweighted regression method with non-stability (doctoral dissertation, Wuhan University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2017&filename=1017008821.nh

[106] Zhejiang Provincial Party Committee Political Research Office Research Group & Yu Xindong (2016)."Strengthening weak links" is the dialectical application of balanced development theories and unbalanced development theories. Policy Outlook (06), 24-26.

[107] Matthias Lehmann (2016). Das Genossenschaftsgesetz, das Kapital und die Reform des Jahres 2006. Zeitschrift fur das gesamte Genossenschaftswesen (2). Doi: 10.1515 / ZFGG - 2016-0008.

[108] Wang Yunjie (2016). Neil Smith's Theoretical Interpretation of Imbalanced Geographic Development Theory (Master's thesis, Nanjing University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202001&filename=1016123500.nh

[109] Cheng Dong (2016). Innovation of Chinese Regional Economic Policy Tool: And found the and Practice. Guizhou Social Sciences (04), 120-126. The doi: 10.13713 / j.carol carroll nki cssci. 2016.04.019.

[110] Wang-Navy (2016). Theoretical Mechanism Analysis of the Impact of Financial Development on Regional Economic Growth. The National Business Situation (09), 61-62. The doi: 10.16834 / j.carol carroll nki issn1009-5292.2016.09.033.

[111] Wan Xingzi (2016). Evaluation and evolution model research of regional sustainable development (doctoral thesis, Wuhan University of Technology).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2019&filename=1018805828.nh

[112] Research on Several Basic Theoretical Elements of Regional Economic Policy (2016). Regional Economic Review (01), 14-23. doi:10.14017/j.cnki.2095-5766.2016.0005.

[113] Social Progress Index (2015). The Choice Reviews Online (03) doi: 10.5860 / Choice. 192006.

[114] Li Fengling (2015). The political appeal of David Harvey's space theory is a construction of "dialectical Utopia of time and space". Journal of Jiangnan University (Humanities and Social Sciences edition) (05), 29-35.

[115] Li Fengling (2015). Harvey's "unified field theory" as a reference. Journal of Huazhong University Of Science and Technology (Social Science Edition) (05), 6-11. Doi: 10.19648 / j.carol carroll nki jhustss1980.2015.05.002.

[116] Wei Feng (2015). Research on horizontal relations between local governments under the threshold of regional governance (master's dissertation, Party School of the CPC Central Committee). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201601&filename=1015337120.nh

[117] Ning Yadong & Ge Jian (2015). Evaluation of the development level of regional circular economy in China based on AHP-FCE algorithm. Economic Research Guide (13), 63-66.

[118] Tanfifi (2015). Sustainable Development of Bohai Rim Region- -Model Construction and Evaluation (doctoral dissertation, China University of Mining and Technology (Beijing). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2018&filename=1015304597.nh

[119] Li Haomin (2015). Research on the coordination of regional economic development and environmental protection in western China (master's thesis, Gansu University of Political Science and Law). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201502&filename=1015305800.nh

[120] The OECD. (2015). The OECD's Better Life Index. Journal of Education for Sustainable Development (1). The doi: 10.1177/0973408215569121 d.

[121] Research group of "China Livelihood Index", Zhang Yutai, Wu Xiaoling, Han Jun, Ye Xingqing, Ge Yanfeng & Jin Sanlin, Development Research Center of The State Council. (2015). Research on "China's Livelihood Index Research" comprehensive report. Manage World (02), 1-11. doi:10.19744/j.cnki.11-1235/f.2015.02.001.

[122] Liu Peipei & Zhu Dequan (2015). The multi-center governance logic of

the linkage development of vocational education and regional economy. Education and Career (02), 12.14. doi:10.13615/j.cnki.1004-3985.2015.02.003.

[123] Fromm & Almeida (2015).Empiricism, Science, And Philosophy in The German Ideology. An Marxism (1), doi: 10.1080/08935696.2014.980673.

[124] Li Hongjun (2014). Wages, Prices, and Profits - A popular explanation of the basic principles of Marxist political economy. The Front Line (07), 62.65.

[125] Li Hongjun (2014). Background, main content and significance of wages, Prices and Profit, which guides the international worker movement and the proletarian Revolution. The Front Line (07), 66-67.

[126] Zhu Shanshan (2014). Research on Regional Sustainable Development Evaluation Based on the New Economic Growth Theory (Master's dissertation, Northwestern University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201402&filename=1014242989.nh

[127] Building Yuhong (2014). Research on comprehensive evaluation of regional water-saving Irrigation development level (doctoral thesis, China Agricultural University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFD1214&filename=1014221337.nh

[128] Gills Barry & Gunder Frank Andre (2014). The World System: Five Hundred Years or Five Thousand? Taylor and Francis, 78 p.

[129] Fan Bonai & Bian Xiaolong (2013). Actual Measurement and Space Distribution of Coordination of Provincial Economic and Social Development in China. Administration and Law (12), 31-38.

[130] Robinson David, Jebakumar Solomon (2013). Atrazine biodegradation efficiency, metabolite detection, and trzD gene expression by enrichment bacterial cultures from agricultural soil. Journal of Zhejiang University-Science B(Biomedicine & Biotechnology), (12),1162.1172.

[131] Li Jianbo, Bai Yongping, Gao Feng & Li Jianhu (2013). Study on Regional Economic Differences in the Radiation Zone of Lanzhou-Xinjiang

Railway. Drought Area Resources and Environment (08), 26-32. Doi: 10.13448 / j.carol carroll nki jalre. 2013.08.005.

[132] Wu Jian & Lin Jinzhong (2013). Marxist Space Political Economy: Research Progress and Chinese Enlightenment. Jiangsu Social Sciences (04), 76-83. doi:10.13858/j.cnki.cn32.1312/c.2013.04.035.

[133] Fan Bonai, Zhang Weiwei & He Jianjun (2013). Study on the Connotation and Measurement of Harmonious Economic and Social Development in China. Statistical Studies (07), 3-8. doi:10.19343/j.cnki.11-1302/c.2013.07.001.

[134] Wang Hui & Wang Feng (2013). Study of regional economic development imbalance in China. Architecture and Culture (07), 91.

[135] Li Xiuling (2013). David Harvey's theory of unbalanced space development and its significance. Theory Monthly (07), 39-43. doi:10.14180/j.cnki.1004-0544.2013.07.032.

[136] Liu Jin (2013). Investigation of Marx's Wage Theory (doctoral thesis, Nankai University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFD1214&filename=1014171623.nh

[137] Zhang Li & Yao Yuchen (2013). Discussion on the Effect of High-speed Railway on regional Economy. Railway Transport and Economy (04), 10-15.

[138] Deng Yejian (2013). Research on the structural effect of RMB real exchange rate change (doctoral dissertation, Shanghai Academy of Social Sciences).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFD1214&filename=1014161606.nh

[139] Fan Bonai, Zhang Weiwei & He Jianjun (2013). Research and Evaluation on the Measurement Index of Economic Development in China. Economic Problem Exploration (04), 135-140.

[140] Zhou Dan (2013). On Marx's Political Economy Criticism on "Wages". Journal of the Party School of the CPC Fujian Provincial Committee (02), 38-43. doi:10.15993/j.cnki.cn35-1198/c.2013.02.005.

[141] Sun Chengfang (2012). Post-Keynesian Price Theory and its new

Progress research (doctoral dissertation, Dongbei University of Finance and Economics).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFD1214&filename=1013164925.nh

[142] Partha Gangopadhyay (2012). Urban informal industry, work poverty, and wage discrimination: theory and facts (English)... (eds.) Beijing Forum (2012) Harmony and Common Prosperity of Civilization: New Pattern, New Challenge, New Thinking, New Opportunities: Paper collection and abstracts of "World City Spirit Inheritance-Experience and Innovation" (pp.267-297).

[143] Li Jianbo, Bai Yongping, Li Jianhu & Hou Chengcheng (2012). The radiation belt of Lanzhou-Xinjiang Railway as an example. Drought Area The Resources and the Environment (10), 144-149. The doi: 10.13448 / j.carol carroll nki jalre. 2012.10.014.

[144] Bai Yongping (2012). David Harvey's theory of unbalanced geographical development. Learning and Exploration (05), 25-29.

[145] Yang Yinkai (2012). Summary of major regional development events in China in 2011. China Economic and Trade Guide (04), 23-26.

[146] Wang Shang, Jiang Hongchen, Huang Liuqin, Yu Tao & Yang Zhongfang (2011). Distribution and influence factors of soil microbial carbon in eastern China. Geoscience front edge (06), 134-142.

[147] Golley Jane & Song Ligang (2011).Rising China: Global Challenges and Opportunities. ANUE Press, 309 p.

[148] Immanuel Wallerstein (2011). The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century. University of California Press, 109 p.

[149] Zhu Chengliang, Yue Hongzhi & Shiping (2010). An Empirical Study on the Impact of Human Capital and Its Composition on Technical Efficiency in China The evidence is based on provincial panel data from 1985 to 2007. Scientific Research (11), 1668-1672 + 1628. doi:10.16192/j.cnki.1003-2053.2010.11.007.

[150] Zhu Chengliang (2010). Empirical Research on China's Economic Growth Efficiency and Its Impact Factors (Master's dissertation, Northwestern

University).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD2010&filename=2010119203.nh

[151] Luc Anselin (2010).Thirty years of spatial econometrics. Papers in Regional Science (1). Doi: 10.1111/1435-5957.2010.00279. J. x.

[152] Liu Yuping & Guo County (2009). The Application of AHP Fuzzy Comprehensive Evaluation Method in the Evaluation of Circular Economy Development. Resource Development and Marketing (09), 801-803.

[153] Xia Wanjun (2009). Research on the convergence Mechanism of regional economy in China. Business Economy and Management (09), 52.57.

[154] Salvador Barrios & Eric Strobl (2009).The dynamics of regional inequalities.Regional Science and Urban Economics (5). Doi: 10.1016 / j.r egsciurbeco. 2009.03.008.

[155] Wang Zhongyi (2009). The theory of unbalanced development. Journal of Jilin Normal University (Humanities and Social Sciences edition) (04), 51-54.

[156] Yang Call & Chen Xuezhong (2009). Evaluation index system and evaluation method of the sustainable development of regional Economy. Value Engineering (07), 18-21.

[157] Teng Yunxian (2009). Research on regional Sustainable Development Index System based on hierarchical analysis method (Master's dissertation, Tianjin University).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD2011&filename=2010092865.nh

[158] Fan Shenggen, Kanbur Ravi & Zhang Xiaobo (2009). Regional Inequality in China: Trends, Explanations and Policy Responses. Taylor and Francis, 235 p.

[159] China Development Index (2008) compilation results research. Journal of Renmin University of China (01), 8 – 13 p.

[160] Jane Golley (2008). The Chinese Economy in the 21st Century: Enterprise and Business Behaviour. Barbara Krug, Hans Hendrischke. "The China Journal, doi: 10.1086 / TCJ. 60.20648002.

[161] Liang Zongjing (2008). Empirical analysis of China's economic growth

drivers (doctoral dissertation, East China Normal University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFD9908&filename=2008146964.nh

[162] Wei Houkai (2008). We will further promote the choice of investment and financing policies for the western region development. Western Finance (05), 6-10. doi:10.16395/j.cnki.61-1462/f.2008.05.006.

[163] Wang Pai (2008). Research on the Evaluation Theory and Methods of the Coordinated Development of Regional Science and Technology and Economy (doctoral thesis, Jilin University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFD9908&filename=2008128990.nh

[164] Panchenko Vladislav, Makarchuk Ivan, Shushpanov Konstantin,Krushanova Anastasia & Vlasenko Valerii.(2020). Problems of Law and State in Friedrich Engels' "Anti-Duhring"... (eds.)Proceedings of the XIV European-Asian Law Congress "The Value of Law" (EAC-LAW 2020)(pp.).XIV European-Asian Law Congress "The Value of Law" (EAC-LAW 2020).

[165] Luisito Bertinelli (2007).Urbanisation, Urban Concentration and Economic Development. Urban Studies (13), doi: 10.1080/00420980701558442.

[166] Wei Houkai (2007). The New Choice for Western Development. The Industrial Economy of China (10), 10.19581 doi: 127 / j.carol carroll nki ciejournal. 2007.10.016.

[167] Tian Hui (2008). Human Sustainable Development Index (HSDI) Construction and Applied Research (doctoral dissertation, Nanjing University of Science and Technology). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFD9908&filename=2008158683.nh

[168] Song Guoliang (2007). Convergence Analysis of China (master's thesis, Harbin Institute of Technology). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD2009&filename=2008194132.nh

[169] Zhao Jie (2007). Comprehensive evaluation system and Applied research of Regional Circular Economy Development Level (Master's thesis, Central South University). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD2007&filename=2007173419.nh

[170] Xia Xuan (2007). Fuzzy comprehensive evaluation of regional science and technology performance based on the Scientific Outlook on Development (master's thesis, Dalian University of Technology). https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD2008&filename=2007210378.nh

APPENDICES

Appendix A

Balanced Development Index System of Tsinghua University

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
Economy	Economic Performance	GDP per capita	Positive	Reflects economic development	*	
		Energy productivity rate	Positive	GDP/total energy consumption, reflecting the degree of energy productivity	*	
		Capital productivity rate	Positive	GDP/capital stock, reflecting the degree of capital productivity	*	
	Economic Structure	The proportion of the main business income of high-tech enterprises in GDP	Positive	Measuring the development of high-tech industries and the power of transformation and upgrading	*	
		Consumption rate of residents	Positive	Resident consumption expenditure/GDP, measuring the demand structure		
		The proportion of service trade to foreign trade	Positive	Total import and export of service trade/total import and export of foreign trade		
	Innovation drive	Degree of human capital funding input	Positive	Human capital internal funding expenditure/GDP		
		Number of invention patents per 10,000 people	Positive	Reflecting the possession of independent intellectual property rights	*	
	Level of urban facilities	Internet penetration rate	Positive	Reflects the degree of development of Internet infrastructure	*	*

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
		Railroad Density	Positive	Reflecting the development of transportation infrastructure	*	
		Urban traffic carrying capacity	Positive	Reflects the capacity and level of urban public transportation	*	
	Human capital	Percentage of labor force population	Positive	Measures the basic situation of China's human capital stock	*	
		Average years of education of the working age population	Positive	Reflects the quality of human capital	*	
Social	Civility	Per capita ownership of public library collections	Positive	Measures the level of public library development	*	
		Per capita expenditure on cultural undertakings	Positive	Measuring the development of cultural undertakings		
	Fairness	Gini coefficient	Negative	Measuring the income gap of residents		
		Gender differences in labor and employment	Negative	Reflecting the degree of gender equity in labor and employment		
	Social Security	Number of production and safety accidents of billion Yuan GDP	Negative	Reflecting the level of social safety production construction	*	
		Criminal Crime Rate	Negative	Reflecting the social security situation		
	Social Governance	Number of social organizations per 10,000 people	Positive	Reflects the level of social governance	*	
		Number of lawyers per 10,000 people	Positive	Reflecting the level of legal system in society	*	
	Social Insurance	Pension replacement rate	Positive	Measures the overall difference in living standards of workers before and after retirement	*	*

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
		Pension insurance coverage rate	Positive	Measures the coverage of the pension insurance system	*	
		Medical out-of-pocket ratio	Negative	Proportion of personal cash payments	*	
		Poverty incidence rate	Negative	Reflects poverty eradication		
Ecology	Air quality	Air quality index good rate	Positive	Measures air quality status	*	
		Fine particulate matter concentration (PM2.5) non-compliance rate	Negative	Measure of air quality status	*	
	Water Quality	Proportion of surface water bodies worse than V	Negative	Reflect the quality of surface water condition	*	
		River water quality status III or above as a percentage	Positive	Reflecting the water quality of rivers		
	Soil Quality	Amount of fertilizer applied per unit of arable land	Negative	Measures the quality of soil	*	
		Amount of pesticide use per unit of arable land	Negative	Measure soil quality	*	
	Environmental management	Harmless treatment rate of urban domestic waste	Positive	Measure the strength and situation of urban environmental governance	*	
		Average daily urban sewage treatment capacity	Positive	Reflects the strength of urban environmental management	*	
	Ecological Protection	Comprehensive treatment area of soil erosion	Positive	Reflecting the ecological protection situation		
		Afforestation area	Positive	Reflecting ecological protection		

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
People's livelihood	Income	Per capita disposable income of residents	Positive	Reflecting the per capita purchasing power and living standard of residents	*	*
		Per capita consumption expenditure	Positive	Reflects the per capita consumption level of residents	*	*
	Employment	Unemployment rate	Negative	Reflects the allocation of resources in the labor market		
		Demand multiplier	中	Reflects the demand situation of the labor market		
	Residence	Urban residential area per capita	Positive	Reflects the per capita housing situation of urban population	*	
		House price to income ratio	Negative	Burden coefficient reflecting residents' demand for housing	*	
		Rural residential facilities penetration rate	Positive	Reflecting the residential development of rural residents	*	
	Education	Gross enrollment rate of high school	Positive	Reflects the level of enrollment at the high school level		
		Teacher-student ratio at high school level and below	Negative	Reflects teacher resources	*	
		Public funding expenditure	Positive	Reflects investment in education	*	
	Medical Health	Mortality rate	Negative	Reflects the level of health care		*
		Number of health technicians per 1,000 population	Positive	Reflects the level of human resources for health care	*	*
		Longevity at birth	Positive	Reflects the level of disease control and health services		
		Number of elderly beds per 1,000 population	Positive	Measures the level of security of elderly services	*	
Note: * denotes indicators for regions/urban and rural areas						

Appendix B

Urban Balanced Development Index System

Primary indicators	Second-level indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
Economy	Economic benefit (Benefit)	Q3 - Gross regional product per capita (yuan/person)	Positive	Reflecting economic development	
		Q4-Industrial value added (billion yuan)	Positive	Reflecting industrial production	
		Q5-Total import and export of business unit location (thousand USD)	Positive	Reflecting the import and export situation	
	Economic Structure	Q6-Technology Market Turnover (billion yuan)	Positive	Measure the development of high-tech industry and the power of transformation and upgrading	
		Q7-Pulling ratio of the secondary industry to the economy	Negative	Reflecting the proportion of secondary industry in the national economic structure	
		Q9-Overall foreign trading*ratio of the tertiary sector to the overall economy	Positive	Reflects the import and export of tertiary industry	
	Innovation-driven	Q9-R&D expenditures of the above-scale industrial enterprises (million yuan)	Positive	Reflects the level of high-tech research in society	
		Q10-Authorized domestic patent applications (items)	Positive	Reflecting the possession of independent intellectual property rights	
	Level of urban Infrastructure	Q11- Passenger volume on all public transportation systems (million passengers)	Positive	Reflecting the passenger transportation of public transportation	*

Primary indicators	Second-level indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
		Q12-Length of public facilities (million kilometers)	Positive	Reflecting the development of transportation infrastructure	*
		Q13-Area of urban roads per capita (square meters)	Positive	Reflects the area of urban roads per capita	*
	Human capital	Q14-Year-end resident population (million people)	Positive	Measures the basic situation of human capital stock in China	*
		Q15-Number of students graduated from (completed) ordinary higher education schools (10,000)	Positive	Reflects the quality of human capital	*
Society	Civility	Q16-Per capita ownership of public library collections (books per person)	Positive	Measuring the level of public library development	*
		Q17-Number of cable broadcast TV subscribers as a proportion of total households (%)(%)	Positive	Measuring the development of cultural undertakings	*
	Fairness	Q18-Town income disposable ratio	Positive	Measures the income level of urban residents	*
		Q19-Rural disposable income ratio	Positive	Measure the living standard of rural areas	*
	Social Security	Q20-Total number of traffic accidents (cases)	Negative	Reflecting the social security situation	
		Q21-Total direct property damage in traffic accidents (million yuan)	Negative	Reflecting the level of social safety and production construction	
	Social governance	Q22-Number of social organization units (pcs)	Positive	Reflecting the level of democratic governance of society	*

Primary indicators	Second-level indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
		Q23-Number of units of autonomous organizations (pcs)	Positive	Reflect the level of social autonomy	
	Social Insurance	Q24-Number of urban workers participating in pension insurance (million)	Positive	Measures the pension situation of workers	*
		Q25-Number of people participating in unemployment insurance (10,000)	Positive	Measure the level of unemployment protection	
		Q26-The number of urban basic medical insurance participants at the end of the year (10,000 people)	Positive	Measuring the level of medical protection	
		Q27-The number of insured persons of work injury insurance at the end of the year (10,000)	Positive	Measuring the level of protection against work-related injuries	
		Q28-The number of participants in maternity insurance at the end of the year (10,000)	Positive	Measuring the level of maternity protection	
		Q29-Number of urban and rural residents covered by social pension insurance (10,000)	Positive	Measuring the level of social pension security	
Ecology	Energy resources	Q30-Total urban natural gas supply (billion cubic meters)	Positive	City gas supply capacity	
		Q31- Urban gas consumption population (million people)	Negative	Urban energy demand	
	Water resources	Q32-Comprehensive production capacity of water supply (million cubic meters/day)	Negative	Water resources supply	*
		Q33-Total water resources (billion cubic meters)	Positive	Water resources stock	

Primary indicators	Second-level indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
	Land resources	Q34-Area of urban area (square kilometers)	Positive	Stock of land resources in urban areas	
		Q35-Area of built-up area (km2)	Negative	Land resource use in urban areas	*
	Environmental Management Enhancement	Q36-Industrial pollution treatment completed investment (million yuan)	Positive	Industrial pollution treatment	*
		Q37-Treatment of exhaust gas projects completed investment (million yuan)	Positive	Waste gas pollution treatment	
	Ecological Protection	Q38-Number of national nature reserves (one)	Positive	Reflecting the ecological protection situation	*
		Q39 - Area of national nature reserves (million hectares)	Positive	Reflecting ecological protection	*
Livelihood	Income	Q40-per capita disposable income of all residents (Yuan)	Positive	Reflecting the per capita purchasing power and living standard of residents	*
		Q41-Consumption expenditure per capita of all residents(yuan)	Negative	Reflects the per capita consumption level of residents	*
	Employment	Q42-Registered urban unemployment rate(%)	Negative	Reflecting the allocation of resources in the labor market	*
		Q43-Employment of urban units (million)	Positive	Reflects the demand situation of labor market	*
	Residence	Q44-Urban population density (person/km2)	Negative	Reflecting the burden of urban population	
		Q45-Housing area per capita in urban area (person/km2)	Positive	Reflects the per capita residential demand of residents	

Primary indicators	Second-level indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
	Education	Q46-Average number of students enrolled in high school level per 100,000 population (person)	Positive	Reflecting the regional literacy level at the high school level	
		Q47-Average number of students enrolled in higher education schools per 100,000 population (persons)	Positive	Reflecting the literacy level of higher education in the region	
		Q48-Education expenditure (million yuan)	Positive	Reflecting the investment in education	
	Medical and health care	Q49-Population mortality rate (‰)	Negative	Reflecting the level of health care	
		Q50-Number of health technicians per 10,000 people(‰)	Positive	Reflecting the level of human resources for medical and health care	
		Q51-Number of beds in medical institutions per 10,000 people(‰)	Positive	Reflecting the level of medical and health care infrastructure	
		Q52-Local financial expenditure on medical and health care (billion yuan)	Positive	Reflects medical investment	
Note: Data is obtained from the Urban Statistical Yearbook of the National Bureau of Statistics from 2010 to 2020; and * indicates indicators common to regions and urban and rural areas					

Appendix C1

Rural Balanced Development Index System

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
Economy	Economic Benefit	q3-Total productivity value of agriculture, forestry, animal husbandry and fishery (billion yuan)	Positive	Reflecting economic development	
		q4-Sown area of food crops (thousand hectares)	Positive	Reflecting industrial production	
		q5-Grain production (million tons)	Positive	Reflecting the import and export situation	
	Economic structure	q6-Agricultural diesel use (million tons)	Positive	Measure the development of high-tech industries and the power of transformation and upgrading	
		q7-Pesticide use (million tons)	Negative	Reflect the proportion of the secondary industry in the national economic structure	
		q8-use of plastic film for agriculture (tons)	Positive	Reflect the import and export situation of the tertiary industry	
	Innovation-driven	q9-Total power of agricultural machinery (million kilowatts)	Positive	Reflecting the level of high-tech research in society	

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
		q10-Number of large and medium-sized agricultural tractors (units)	Positive	Reflecting the possession of independent intellectual property rights	
	Level of urban infrastructures	q11-Total number of public transportation passengers (million passengers)	Positive	Reflecting the passenger transportation of public transportation	*
		q12-Length of public facilities (million kilometers)	Positive	Reflecting the development of transportation infrastructure	*
		q13-Area of urban roads per capita (square meters)	Positive	Reflects the area of urban roads per capita	*
	Human capital	q14-Year-end resident population (million people)	Positive	Measures the basic situation of human capital stock in China	*
		q15-Number of students graduated (completed) from ordinary higher education institutions (10,000)	Positive	Reflects the quality of human capital	*
Society	Civility	q16-Per capita ownership of public library collections (books/person)	Positive	Measuring the level of public library development	*
		q17-Number of cable broadcast TV subscribers as a proportion of total households (%) (%)	Positive	Measuring the development of cultural undertakings	*
	Fairness	q18-Town income disposable ratio	Positive	Measuring the income level of urban residents	*

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
		q19-Rural income disposable ratio	Positive	Measuring the living standard of rural areas	*
	Social security	q20-Flood removal area (thousand hectares)	Negative	Reflecting social security	
		q21-Area affected by disasters (thousand hectares)	Negative	Reflecting the level of social security production and construction	
	Social governance	q22-Number of social organization units (pcs)	Positive	Reflect the level of democratic governance of society	*
		q23-Number of villagers' committee units (pcs)	Positive	Reflect the level of social autonomy	
	Social security	q24-Number of urban workers participating in old-age insurance (million)	Positive	Measures the pension situation of workers	*
Ecology	Energy resources	q25 - Rural electricity consumption (billion kilowatt hours)	Positive	Urban gas supply capacity	
		q26-Rural electricity generation capacity (million kWh)	Negative	Urban energy demand	
	Water resources	q27-Rural hydropower construction investment completed this year (million yuan)	Negative	Water resources supply	*
		q28-Total reservoir capacity (billion cubic meters)	Positive	Water resources stock situation	

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
	Land resources	q29-Effective irrigated area (thousand hectares)	Positive	Land resource use	
		q30-Total sown area of crops (thousand hectares)	Negative	Land resource stock	*
	Environmental management enhancement	q31-Erosion control area (thousand hectares)	Positive	Industrial pollution control	*
		q32-Industrial pollution control completed investment (million yuan)			
People's livelihoodlivelihood	Income	q33-per capita disposable income of rural residents(yuan)	Positive	Reflecting the per capita purchasing power and living standard of residents	*
		q34-per capita consumption expenditure of rural residents(yuan)	Negative	Reflecting the per capita consumption level of residents	*
	Employment	q35-Registered urban unemployment rate (%)	Negative	Reflecting the allocation of resources in the labor market	*
		q36-Employed persons in urban units (million)	Positive	Reflecting the demand situation of labor market	*
	Residence	q37-Rural population(10,000 people)	Negative	Reflecting the burden of rural population	
		q38-Housing area per capita in urban areas (people/km2)	Positive	Reflecting the per capita residential demand of residents	

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Common Indicators
	Education	q39-Average number of students enrolled in high school level per 100,000 population (persons)	Positive	Reflecting the regional literacy level at the high school level	
		q40-Average number of students enrolled in higher education schools per 100,000 population (persons)	Positive	Reflecting the regional literacy level at the higher education level	
		q41-education expenditure (million yuan)	Positive	Reflecting the investment in education	
	Medical and health care	q42-Population mortality rate (‰)	Negative	Reflecting the level of health care	
		q43-Number of health technicians per 10,000 people(‰)	Positive	Reflect the level of human resources for medical and health care	
		q44-Number of medical institution beds per 10,000 people in rural areas(‰)	Positive	Reflecting the level of medical and health care infrastructure	
		q45-Local financial expenditure on medical and health care (billion yuan)	Positive	Reflecting medical investment	
Note: Data is obtained from the Urban Statistical Yearbook of the National Bureau of Statistics from 2010 to 2020, and * indicates indicators common to both regional and urban-rural areas					

Appendix D1

Total Evaluation system of ethnic areas in Southwest China

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
Economy	Economic Performance	GDP per capita	Positive	Reflects economic development	*	
		Energy productivity rate	Positive	GDP/total energy consumption, reflecting the degree of energy productivity	*	
		Capital productivity rate	Positive	GDP/capital stock, reflecting the degree of capital productivity	*	
	Economic Structure	The proportion of the main business income of high-tech enterprises in GDP	Positive	Measuring the development of high-tech industries and the power of transformation and upgrading	*	
		Consumption rate of residents	Positive	Resident consumption expenditure/GDP, measuring the demand structure		
		The proportion of service trade to foreign trade	Positive	Total import and export of service trade/total import and export of foreign trade		
	Innovation drive	Degree of human capital funding input	Positive	Human capital internal funding expenditure/GDP		
		Number of invention patents per 10,000 people	Positive	Reflecting the possession of independent intellectual property rights	*	
	Level of urban	Internet penetration	Positive	Reflects the degree of	*	*

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
	facilities	rate		development of Internet infrastructure		
		Railroad Density	Positive	Reflecting the development of transportation infrastructure	*	
		Urban traffic carrying capacity	Positive	Reflects the capacity and level of urban public transportation	*	
	Human capital	Percentage of labor force population	Positive	Measures the basic situation of China's human capital stock	*	
		Average years of education of the working age population	Positive	Reflects the quality of human capital	*	
Social	Civility	Per capita ownership of public library collections	Positive	Measures the level of public library development	*	
		Per capita expenditure on cultural undertakings	Positive	Measuring the development of cultural undertakings		
	Fairness	Gini coefficient	Negative	Measuring the income gap of residents		
		Gender differences in labor and employment	Negative	Reflecting the degree of gender equity in labor and employment		
	Social Security	Number of production and safety accidents of billion Yuan GDP	Negative	Reflecting the level of social safety production construction	*	
		Criminal Crime Rate	Negative	Reflecting the social security situation		

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
	Social Governance	Number of social organizations per 10,000 people	Positive	Reflects the level of social governance	*	
		Number of lawyers per 10,000 people	Positive	Reflecting the level of legal system in society	*	
	Social Insurance	Pension replacement rate	Positive	Measures the overall difference in living standards of workers before and after retirement	*	*
		Pension insurance coverage rate	Positive	Measures the coverage of the pension insurance system	*	
		Medical out-of-pocket ratio	Negative	Proportion of personal cash payments	*	
		Poverty incidence rate	Negative	Reflects poverty eradication		
Ecology	Air quality	Air quality index good rate	Positive	Measures air quality status	*	
		Fine particulate matter concentration (PM2.5) non-compliance rate	Negative	Measure of air quality status	*	
	Water Quality	Proportion of surface water bodies worse than V	Negative	Reflect the quality of surface water condition	*	
		River water quality status III or above as a percentage	Positive	Reflecting the water quality of rivers		

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
	Soil Quality	Amount of fertilizer applied per unit of arable land	Negative	Measures the quality of soil	*	
		Amount of pesticide use per unit of arable land	Negative	Measure soil quality	*	
	Environmental management	Harmless treatment rate of urban domestic waste	Positive	Measure the strength and situation of urban environmental governance	*	
		Average daily urban sewage treatment capacity	Positive	Reflects the strength of urban environmental management	*	
	Ecological Protection	Comprehensive treatment area of soil erosion	Positive	Reflecting the ecological protection situation		
		Afforestation area	Positive	Reflecting ecological protection		
People's livelihood	Income	Per capita disposable income of residents	Positive	Reflecting the per capita purchasing power and living standard of residents	*	*
		Per capita consumption expenditure	Positive	Reflects the per capita consumption level of residents	*	*
	Employment	Unemployment rate	Negative	Reflects the allocation of resources in the labor market		
		Demand multiplier	中	Reflects the demand situation of the labor market		
	Residence	Urban residential area per	Positive	Reflects the per capita housing situation of urban	*	

Primary indicators	Secondary indicators	Tertiary indicators	Indicator Direction	Indicator Interpretation	Type of Imbalance	
					Regional	Urban and Rural
		capita		population		
		House price to income ratio	Negative	Burden coefficient reflecting residents' demand for housing	*	
		Rural residential facilities penetration rate	Positive	Reflecting the residential development of rural residents	*	
	Education	Gross enrollment rate of high school	Positive	Reflects the level of enrollment at the high school level		
		Teacher-student ratio at high school level and below	Negative	Reflects teacher resources	*	
		Public funding expenditure	Positive	Reflects investment in education	*	
	Medical Health	Mortality rate	Negative	Reflects the level of health care		*
		Number of health technicians per 1,000 population	Positive	Reflects the level of human resources for health care	*	*
		Longevity at birth	Positive	Reflects the level of disease control and health services		
		Number of elderly beds per 1,000 population	Positive	Measures the level of security of elderly services	*	
Note: * denotes indicators for regions/urban and rural areas						

Appendix D2

Urban Evaluation system of ethnic areas in Southwest China

First-level indicators	Secondary indicators	Tertiary indicators	Indicator direction	Indicator interpretation	Shared index
Economy	Economic benefits	Q3- Gross Regional Product per capita (yuan/person)	is	Reflect economic development	
		Q4- Industrial added Value (100 million yuan)	is	Reflect industrial production	
		Q5- Total imports and exports at the location of the business unit (in thousands of US dollars)	is	Reflect import and export	
	Economic structure	Q6- Technology market turnover (billion yuan)	is	We will measure the development of high-tech industries and their strength for transformation and upgrading	
		Q7- The ratio of the secondary industry to the economy	negative	Reflects the proportion of secondary industry in the national economic structure	
		Q8- Total foreign trade * Ratio of tertiary industry to GDP	is	Reflect the import and export situation of the tertiary industry	
	Innovation-driven	Q9- R&D funds for industrial enterprises above designated size (ten thousand yuan)	is	Reflect the level of high-tech research in society	
		Q10- Number of authorized domestic patent applications (items)	is	Reflect the ownership of independent intellectual property	
	Level of urban facilities	Q11- Total number of public transport passengers (10,000)	is	Reflect the passenger traffic of public transport	*
		Q12- Length of public facilities (10,000 km)	is	Reflect the development of transport infrastructure	*
		Q13- Urban road Area per capita (square meters)	is	Reflects the per capita area of urban roads	*

	Human capital	Q14- Permanent population at year-end (10,000)	is	Measure the basic condition of our human capital stock	*
		Q15- Number of graduates from regular institutions of higher Learning (10,000)	is	Reflect the quality of human capital	*
Society	Social civilization	Q16- Public library holdings per capita (volumes/person)	is	Measure the level of public library development	*
		Q17- Percentage of Cable Broadcast TV Subscribers in Total Households (%)(%)	is	Measuring the development of cultural undertakings	*
	Social equity	Q18- Urban disposable income ratio	is	Measure the income level of urban residents	*
		Q19- Rural income disposable ratio	is	Measure the standard of living in the countryside	*
	Social Security	Q20- Total number of traffic accidents (incidents)	negative	Reflect the social security situation	
		Q21- Total direct property losses from traffic accidents (ten thousand Yuan)	negative	Reflects the level of social production safety	
	Social governance	Q22- Number of social organization units (in number)	is	Reflects the level of democratic governance of the society	*
		Q23- Number of autonomous organizational units (in number)	is	Reflect the level of autonomy of the society	
	Social Security	Q24- Number of urban workers participating in pension insurance (10,000)	is	Measure the pension situation of employees	*
		Q25- Number of people enrolled in unemployment Insurance (10,000)	is	Measure the level of unemployment protection	
		Q26- Number of urban residents covered by basic medical insurance at the end of the year (10,000)	is	Measure the level of medical care	

		Q27- Number of workers' injury insurance enrollees at year-end (10,000)	is	Measure the level of injury protection	
		Q28- Number of people enrolled in maternity insurance at the end of the year (10,000)	is	Measure the level of reproductive protection	
		Q29- Number of urban and rural residents covered by social endowment insurance (10,000)	is	Measure the level of social old-age security	
ecology	Energy resources	Q30- Total amount of natural gas supplied to the city (billion cubic meters)	is	Urban gas supply capacity	
		Q31- Population of urban natural gas users (10,000)	negative	Urban energy demand	
	Water resources	Q32- Combined production capacity of water supply (10,000 cubic meters per day)	negative	Water availability	*
	Land resources	Q33- Total Water resources (billion cubic meters)	is	Water resources stock	
		Q34- Urban area (km2)	is	Urban land resources stock	
	Environmen-tal governance	Q35- built-up area (square kilometers)	negative	Use of land resources in urban areas	*
		Q36- Completed investment in Industrial pollution control (ten thousand Yuan)	is	Treatment of industrial pollution	*
	Ecological protection	Q37- Completion investment of waste gas treatment project (ten thousand Yuan)	is	Control of waste gas pollution	
		Q38- Number of National Nature Reserves (number)	is	Reflect ecological protection	*
	Income	Q39- Area of National Nature Reserve (10,000 hectares)	is	Reflect ecological protection	*
		Q40- Per capita Disposable income of all residents (Yuan)	is	Reflects the per capita purchasing power and living standards of residents	*

People's livelihood	Employment	Q41- Per capita Consumption expenditure of all Residents (Yuan)	negative	Reflects the per capita consumption level of residents	*
		Q42- Urban registered unemployment rate (%)	negative	Reflects resource allocation in the labor market	*
	Live	Q43- Employed persons in urban units (10,000)	is	Reflects the demand of the labor market	*
		Q44- Urban population density (people/km2)	negative	Reflects the burden of urban population	
	Education	Per capita housing area in urban area (person/km2)	is	Reflects the per capita housing demand of residents	
		Q46- Average number of students enrolled in high school per 100,000 population	is	Reflect the regional high school level of education	
	Medical and health care	Q47- Average number of students enrolled in institutions of higher learning per 100,000 population	is	Reflect the regional level of higher education	
		Q48- Educational Expenditure (Ten thousand Yuan)	is	Reflect the input of educational funds	
		Q49- Death rate (per thousand)	negative	Reflects the level of health care	
		Q50- Number of health technicians per 10,000 people (persons)	is	Reflects the level of human resources for health care	
		Q51- Number of beds in medical institutions per 10,000 people	is	Reflects the level of medical and health infrastructure	
		Q52- Local financial expenditure on medical and health care (100 million yuan)	is	Reflects medical input	
Note: The data are from the Urban Statistical Yearbook of the National Bureau of Statistics from 2010 to 2020. * indicates the common index of regions and urban and rural areas					

Appendix D3

Rural Evaluation system of ethnic areas in Southwest China

First-level indicators	Secondary indicators	Tertiary indicators	Indicator direction	Indicator interpretation	Shared index
Economy	Economic benefits	Q3- Gross Regional Product per capita (yuan/person)	is	Reflect economic development	
		Q4- Industrial added Value (100 million yuan)	is	Reflect industrial production	
		Q5- Total imports and exports at - the location of the business unit (in thousands of US dollars)	is	Reflect import and export	
	Economic structure	Q6- Technology market turnover (billion yuan)	is	We will measure the development of high-tech industries and their strength for transformation and upgrading	
		Q7- The ratio of the secondary industry to the economy	negative	Reflects the proportion of secondary industry in the national economic structure	
		Q8- Total foreign trade * Ratio of tertiary industry to GDP	is	Reflect the import and export situation of the tertiary industry	
	Innovation-driven	Q9- R&D funds for industrial enterprises above designated size (ten thousand yuan)	is	Reflect the level of high-tech research in society	
		Q10- Number of authorized domestic patent applications (items)	is	Reflect the ownership of independent intellectual property	
	Level of urban facilities	Q11- Total number of public transport passengers (10,000)	is	Reflect the passenger traffic of public transport	*
		Q12- Length of public facilities (10,000 km)	is	Reflect the development of transport infrastructure	*
		Q13- Urban road Area per capita (square meters)	is	Reflects the per capita area of urban roads	*

	Human capital	Q14- Permanent population at year-end (10,000)	is	Measure the basic condition of our human capital stock	*
		Q15- Number of graduates from regular institutions of higher Learning (10,000)	is	Reflect the quality of human capital	*
Society	Social civilization	Q16- Public library holdings per capita (volumes/person)	is	Measure the level of public library development	*
		Q17- Percentage of Cable Broadcast TV Subscribers in Total Households (%)(%)	is	Measuring the development of cultural undertakings	*
	Social equity	Q18- Urban disposable income ratio	is	Measure the income level of urban residents	*
		Q19- Rural income disposable ratio	is	Measure the standard of living in the countryside	*
	Social Security	Q20- Total number of traffic accidents (incidents)	negative	Reflect the social security situation	
		Q21- Total direct property losses from traffic accidents (ten thousand Yuan)	negative	Reflects the level of social production safety	
	Social governance	Q22- Number of social organization units (in number)	is	Reflects the level of democratic governance of the society	*
		Q23- Number of autonomous organizational units (in number)	is	Reflect the level of autonomy of the society	
	Social Security	Q24- Number of urban workers participating in pension insurance (10,000)	is	Measure the pension situation of employees	*
		Q25- Number of people enrolled in unemployment Insurance (10,000)	is	Measure the level of unemployment protection	
		Q26- Number of urban residents covered by basic medical insurance at the end of the year (10,000)	is	Measure the level of medical care	
		Q27- Number of workers' injury insurance enrollees at year-end (10,000)	is	Measure the level of injury protection	

		Q28- Number of people enrolled in maternity insurance at the end of the year (10,000)	is	Measure the level of reproductive protection	
		Q29- Number of urban and rural residents covered by social endowment insurance (10,000)	is	Measure the level of social old-age security	
ecology	Energy resources	Q30- Total amount of natural gas supplied to the city (billion cubic meters)	is	Urban gas supply capacity	
		Q31- Population of urban natural gas users (10,000)	negative	Urban energy demand	
	Water resources	Q32- Combined production capacity of water supply (10,000 cubic meters per day)	negative	Water availability	*
	Land resources	Q33- Total Water resources (billion cubic meters)	is	Water resources stock	
		Q34- Urban area (km2)	is	Urban land resources stock	
	Environmental governance	Q35- built-up area (square kilometers)	negative	Use of land resources in urban areas	*
		Q36- Completed investment in Industrial pollution control (ten thousand Yuan)	is	Treatment of industrial pollution	*
	Ecological protection	Q37- Completion investment of waste gas treatment project (ten thousand Yuan)	is	Control of waste gas pollution	
		Q38- Number of National Nature Reserves (number)	is	Reflect ecological protection	*
	Income	Q39- Area of National Nature Reserve (10,000 hectares)	is	Reflect ecological protection	*
		Q40- Per capita Disposable income of all residents (Yuan)	is	Reflects the per capita purchasing power and living standards of residents	*

People's livelihood	Employment	Q41- Per capita Consumption expenditure of all Residents (Yuan)	negative	Reflects the per capita consumption level of residents	*
		Q42- Urban registered unemployment rate (%)	negative	Reflects resource allocation in the labor market	*
	Live	Q43- Employed persons in urban units (10,000)	is	Reflects the demand of the labor market	*
		Q44- Urban population density (people/km2)	negative	Reflects the burden of urban population	
	Education	Per capita housing area in urban area (person/km2)	is	Reflects the per capita housing demand of residents	
		Q46- Average number of students enrolled in high school per 100,000 population	is	Reflect the regional high school level of education	
	Medical and health care	Q47- Average number of students enrolled in institutions of higher learning per 100,000 population	is	Reflect the regional level of higher education	
		Q48- Educational Expenditure (Ten thousand Yuan)	is	Reflect the input of educational funds	
		Q49- Death rate (per thousand)	negative	Reflects the level of health care	
		Q50- Number of health technicians per 10,000 people (persons)	is	Reflects the level of human resources for health care	
		Q51- Number of beds in medical institutions per 10,000 people	is	Reflects the level of medical and health infrastructure	
		Q52- Local financial expenditure on medical and health care (100 million yuan)	is	Reflects medical input	
Note: The data are from the Urban Statistical Yearbook of the National Bureau of Statistics from 2010 to 2020. * indicates the common index of regions and urban and rural areas					

Appendix E1

Urban Development Index of Guangxi

Guangxi	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Q3	0.08	0.14	0.17	0.21	0.24	0.28	0.31	0.36	0.41	0.46	0.48
Q4	0.21	0.26	0.27	0.27	0.30	0.31	0.32	0.35	0.38	0.39	0.38
Q5	0.15	0.20	0.25	0.28	0.35	0.44	0.41	0.50	0.53	0.58	0.60
Q6	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.03	0.05	0.06	0.07
Q7	0.81	0.76	0.75	0.74	0.71	0.70	0.68	0.66	0.62	0.60	0.60
Q8	0.11	0.15	0.20	0.23	0.29	0.38	0.37	0.46	0.51	0.56	0.59
Q9	0.09	0.16	0.19	0.22	0.23	0.21	0.22	0.25	0.24	0.28	0.30
Q10	0.03	0.04	0.05	0.07	0.09	0.12	0.14	0.14	0.19	0.21	0.32
Q11	0.28	0.28	0.28	0.27	0.25	0.23	0.23	0.23	0.24	0.23	0.14
Q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q13	0.42	0.42	0.44	0.49	0.50	0.53	0.57	0.60	0.70	0.83	0.93
Q14	0.54	0.54	0.55	0.55	0.56	0.56	0.57	0.58	0.58	0.58	0.59
Q15	0.31	0.34	0.36	0.38	0.39	0.41	0.43	0.48	0.48	0.53	0.60
Q16	0.52	0.47	0.51	0.51	0.65	0.69	0.73	0.75	0.73	0.78	0.80
Q17	0.15	0.17	0.55	0.55	0.41	0.47	0.49	0.47	0.48	0.45	0.55
Q18	1.00	0.92	0.92	0.92	0.91	0.90	0.90	0.88	0.86	0.83	0.86
Q19	0.90	0.84	0.87	0.89	0.89	0.91	0.92	0.92	0.93	0.94	1.00
Q20	0.80	0.80	0.81	0.82	0.82	0.81	0.82	0.82	0.15	0.00	0.09
Q21	0.88	0.88	0.89	0.87	0.88	0.84	0.86	0.86	0.51	0.36	0.47
Q22	0.28	0.29	0.32	0.38	0.44	0.48	0.52	0.53	0.56	0.59	0.63
Q23	0.22	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.23	0.23
Q24	0.16	0.17	0.18	0.19	0.19	0.20	0.26	0.27	0.29	0.30	0.32
Q25	0.22	0.22	0.23	0.24	0.24	0.25	0.26	0.28	0.30	0.34	0.39
Q26	0.29	0.11	0.11	0.11	0.12	0.12	0.12	0.60	0.59	0.60	0.60

Q27	0.17	0.20	0.23	0.24	0.25	0.27	0.28	0.29	0.31	0.33	0.36
Q28	0.18	0.21	0.22	0.23	0.24	0.26	0.27	0.29	0.32	0.35	0.42
Q29	0.48	0.48	0.44	0.47	0.49	0.50	0.51	0.52	0.54	0.57	0.71
Q30	0.01	0.01	0.02	0.02	0.03	0.04	0.05	0.08	0.08	0.09	0.17
Q31	0.96	0.95	0.93	0.91	0.90	0.87	0.84	0.82	0.79	0.76	0.73
Q32	0.65	0.63	0.61	0.60	0.63	0.61	0.60	0.59	0.58	0.61	0.59
Q33	0.32	0.21	0.38	0.37	0.36	0.46	0.40	0.45	0.32	0.38	0.39
Q34	0.51	0.52	0.55	0.55	0.53	0.52	0.52	0.52	0.52	0.52	0.53
Q35	0.72	0.70	0.68	0.66	0.64	0.62	0.60	0.57	0.55	0.53	0.51
Q36	0.38	0.35	0.35	0.74	0.72	1.00	0.53	0.31	0.24	0.20	0.14
Q37	0.15	0.18	0.14	0.59	0.57	1.00	0.56	0.23	0.08	0.09	0.11
Q38	0.45	0.45	0.48	0.62	0.66	0.66	0.42	0.42	0.69	0.69	0.69
Q39	0.00	0.00	0.00	0.00	0.01	0.01	0.19	0.19	0.01	0.01	0.00
Q40	0.18	0.25	0.31	0.37	0.42	0.48	0.55	0.61	0.69	0.74	0.83
Q41	0.90	0.85	0.79	0.76	0.72	0.67	0.62	0.56	0.49	0.41	0.42
Q42	0.35	0.43	0.48	0.52	0.57	0.70	0.70	1.00	0.96	0.83	0.74
Q43	0.35	0.38	0.40	0.45	0.45	0.46	0.45	0.45	0.43	0.45	0.46
Q44	0.72	0.70	0.71	0.71	0.67	0.63	0.61	0.59	0.57	0.55	0.53
Q45	0.31	0.31	0.33	0.33	0.31	0.29	0.29	0.29	0.29	0.29	0.29
Q46	0.51	0.64	0.65	0.62	0.60	0.58	0.57	0.61	0.64	0.67	0.72
Q47	0.18	0.25	0.31	0.36	0.40	0.46	0.50	0.55	0.64	0.76	0.86
Q48	0.13	0.15	0.20	0.24	0.33	0.36	0.43	0.47	0.51	0.56	0.63
Q49	0.67	0.49	0.41	0.39	0.44	0.46	0.52	0.43	0.52	0.46	0.37
Q50	0.21	0.25	0.42	0.36	0.55	0.60	0.66	0.70	0.75	0.83	0.92
Q51	0.04	0.06	0.21	0.28	0.33	0.37	0.40	0.46	0.51	0.59	0.64
Q52	0.13	0.20	0.22	0.25	0.32	0.38	0.44	0.48	0.52	0.53	0.59

Appendix E 2

Urban development index of Guizhou

Guizhou	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Q3	0.00	0.05	0.09	0.14	0.19	0.24	0.29	0.35	0.42	0.47	0.51
Q4	0.11	0.13	0.16	0.19	0.21	0.24	0.26	0.28	0.31	0.33	0.35
Q5	0.03	0.04	0.06	0.07	0.09	0.10	0.05	0.07	0.07	0.06	0.07
Q6	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.06	0.14	0.18	0.20
Q7	0.90	0.88	0.85	0.83	0.80	0.78	0.75	0.72	0.69	0.66	0.65
Q8	0.02	0.04	0.05	0.06	0.08	0.09	0.04	0.06	0.06	0.05	0.06
Q9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Q10	0.03	0.03	0.05	0.07	0.09	0.13	0.10	0.11	0.18	0.23	0.32
Q11	0.22	0.24	0.26	0.27	0.28	0.25	0.30	0.27	0.29	0.28	0.23
Q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q13	0.00	0.00	0.01	0.16	0.20	0.25	0.30	0.30	0.37	0.43	0.80
Q14	0.39	0.40	0.41	0.41	0.42	0.42	0.43	0.43	0.44	0.44	0.44
Q15	0.16	0.18	0.18	0.19	0.21	0.26	0.26	0.33	0.36	0.38	0.44
Q16	0.52	0.29	0.41	0.27	0.31	0.31	0.31	0.39	0.43	0.49	0.47
Q17	0.12	0.23	0.19	0.17	0.14	0.20	0.25	0.48	0.75	0.93	1.00
Q18	0.76	0.68	0.62	0.56	0.54	0.53	0.52	0.51	0.49	0.50	0.51
Q19	0.44	0.41	0.39	0.39	0.43	0.42	0.46	0.50	0.53	0.55	0.58
Q20	0.93	0.94	0.95	0.95	0.96	0.96	0.38	0.27	0.40	0.34	0.31
Q21	0.91	0.88	0.88	0.89	0.91	0.92	0.21	0.00	0.23	0.23	0.27
Q22	0.14	0.15	0.16	0.18	0.20	0.22	0.25	0.27	0.29	0.30	0.30
Q23	0.29	0.29	0.30	0.28	0.28	0.28	0.27	0.25	0.25	0.25	0.26
Q24	0.09	0.10	0.11	0.12	0.12	0.14	0.15	0.21	0.22	0.24	0.25
Q25	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.22	0.24	0.26	0.28
Q26	0.29	0.07	0.07	0.07	0.07	0.11	0.11	0.11	0.49	0.48	0.48

Q27	0.12	0.14	0.17	0.19	0.20	0.21	0.23	0.25	0.26	0.30	0.35
Q28	0.13	0.16	0.19	0.20	0.21	0.22	0.24	0.26	0.28	0.30	0.33
Q29	0.48	0.48	0.35	0.42	0.45	0.47	0.48	0.50	0.52	0.53	0.55
Q30	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.08	0.09	0.11	0.14
Q31	1.00	0.99	0.98	0.95	0.95	0.91	0.90	0.87	0.86	0.83	0.81
Q32	0.87	0.87	0.87	0.87	0.87	0.86	0.84	0.83	0.80	0.76	0.75
Q33	0.12	0.04	0.12	0.07	0.18	0.16	0.14	0.14	0.12	0.15	0.20
Q34	0.13	0.13	0.14	0.14	0.22	0.22	0.27	0.27	0.28	0.32	0.32
Q35	0.88	0.86	0.84	0.80	0.79	0.77	0.76	0.71	0.69	0.68	0.67
Q36	0.28	0.53	0.50	0.79	0.75	0.43	0.23	0.22	0.27	0.36	0.63
Q37	0.21	0.34	0.36	0.91	0.90	0.49	0.22	0.17	0.25	0.29	0.17
Q38	0.17	0.17	0.17	0.17	0.17	0.17	0.42	0.42	0.24	0.24	0.24
Q39	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.00	0.00	0.00
Q40	0.02	0.08	0.13	0.18	0.24	0.29	0.35	0.42	0.49	0.57	0.63
Q41	0.96	0.92	0.88	0.82	0.77	0.72	0.64	0.59	0.55	0.50	0.49
Q42	0.39	0.39	0.52	0.52	0.52	0.52	0.57	0.57	0.57	0.61	0.30
Q43	0.24	0.26	0.29	0.33	0.34	0.34	0.34	0.35	0.34	0.36	0.37
Q44	0.22	0.15	0.20	0.18	0.47	0.46	0.53	0.49	0.46	0.51	0.50
Q45	0.02	0.02	0.03	0.03	0.12	0.12	0.16	0.16	0.17	0.20	0.21
Q46	0.23	0.41	0.51	0.71	0.90	1.00	0.96	0.93	0.88	0.80	0.73
Q47	0.00	0.06	0.12	0.18	0.25	0.30	0.38	0.44	0.49	0.58	0.66
Q48	0.11	0.14	0.18	0.28	0.32	0.40	0.44	0.54	0.55	0.59	0.36
Q49	0.33	0.21	0.20	0.14	0.13	0.12	0.21	0.22	0.23	0.20	0.37
Q50	0.00	0.04	0.23	0.21	0.43	0.53	0.62	0.72	0.81	0.92	0.94
Q51	0.00	0.05	0.28	0.43	0.51	0.58	0.65	0.76	0.82	0.91	0.89
Q52	0.10	0.14	0.17	0.20	0.27	0.33	0.36	0.40	0.45	0.50	0.53

Appendix E 3

Urban development index of Sichuan

Sichuan	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Q3	0.13	0.20	0.26	0.30	0.35	0.37	0.42	0.50	0.59	0.65	0.69
Q4	0.52	0.63	0.70	0.77	0.80	0.80	0.80	0.85	0.92	0.98	1.00
Q5	0.28	0.41	0.51	0.55	0.60	0.44	0.42	0.58	0.77	0.84	1.00
Q6	0.04	0.05	0.09	0.12	0.16	0.23	0.24	0.33	0.80	0.97	1.00
Q7	0.53	0.43	0.36	0.29	0.25	0.25	0.23	0.17	0.08	0.02	0.00
Q8	0.20	0.30	0.38	0.43	0.49	0.37	0.38	0.56	0.77	0.84	1.00
Q9	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Q10	0.30	0.26	0.39	0.43	0.43	0.60	0.58	0.59	0.81	0.76	1.00
Q11	0.58	0.63	0.71	0.76	0.82	0.81	0.81	0.82	0.94	1.00	0.75
Q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q13	0.28	0.30	0.33	0.36	0.36	0.38	0.39	0.39	0.44	0.53	0.63
Q14	0.96	0.96	0.96	0.97	0.97	0.98	0.99	0.99	0.99	1.00	1.00
Q15	0.64	0.66	0.66	0.73	0.78	0.83	0.83	0.89	0.91	0.93	1.00
Q16	0.52	0.39	0.45	0.37	0.39	0.43	0.47	0.53	0.55	0.61	0.65
Q17	0.53	0.54	0.56	0.57	0.58	0.47	0.27	0.12	0.29	0.16	0.11
Q18	0.44	0.40	0.39	0.40	0.43	0.44	0.44	0.41	0.38	0.38	0.39
Q19	0.38	0.35	0.36	0.39	0.45	0.52	0.54	0.54	0.53	0.54	0.60
Q20	0.35	0.41	0.51	0.53	0.55	0.58	0.63	0.66	0.57	0.53	0.54
Q21	0.56	0.40	0.45	0.52	0.40	0.48	0.53	0.60	0.37	0.31	0.40
Q22	0.63	0.66	0.71	0.77	0.83	0.88	0.86	0.93	0.96	0.98	1.00
Q23	1.00	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.62
Q24	0.46	0.53	0.57	0.61	0.65	0.68	0.76	0.82	0.90	0.95	1.00
Q25	0.44	0.51	0.56	0.58	0.60	0.63	0.67	0.74	0.84	0.91	1.00
Q26	0.29	0.26	0.27	0.28	0.29	0.30	0.58	0.89	1.00	1.00	0.99

Q27	0.44	0.49	0.52	0.52	0.53	0.57	0.60	0.66	0.77	0.89	1.00
Q28	0.42	0.53	0.57	0.61	0.64	0.59	0.63	0.68	0.77	0.84	1.00
Q29	0.48	0.48	0.83	0.89	0.89	0.89	0.90	0.91	0.95	1.00	0.96
Q30	0.57	0.61	0.62	0.64	0.66	0.68	0.75	0.78	0.92	1.00	0.94
Q31	0.55	0.50	0.46	0.42	0.38	0.34	0.26	0.19	0.13	0.10	0.00
Q32	0.53	0.52	0.52	0.49	0.44	0.43	0.37	0.28	0.35	0.17	0.00
Q33	0.49	0.42	0.57	0.47	0.49	0.41	0.44	0.47	0.58	0.53	0.65
Q34	0.52	0.54	0.56	0.58	0.58	1.00	0.72	0.77	0.78	0.79	0.82
Q35	0.50	0.45	0.41	0.36	0.31	0.29	0.18	0.12	0.07	0.04	0.00
Q36	0.29	0.67	0.45	0.76	0.94	0.48	0.47	0.51	0.66	0.50	0.99
Q37	0.16	0.45	0.26	0.79	0.88	0.25	0.33	0.47	0.61	0.46	0.40
Q38	0.69	0.72	0.83	0.90	0.93	0.93	0.42	0.42	1.00	1.00	1.00
Q39	0.07	0.07	0.07	0.07	0.07	0.07	0.19	0.19	0.08	0.08	0.08
Q40	0.11	0.19	0.25	0.31	0.38	0.44	0.50	0.58	0.65	0.75	0.82
Q41	0.86	0.80	0.75	0.68	0.62	0.55	0.49	0.43	0.35	0.27	0.24
Q42	0.17	0.13	0.22	0.17	0.13	0.17	0.13	0.22	0.43	0.52	0.39
Q43	0.65	0.70	0.74	0.98	0.94	0.92	0.91	0.92	0.90	0.91	1.00
Q44	0.37	0.35	0.33	0.32	0.27	0.61	0.32	0.30	0.27	0.28	0.25
Q45	0.12	0.13	0.13	0.14	0.14	0.35	0.21	0.23	0.23	0.24	0.25
Q46	0.53	0.58	0.57	0.53	0.46	0.40	0.35	0.29	0.26	0.25	0.26
Q47	0.29	0.34	0.40	0.44	0.49	0.52	0.52	0.53	0.56	0.62	0.71
Q48	0.27	0.34	0.38	0.44	0.60	0.63	0.72	0.78	0.85	0.92	1.00
Q49	0.31	0.24	0.21	0.22	0.18	0.20	0.19	0.17	0.18	0.15	0.37
Q50	0.21	0.26	0.43	0.42	0.58	0.62	0.66	0.74	0.79	0.89	0.96
Q51	0.16	0.23	0.44	0.52	0.60	0.66	0.72	0.81	0.89	0.96	1.00
Q52	0.23	0.34	0.39	0.46	0.55	0.66	0.74	0.80	0.85	0.91	1.00

Appendix E 4

Urban Development Index of Tibet

Tibet	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Q3	0.07	0.11	0.15	0.20	0.25	0.29	0.34	0.40	0.48	0.53	0.60
Q4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Q5	0.01	0.01	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.00
Q6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q7	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.98	0.98	0.97	0.97
Q8	0.01	0.01	0.03	0.03	0.02	0.01	0.00	0.01	0.00	0.00	0.00
Q9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Q11	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q13	0.36	0.37	0.41	0.36	0.43	1.00	0.56	0.44	0.30	0.50	0.77
Q14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Q15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q16	0.52	0.00	0.06	0.25	0.39	0.61	0.67	0.76	0.88	1.00	0.96
Q17	0.00	0.00	0.02	0.13	0.13	0.16	0.19	0.13	0.13	0.13	0.09
Q18	0.63	0.56	0.56	0.53	0.50	0.54	0.53	0.52	0.00	0.00	0.00
Q19	0.40	0.37	0.37	0.40	0.42	0.46	0.46	0.46	0.00	0.00	0.00
Q20	0.98	0.97	0.98	0.98	1.00	1.00	1.00	1.00	1.00	0.99	0.99
Q21	0.97	0.96	0.94	0.95	0.98	1.00	1.00	1.00	1.00	0.97	0.94
Q22	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Q23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Q24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02
Q25	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02
Q26	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03

Q27	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02
Q28	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Q29	0.48	0.48	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Q30	0.23	0.23	0.23	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q31	0.74	0.74	0.74	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99
Q32	1.00	0.98	0.98	1.00	0.98	0.98	0.97	0.98	0.98	0.98	0.98
Q33	0.96	0.92	0.87	0.92	0.92	0.79	0.97	1.00	0.98	0.94	0.96
Q34	0.04	0.06	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03
Q35	1.00	1.00	0.99	0.99	0.99	0.98	0.98	0.98	0.97	0.97	0.97
Q36	0.00	0.00	0.01	0.01	0.04	0.04	0.01	0.00	0.00	0.00	0.01
Q37	0.32	0.32	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.32	0.00
Q38	0.21	0.21	0.21	0.21	0.21	0.21	0.42	0.42	0.28	0.28	0.28
Q39	1.00	1.00	1.00	1.00	1.00	1.00	0.19	0.19	1.00	1.00	1.00
Q40	0.00	0.04	0.08	0.13	0.17	0.23	0.29	0.36	0.44	0.53	0.62
Q41	1.00	0.99	0.97	0.92	0.87	0.83	0.77	0.72	0.66	0.58	0.57
Q42	0.22	0.57	0.83	0.87	0.87	0.87	0.83	0.78	0.74	0.70	0.70
Q43	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.02
Q44	0.98	1.00	0.68	0.63	0.62	0.65	0.40	0.80	0.65	0.67	0.70
Q45	0.82	1.00	0.25	0.24	0.26	0.33	0.34	0.50	0.51	0.50	0.50
Q46	0.02	0.00	0.02	0.06	0.07	0.07	0.07	0.09	0.14	0.20	0.36
Q47	0.11	0.14	0.17	0.18	0.24	0.28	0.28	0.24	0.22	0.21	0.22
Q48	0.00	0.00	0.01	0.03	0.04	0.06	0.06	0.08	0.09	0.10	0.36
Q49	0.65	0.78	0.76	0.70	0.76	0.79	0.79	0.84	0.96	1.00	0.37
Q50	0.17	0.21	0.09	0.23	0.30	0.36	0.38	0.45	0.57	0.66	0.70
Q51	0.10	0.13	0.04	0.19	0.24	0.35	0.35	0.43	0.45	0.45	0.49
Q52	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.06	0.08	0.09	0.11

Appendix E 5

Urban Development Index of Yunnan

Yunnan	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Q3	0.06	0.12	0.17	0.23	0.27	0.29	0.34	0.41	0.48	0.56	0.60
Q4	0.20	0.23	0.26	0.29	0.30	0.30	0.30	0.32	0.36	0.40	0.41
Q5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q6	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.07	0.07	0.07	0.04
Q7	0.82	0.79	0.75	0.72	0.70	0.69	0.68	0.64	0.59	0.54	0.53
Q8	0.09	0.12	0.15	0.19	0.23	0.20	0.16	0.20	0.26	0.28	0.32
Q9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Q10	0.03	0.04	0.05	0.06	0.07	0.11	0.11	0.13	0.19	0.21	0.27
Q11	0.27	0.27	0.29	0.29	0.30	0.31	0.31	0.30	0.32	0.33	0.20
Q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q13	0.23	0.29	0.29	0.31	0.57	0.41	0.50	0.32	0.41	0.46	0.54
Q14	0.53	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.55	0.55	0.55
Q15	0.21	0.24	0.26	0.28	0.31	0.32	0.34	0.39	0.42	0.44	0.53
Q16	0.52	0.35	0.41	0.37	0.41	0.43	0.49	0.49	0.51	0.57	0.61
Q17	0.39	0.46	0.47	0.32	0.24	0.14	0.04	0.06	0.20	0.02	0.09
Q18	0.73	0.69	0.68	0.68	0.64	0.63	0.63	0.59	0.00	0.00	0.00
Q19	0.61	0.63	0.64	0.59	0.64	0.66	0.64	0.63	0.00	0.00	0.00
Q20	0.78	0.76	0.82	0.83	0.73	0.74	0.74	0.74	0.71	0.68	0.69
Q21	0.81	0.79	0.78	0.85	0.73	0.73	0.77	0.75	0.77	0.72	0.79
Q22	0.27	0.29	0.33	0.37	0.42	0.46	0.49	0.50	0.52	0.51	0.51
Q23	0.18	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19
Q24	0.11	0.12	0.13	0.13	0.14	0.14	0.20	0.21	0.21	0.23	0.25
Q25	0.19	0.20	0.21	0.22	0.22	0.23	0.23	0.24	0.25	0.27	0.29
Q26	0.29	0.10	0.10	0.13	0.13	0.13	0.13	0.51	0.52	0.52	0.53

Q27	0.17	0.18	0.22	0.25	0.25	0.27	0.28	0.29	0.30	0.33	0.37
Q28	0.18	0.18	0.20	0.23	0.24	0.25	0.25	0.26	0.29	0.31	0.32
Q29	0.48	0.48	0.61	0.62	0.63	0.66	0.66	0.66	0.69	0.70	0.72
Q30	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.07
Q31	0.99	0.99	0.99	0.99	0.96	0.94	0.90	0.83	0.82	0.80	0.78
Q32	0.84	0.82	0.80	0.81	0.80	0.79	0.78	0.77	0.76	0.75	0.74
Q33	0.35	0.24	0.29	0.29	0.30	0.33	0.38	0.41	0.41	0.25	0.31
Q34	0.15	0.17	0.17	0.29	0.25	0.26	0.27	0.27	0.27	0.27	0.28
Q35	0.79	0.77	0.75	0.73	0.71	0.69	0.66	0.66	0.65	0.64	0.62
Q36	0.43	0.56	0.80	0.97	0.99	0.87	0.51	0.24	0.40	0.48	0.58
Q37	0.39	0.36	0.30	0.87	0.72	0.71	0.50	0.18	0.20	0.45	0.41
Q38	0.45	0.48	0.55	0.59	0.59	0.59	0.42	0.42	0.59	0.59	0.59
Q39	0.03	0.03	0.03	0.04	0.04	0.04	0.19	0.19	0.04	0.04	0.04
Q40	0.06	0.13	0.19	0.25	0.30	0.36	0.42	0.48	0.56	0.64	0.69
Q41	0.93	0.88	0.83	0.80	0.74	0.69	0.65	0.60	0.52	0.45	0.39
Q42	0.13	0.17	0.22	0.22	0.22	0.22	0.39	0.57	0.48	0.52	0.26
Q43	0.36	0.39	0.44	0.48	0.47	0.47	0.47	0.48	0.48	0.41	0.40
Q44	0.07	0.06	0.00	0.46	0.33	0.31	0.29	0.29	0.29	0.25	0.25
Q45	0.00	0.01	0.02	0.12	0.08	0.09	0.10	0.10	0.10	0.10	0.11
Q46	0.27	0.30	0.33	0.28	0.30	0.30	0.32	0.37	0.40	0.43	0.55
Q47	0.12	0.18	0.20	0.24	0.27	0.30	0.33	0.38	0.45	0.55	0.66
Q48	0.13	0.17	0.22	0.27	0.38	0.39	0.45	0.51	0.58	0.64	0.65
Q49	0.32	0.39	0.37	0.37	0.36	0.35	0.33	0.29	0.40	0.44	0.37
Q50	0.13	0.15	0.21	0.32	0.36	0.43	0.51	0.64	0.70	0.85	1.00
Q51	0.18	0.25	0.32	0.38	0.43	0.48	0.53	0.61	0.67	0.74	0.83
Q52	0.15	0.21	0.24	0.27	0.32	0.39	0.44	0.52	0.54	0.58	0.68

Appendix E 6

Urban Development Index of Chongqing

Chongqing	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Q3	0.23	0.34	0.40	0.47	0.54	0.61	0.69	0.78	0.85	0.94	1.00
Q4	0.22	0.27	0.32	0.35	0.40	0.42	0.44	0.46	0.47	0.49	0.52
Q5	0.11	0.25	0.46	0.59	0.82	0.64	0.54	0.57	0.68	0.72	0.81
Q6	0.06	0.05	0.04	0.07	0.13	0.05	0.12	0.04	0.15	0.05	0.09
Q7	0.80	0.75	0.70	0.66	0.62	0.59	0.56	0.52	0.50	0.47	0.43
Q8	0.09	0.21	0.40	0.51	0.72	0.54	0.44	0.46	0.53	0.54	0.61
Q9	0.15	0.25	0.31	0.37	0.45	0.54	0.64	0.75	0.80	0.90	1.00
Q10	0.11	0.14	0.19	0.23	0.22	0.36	0.39	0.32	0.42	0.40	0.51
Q11	0.33	0.36	0.40	0.52	0.58	0.61	0.63	0.64	0.64	0.68	0.50
Q12	0.39	0.49	0.57	0.63	0.72	0.76	0.81	0.86	0.89	0.94	1.00
Q13	0.15	0.21	0.22	0.25	0.28	0.30	0.31	0.33	0.38	0.42	0.44
Q14	0.33	0.33	0.34	0.34	0.34	0.35	0.35	0.35	0.36	0.36	0.36
Q15	0.27	0.29	0.30	0.33	0.37	0.41	0.43	0.44	0.45	0.45	0.48
Q16	0.52	0.39	0.65	0.37	0.45	0.47	0.55	0.69	0.76	0.82	0.84
Q17	0.51	0.50	0.50	0.46	0.41	0.34	0.20	0.06	0.89	0.64	0.63
Q18	0.37	0.34	0.34	0.35	0.37	0.37	0.37	0.37	0.37	0.37	0.38
Q19	0.26	0.25	0.24	0.23	0.26	0.30	0.31	0.32	0.33	0.34	0.36
Q20	0.72	0.73	0.72	0.73	0.75	0.77	0.78	0.78	0.79	0.80	0.81
Q21	0.92	0.90	0.87	0.89	0.89	0.86	0.84	0.87	0.86	0.88	0.91
Q22	0.19	0.22	0.25	0.28	0.31	0.33	0.35	0.36	0.38	0.38	0.39
Q23	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Q24	0.20	0.23	0.25	0.27	0.29	0.30	0.33	0.35	0.37	0.40	0.42
Q25	0.22	0.25	0.30	0.37	0.41	0.42	0.42	0.44	0.46	0.49	0.52
Q26	0.29	0.15	0.37	0.37	0.37	0.38	0.37	0.37	0.37	0.38	0.38

Q27	0.20	0.25	0.28	0.30	0.32	0.32	0.34	0.38	0.43	0.50	0.55
Q28	0.14	0.18	0.21	0.24	0.30	0.30	0.31	0.36	0.38	0.41	0.44
Q29	0.48	0.48	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.32	0.32
Q30	0.28	0.29	0.35	0.35	0.35	0.38	0.42	0.51	0.54	0.58	0.57
Q31	0.67	0.67	0.64	0.63	0.59	0.54	0.50	0.47	0.46	0.44	0.42
Q32	0.77	0.76	0.75	0.72	0.71	0.70	0.67	0.65	0.64	0.64	0.58
Q33	0.00	0.01	0.00	0.00	0.04	0.00	0.03	0.05	0.02	0.01	0.07
Q34	0.51	0.51	0.55	0.56	0.60	0.64	0.68	0.68	0.68	0.70	0.71
Q35	0.75	0.69	0.69	0.67	0.63	0.60	0.59	0.57	0.55	0.54	0.52
Q36	0.31	0.20	0.15	0.32	0.20	0.24	0.15	0.25	0.20	0.15	0.16
Q37	0.15	0.04	0.09	0.38	0.18	0.24	0.14	0.27	0.12	0.10	0.21
Q38	0.00	0.03	0.07	0.10	0.10	0.10	0.42	0.42	0.10	0.10	0.10
Q39	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.00	0.00	0.00
Q40	0.18	0.26	0.34	0.41	0.48	0.56	0.64	0.72	0.82	0.92	1.00
Q41	0.72	0.66	0.61	0.55	0.48	0.42	0.34	0.27	0.19	0.15	0.00
Q42	0.26	0.43	0.52	0.48	0.43	0.39	0.35	0.48	0.65	0.83	0.00
Q43	0.29	0.38	0.39	0.45	0.47	0.47	0.47	0.46	0.44	0.42	0.42
Q44	0.62	0.63	0.63	0.62	0.61	0.60	0.59	0.57	0.57	0.57	0.56
Q45	0.59	0.58	0.62	0.62	0.67	0.71	0.75	0.75	0.74	0.76	0.77
Q46	0.73	0.72	0.73	0.73	0.67	0.61	0.52	0.46	0.44	0.46	0.48
Q47	0.56	0.61	0.70	0.77	0.82	0.84	0.84	0.85	0.85	0.92	1.00
Q48	0.12	0.16	0.20	0.27	0.29	0.34	0.38	0.40	0.44	0.49	0.36
Q49	0.38	0.28	0.23	0.26	0.17	0.12	0.11	0.10	0.01	0.00	0.37
Q50	0.17	0.21	0.38	0.32	0.51	0.57	0.64	0.70	0.79	0.89	0.92
Q51	0.12	0.18	0.37	0.47	0.54	0.64	0.71	0.80	0.87	0.93	0.92
Q52	0.06	0.11	0.14	0.17	0.21	0.28	0.30	0.32	0.34	0.35	0.40

Appendix F1

Guangxi Rural Development Index

Guangxi	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
q3	0.45	0.55	0.58	0.63	0.66	0.70	0.77	0.79	0.83	0.93	1.00
q4	0.69	0.69	0.68	0.68	0.68	0.68	0.66	0.65	0.64	0.63	0.64
q5	0.34	0.32	0.30	0.28	0.26	0.26	0.27	0.35	0.40	0.39	0.57
q6	0.67	0.67	0.70	0.71	0.71	0.70	0.70	0.67	0.67	0.65	0.66
q7	0.25	0.23	0.21	0.20	0.16	0.13	0.00	0.16	0.19	0.21	0.60
q8	0.72	0.70	0.68	0.67	0.64	0.63	0.61	0.61	0.62	0.61	0.52
q9	0.68	0.75	0.80	0.85	0.91	0.97	0.89	0.93	0.96	0.98	1.00
q10	0.06	0.08	0.09	0.10	0.11	0.13	0.14	0.16	0.15	0.16	0.17
q11	0.28	0.28	0.28	0.27	0.25	0.23	0.23	0.23	0.24	0.23	0.14
q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q13	0.42	0.42	0.44	0.49	0.50	0.53	0.57	0.60	0.70	0.83	0.93
q14	0.54	0.54	0.55	0.55	0.56	0.56	0.57	0.58	0.58	0.58	0.59
q15	0.31	0.34	0.36	0.38	0.39	0.41	0.43	0.48	0.48	0.53	0.60
q16	0.52	0.47	0.51	0.51	0.65	0.69	0.73	0.75	0.73	0.78	0.80
q17	0.15	0.17	0.55	0.55	0.41	0.47	0.49	0.47	0.48	0.45	0.55
q18	1.00	0.92	0.92	0.92	0.91	0.90	0.90	0.88	0.86	0.83	0.86
q19	0.90	0.84	0.87	0.89	0.89	0.91	0.92	0.92	0.93	0.94	1.00
q20	0.62	0.62	0.63	0.68	0.68	0.69	0.70	0.69	0.69	0.70	0.70
q21	0.52	0.45	0.18	0.21	0.38	0.17	0.09	0.06	0.04	0.08	0.23
q22	0.28	0.29	0.32	0.38	0.44	0.48	0.52	0.53	0.56	0.59	0.63
q23	0.22	0.22	0.22	0.22	0.21	0.21	0.21	0.21	0.21	0.21	0.21

q24	0.44	0.44	0.44	0.80	0.80	0.78	0.80	0.84	0.84	0.85	0.84
q25	0.65	0.61	0.55	0.52	0.46	0.41	0.33	0.27	0.24	0.11	0.00
q26	0.75	0.79	0.71	0.71	0.68	0.67	0.67	0.67	0.70	0.66	0.67
q27	0.60	0.62	0.67	0.74	0.74	0.70	0.65	0.76	0.92	0.93	0.95
q28	0.45	0.45	0.44	0.47	0.49	0.50	0.51	0.52	0.54	0.57	0.71
q29	0.74	0.74	0.75	0.78	0.78	0.79	0.81	0.82	0.84	0.85	0.86
q30	0.84	0.84	0.86	0.87	0.83	0.87	0.85	0.85	0.85	0.85	0.87
q31	0.17	0.18	0.19	0.16	0.18	0.20	0.21	0.23	0.25	0.27	0.29
q32	0.38	0.35	0.35	0.74	0.72	1.00	0.53	0.31	0.24	0.20	0.14
q33	0.18	0.25	0.32	0.39	0.45	0.52	0.60	0.69	0.79	0.88	1.00
q34	0.93	0.86	0.80	0.77	0.72	0.65	0.59	0.51	0.42	0.31	0.28
q35	0.35	0.43	0.48	0.52	0.57	0.70	0.70	1.00	0.96	0.83	0.74
q36	0.35	0.38	0.40	0.45	0.45	0.46	0.45	0.45	0.43	0.45	0.46
q37	0.54	0.53	0.52	0.51	0.50	0.49	0.48	0.47	0.46	0.45	0.44
q38	0.31	0.31	0.33	0.33	0.31	0.29	0.29	0.29	0.29	0.29	0.29
q39	0.51	0.64	0.65	0.62	0.60	0.58	0.57	0.61	0.64	0.67	0.72
q40	0.18	0.25	0.31	0.36	0.40	0.46	0.50	0.55	0.64	0.76	0.86
q41	0.13	0.15	0.20	0.24	0.33	0.36	0.43	0.47	0.51	0.56	0.63
q42	0.67	0.49	0.41	0.39	0.44	0.46	0.52	0.43	0.52	0.46	0.37
q43	0.21	0.25	0.42	0.36	0.55	0.60	0.66	0.70	0.75	0.83	0.92
q44	0.43	0.01	0.08	0.16	0.22	0.23	0.26	0.30	0.36	0.44	0.51
q45	0.13	0.20	0.22	0.25	0.32	0.38	0.44	0.48	0.52	0.53	0.59

Appendix F2

Guizhou Rural Development Index

Guizhou	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
q3	0.15	0.18	0.23	0.27	0.35	0.45	0.52	0.57	0.60	0.65	0.73
q4	0.69	0.70	0.70	0.71	0.72	0.72	0.72	0.70	0.63	0.62	0.63
q5	0.95	0.92	0.91	0.90	0.91	0.90	0.90	0.90	0.90	0.90	0.57
q6	0.55	0.46	0.59	0.55	0.60	0.62	0.65	0.64	0.54	0.53	0.54
q7	0.86	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.88	0.90	0.60
q8	0.71	0.67	0.64	0.62	0.60	0.60	0.59	0.59	0.55	0.64	0.52
q9	0.38	0.42	0.49	0.53	0.59	0.62	0.47	0.51	0.57	0.60	0.63
q10	0.07	0.09	0.12	0.12	0.13	0.13	0.13	0.12	0.05	0.05	0.05
q11	0.22	0.24	0.26	0.27	0.28	0.25	0.30	0.27	0.29	0.28	0.23
q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q13	0.00	0.00	0.01	0.16	0.20	0.25	0.30	0.30	0.37	0.43	0.80
q14	0.39	0.40	0.41	0.41	0.42	0.42	0.43	0.43	0.44	0.44	0.44
q15	0.16	0.18	0.18	0.19	0.21	0.26	0.26	0.33	0.36	0.38	0.44
q16	0.52	0.29	0.41	0.27	0.31	0.31	0.31	0.39	0.43	0.49	0.47
q17	0.12	0.23	0.19	0.17	0.14	0.20	0.25	0.48	0.75	0.93	1.00
q18	0.76	0.68	0.62	0.56	0.54	0.53	0.52	0.51	0.49	0.50	0.51
q19	0.44	0.41	0.39	0.39	0.43	0.42	0.46	0.50	0.53	0.55	0.58
q20	0.16	0.16	0.16	0.16	0.26	0.29	0.29	0.36	0.37	0.37	0.37
q21	0.52	0.80	0.17	0.47	0.19	0.07	0.10	0.08	0.09	0.04	0.23
q22	0.14	0.15	0.16	0.18	0.20	0.22	0.25	0.27	0.29	0.30	0.30

q23	0.29	0.29	0.30	0.28	0.27	0.27	0.22	0.19	0.19	0.19	0.19
q24	0.41	0.42	0.42	0.51	0.51	0.34	0.51	0.51	0.52	0.52	0.57
q25	0.71	0.66	0.62	0.57	0.50	0.44	0.40	0.33	0.31	0.26	0.17
q26	0.84	0.86	0.82	0.82	0.76	0.76	0.76	0.77	0.76	0.74	0.70
q27	0.83	0.76	0.72	0.69	0.65	0.65	0.82	0.81	0.86	0.90	0.91
q28	0.45	0.45	0.35	0.42	0.45	0.47	0.48	0.50	0.52	0.53	0.55
q29	0.51	0.55	0.56	0.40	0.43	0.48	0.49	0.50	0.51	0.53	0.53
q30	0.69	0.71	0.74	0.76	0.78	0.78	0.80	0.80	0.78	0.78	0.78
q31	0.29	0.31	0.33	0.55	0.57	0.60	0.62	0.64	0.67	0.69	0.72
q32	0.28	0.53	0.50	0.79	0.75	0.43	0.23	0.22	0.27	0.36	0.63
q33	0.00	0.06	0.11	0.17	0.23	0.29	0.34	0.41	0.47	0.55	0.63
q34	0.99	0.94	0.90	0.83	0.78	0.73	0.66	0.60	0.53	0.45	0.40
q35	0.39	0.39	0.52	0.52	0.52	0.52	0.57	0.57	0.57	0.61	0.30
q36	0.24	0.26	0.29	0.33	0.34	0.34	0.34	0.35	0.34	0.36	0.37
q37	0.45	0.45	0.45	0.44	0.43	0.41	0.40	0.38	0.37	0.36	0.34
q38	0.02	0.02	0.03	0.03	0.12	0.12	0.16	0.16	0.17	0.20	0.21
q39	0.23	0.41	0.51	0.71	0.90	1.00	0.96	0.93	0.88	0.80	0.73
q40	0.00	0.06	0.12	0.18	0.25	0.30	0.38	0.44	0.49	0.58	0.66
q41	0.11	0.14	0.18	0.28	0.32	0.40	0.44	0.54	0.55	0.59	0.36
q42	0.33	0.21	0.20	0.14	0.13	0.12	0.21	0.22	0.23	0.20	0.37
q43	0.00	0.04	0.23	0.21	0.43	0.53	0.62	0.72	0.81	0.92	0.94
q44	0.43	0.00	0.12	0.26	0.30	0.33	0.37	0.43	0.59	0.68	0.66
q45	0.10	0.14	0.17	0.20	0.27	0.33	0.36	0.40	0.45	0.50	0.53

Appendix F3

Sichuan Rural Development index

Sichuan	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
q3	0.30	0.38	0.45	0.51	0.55	0.57	0.62	0.65	0.69	0.83	1.00
q4	0.70	0.72	0.73	0.75	0.74	0.74	0.74	0.73	0.73	0.73	0.72
q5	0.25	0.16	0.10	0.05	0.02	0.00	0.02	0.00	0.73	0.72	0.57
q6	0.78	0.85	0.88	0.92	0.94	0.94	0.96	0.97	0.98	0.99	1.00
q7	0.47	0.44	0.36	0.36	0.34	0.32	0.32	0.33	0.39	0.45	0.60
q8	0.30	0.25	0.17	0.13	0.09	0.07	0.05	0.02	0.02	0.00	0.52
q9	0.58	0.64	0.71	0.76	0.81	0.84	0.87	0.90	0.66	0.66	0.68
q10	0.70	0.76	0.83	0.89	0.94	0.99	1.00	1.00	0.24	0.21	0.22
q11	0.58	0.63	0.71	0.76	0.82	0.81	0.81	0.82	0.94	1.00	0.75
q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q13	0.28	0.30	0.33	0.36	0.36	0.38	0.39	0.39	0.44	0.53	0.63
q14	0.96	0.96	0.96	0.97	0.97	0.98	0.99	0.99	0.99	1.00	1.00
q15	0.64	0.66	0.66	0.73	0.78	0.83	0.83	0.89	0.91	0.93	1.00
q16	0.52	0.39	0.45	0.37	0.39	0.43	0.47	0.53	0.55	0.61	0.65
q17	0.53	0.54	0.56	0.57	0.58	0.47	0.27	0.12	0.29	0.16	0.11
q18	0.44	0.40	0.39	0.40	0.43	0.44	0.44	0.41	0.38	0.38	0.39
q19	0.38	0.35	0.36	0.39	0.45	0.52	0.54	0.54	0.53	0.54	0.60
q20	0.75	0.76	0.77	0.77	0.78	0.80	0.82	0.84	0.87	0.91	0.90
q21	1.00	0.62	0.49	0.38	0.27	0.32	0.27	0.12	0.08	0.49	0.23
q22	0.63	0.66	0.71	0.77	0.83	0.88	0.86	0.93	0.96	0.98	1.00

q23	1.00	0.99	0.98	0.98	0.98	0.97	0.97	0.96	0.96	0.91	0.51
q24	0.14	0.15	0.16	0.43	0.44	0.88	0.94	0.89	0.90	0.90	1.00
q25	0.57	0.53	0.48	0.42	0.39	0.35	0.33	0.28	0.26	0.15	0.12
q26	0.41	0.34	0.29	0.20	0.19	0.12	0.05	0.00	0.00	0.11	0.11
q27	0.00	0.20	0.25	0.27	0.36	0.50	0.63	0.71	0.80	0.88	0.98
q28	0.45	0.45	0.83	0.89	0.89	0.89	0.90	0.91	0.95	1.00	0.96
q29	0.78	0.80	0.83	0.82	0.85	0.87	0.90	0.93	0.95	0.97	1.00
q30	0.89	0.93	0.95	0.98	0.98	0.97	0.97	0.97	0.99	0.99	1.00
q31	0.53	0.55	0.58	0.70	0.73	0.76	0.81	0.85	0.90	0.95	1.00
q32	0.29	0.67	0.45	0.76	0.94	0.48	0.47	0.51	0.66	0.50	0.99
q33	0.13	0.22	0.29	0.37	0.44	0.51	0.59	0.67	0.76	0.87	0.97
q34	0.89	0.82	0.75	0.67	0.60	0.53	0.45	0.36	0.26	0.16	0.09
q35	0.17	0.13	0.22	0.17	0.13	0.17	0.13	0.22	0.43	0.52	0.39
q36	0.65	0.70	0.74	0.98	0.94	0.92	0.91	0.92	0.90	0.91	1.00
q37	1.00	0.97	0.95	0.92	0.90	0.88	0.85	0.82	0.79	0.76	0.74
q38	0.12	0.13	0.13	0.14	0.14	0.35	0.21	0.23	0.23	0.24	0.25
q39	0.53	0.58	0.57	0.53	0.46	0.40	0.35	0.29	0.26	0.25	0.26
q40	0.29	0.34	0.40	0.44	0.49	0.52	0.52	0.53	0.56	0.62	0.71
q41	0.27	0.34	0.38	0.44	0.60	0.63	0.72	0.78	0.85	0.92	1.00
q42	0.31	0.24	0.21	0.22	0.18	0.20	0.19	0.17	0.18	0.15	0.37
q43	0.21	0.26	0.43	0.42	0.58	0.62	0.66	0.74	0.79	0.89	0.96
q44	0.43	0.22	0.34	0.41	0.49	0.55	0.65	0.78	0.86	0.96	1.00
q45	0.23	0.34	0.39	0.46	0.55	0.66	0.74	0.80	0.85	0.91	1.00

Appendix F4

Tibet Rural Development Index

Tibet	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
q3	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02
q4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q5	1.00	0.99	0.98	0.97	0.98	0.97	0.96	0.97	1.00	1.00	0.57
q6	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
q7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.60
q8	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.52
q9	0.00	0.01	0.02	0.04	0.05	0.07	0.07	0.04	0.05	0.05	0.06
q10	0.07	0.11	0.15	0.20	0.27	0.33	0.38	0.40	0.20	0.21	0.21
q11	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q13	0.36	0.37	0.41	0.36	0.43	1.00	0.56	0.44	0.30	0.50	0.77
q14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
q15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q16	0.52	0.00	0.06	0.25	0.39	0.61	0.67	0.76	0.88	1.00	0.96
q17	0.00	0.00	0.02	0.13	0.13	0.16	0.19	0.13	0.13	0.13	0.09
q18	0.63	0.56	0.56	0.53	0.50	0.54	0.53	0.52	0.00	0.00	0.00
q19	0.40	0.37	0.37	0.40	0.42	0.46	0.46	0.46	0.00	0.00	0.00
q20	0.07	0.07	0.07	0.06	0.06	1.00	0.99	0.01	0.01	0.01	0.01
q21	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.23
q22	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00

q23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
q24	0.00	0.00	0.00	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03
q25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.98
q26	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.98
q27	0.72	0.99	0.98	0.96	0.91	0.91	0.94	0.96	0.99	1.00	0.72
q28	0.45	0.45	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
q29	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03
q30	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
q31	0.00	0.00	0.00	0.07	0.07	0.04	0.03	0.04	0.05	0.06	0.06
q32	0.00	0.00	0.01	0.01	0.04	0.04	0.01	0.00	0.00	0.00	0.01
q33	0.03	0.09	0.15	0.22	0.29	0.36	0.42	0.52	0.61	0.73	0.86
q34	1.00	0.99	0.97	0.92	0.86	0.81	0.77	0.72	0.66	0.59	0.55
q35	0.22	0.57	0.83	0.87	0.87	0.87	0.83	0.78	0.74	0.70	0.70
q36	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.02
q37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q38	0.82	1.00	0.25	0.24	0.26	0.33	0.34	0.50	0.51	0.50	0.50
q39	0.02	0.00	0.02	0.06	0.07	0.07	0.07	0.09	0.14	0.20	0.36
q40	0.11	0.14	0.17	0.18	0.24	0.28	0.28	0.24	0.22	0.21	0.22
q41	0.00	0.00	0.01	0.03	0.04	0.06	0.06	0.08	0.09	0.10	0.36
q42	0.65	0.78	0.76	0.70	0.76	0.79	0.79	0.84	0.96	1.00	0.37
q43	0.17	0.21	0.09	0.23	0.30	0.36	0.38	0.45	0.57	0.66	0.70
q44	0.43	0.13	0.05	0.19	0.25	0.26	0.19	0.25	0.31	0.39	0.48
q45	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.06	0.08	0.09	0.11

Appendix F5

Yunnan Rural Development Index

Yunnan	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
q3	0.30	0.38	0.45	0.51	0.55	0.57	0.62	0.65	0.69	0.83	1.00
q4	0.97	0.98	0.99	1.00	0.99	0.98	0.98	0.97	0.98	0.97	0.97
q5	0.25	0.16	0.10	0.05	0.02	0.00	0.02	0.00	0.73	0.72	0.57
q6	0.78	0.85	0.88	0.92	0.94	0.94	0.96	0.97	0.98	0.99	1.00
q7	0.47	0.44	0.36	0.36	0.34	0.32	0.32	0.33	0.39	0.45	0.60
q8	0.30	0.25	0.17	0.13	0.09	0.07	0.05	0.02	0.02	0.00	0.52
q9	0.58	0.64	0.71	0.76	0.81	0.84	0.87	0.90	0.66	0.66	0.68
q10	0.70	0.76	0.83	0.89	0.94	0.99	1.00	1.00	0.24	0.21	0.22
q11	0.27	0.27	0.29	0.29	0.30	0.31	0.31	0.30	0.32	0.33	0.20
q12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q13	0.23	0.29	0.29	0.31	0.57	0.41	0.50	0.32	0.41	0.46	0.54
q14	0.53	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.55	0.55	0.55
q15	0.21	0.24	0.26	0.28	0.31	0.32	0.34	0.39	0.42	0.44	0.53
q16	0.52	0.35	0.41	0.37	0.41	0.43	0.49	0.49	0.51	0.57	0.61
q17	0.39	0.46	0.47	0.32	0.24	0.14	0.04	0.06	0.20	0.02	0.09
q18	0.73	0.69	0.68	0.68	0.64	0.63	0.63	0.59	0.00	0.00	0.00
q19	0.61	0.63	0.64	0.59	0.64	0.66	0.64	0.63	0.00	0.00	0.00
q20	0.75	0.76	0.77	0.77	0.78	0.80	0.82	0.84	0.87	0.91	0.90
q21	1.00	0.62	0.49	0.38	0.27	0.32	0.27	0.12	0.08	0.49	0.23
q22	0.27	0.29	0.33	0.37	0.42	0.46	0.49	0.50	0.52	0.51	0.51
q23	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16

q24	0.14	0.15	0.16	0.43	0.44	0.88	0.94	0.89	0.90	0.90	1.00
q25	0.57	0.53	0.48	0.42	0.39	0.35	0.33	0.28	0.26	0.15	0.12
q26	0.41	0.34	0.29	0.20	0.19	0.12	0.05	0.00	0.00	0.11	0.11
q27	0.00	0.20	0.25	0.27	0.36	0.50	0.63	0.71	0.80	0.88	0.98
q28	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
q29	0.78	0.80	0.83	0.82	0.85	0.87	0.90	0.93	0.95	0.97	1.00
q30	0.89	0.93	0.95	0.98	0.98	0.97	0.97	0.97	0.99	0.99	1.00
q31	0.53	0.55	0.58	0.70	0.73	0.76	0.81	0.85	0.90	0.95	1.00
q32	0.43	0.56	0.80	0.97	0.99	0.87	0.51	0.24	0.40	0.48	0.58
q33	0.04	0.11	0.17	0.23	0.29	0.36	0.42	0.48	0.56	0.65	0.72
q34	0.95	0.90	0.85	0.83	0.77	0.71	0.67	0.62	0.53	0.45	0.39
q35	0.13	0.17	0.22	0.22	0.22	0.22	0.39	0.57	0.48	0.52	0.26
q36	0.36	0.39	0.44	0.48	0.47	0.47	0.47	0.48	0.48	0.41	0.40
q37	0.61	0.59	0.57	0.56	0.55	0.53	0.51	0.50	0.49	0.48	0.46
q38	0.00	0.01	0.02	0.12	0.08	0.09	0.10	0.10	0.10	0.10	0.11
q39	0.27	0.30	0.33	0.28	0.30	0.30	0.32	0.37	0.40	0.43	0.55
q40	0.12	0.18	0.20	0.24	0.27	0.30	0.33	0.38	0.45	0.55	0.66
q41	0.13	0.17	0.22	0.27	0.38	0.39	0.45	0.51	0.58	0.64	0.65
q42	0.32	0.39	0.37	0.37	0.36	0.35	0.33	0.29	0.40	0.44	0.37
q43	0.13	0.15	0.21	0.32	0.36	0.43	0.51	0.64	0.70	0.85	1.00
q44	0.43	0.23	0.34	0.41	0.48	0.52	0.58	0.66	0.76	0.86	0.90
q45	0.15	0.21	0.24	0.27	0.32	0.39	0.44	0.52	0.54	0.58	0.68

Appendix F6

Chongqing Rural Development Index

Chongqing	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
q3	0.15	0.19	0.21	0.23	0.24	0.26	0.30	0.31	0.34	0.38	0.46
q4	0.47	0.47	0.47	0.46	0.45	0.45	0.46	0.45	0.45	0.45	0.45
q5	0.84	0.83	0.81	0.78	0.77	0.78	0.78	0.78	0.78	0.78	0.57
q6	0.55	0.54	0.54	0.53	0.53	0.53	0.55	0.55	0.55	0.55	0.55
q7	0.76	0.77	0.78	0.79	0.79	0.80	0.80	0.80	0.81	0.82	0.60
q8	0.71	0.68	0.67	0.65	0.65	0.63	0.63	0.63	0.64	0.66	0.52
q9	0.20	0.22	0.22	0.23	0.25	0.26	0.27	0.28	0.30	0.31	0.32
q10	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
q11	0.33	0.36	0.40	0.52	0.58	0.61	0.63	0.64	0.64	0.68	0.50
q12	0.39	0.49	0.57	0.63	0.72	0.76	0.81	0.86	0.89	0.94	1.00
q13	0.15	0.21	0.22	0.25	0.28	0.30	0.31	0.33	0.38	0.42	0.44
q14	0.33	0.33	0.34	0.34	0.34	0.35	0.35	0.35	0.36	0.36	0.36
q15	0.27	0.29	0.30	0.33	0.37	0.41	0.43	0.44	0.45	0.45	0.48
q16	0.52	0.39	0.65	0.37	0.45	0.47	0.55	0.69	0.76	0.82	0.84
q17	0.51	0.50	0.50	0.46	0.41	0.34	0.20	0.06	0.89	0.64	0.63
q18	0.37	0.34	0.34	0.35	0.37	0.37	0.37	0.37	0.37	0.37	0.38
q19	0.26	0.25	0.24	0.23	0.26	0.30	0.31	0.32	0.33	0.34	0.36
q20	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.00	0.55	0.55
q21	0.18	0.25	0.12	0.14	0.09	0.02	0.06	0.04	0.02	0.02	0.23
q22	0.19	0.22	0.25	0.28	0.31	0.33	0.35	0.36	0.38	0.38	0.39
q23	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06

q24	0.07	0.08	0.08	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14
q25	0.54	0.50	0.48	0.46	0.45	0.45	0.45	0.43	0.44	0.43	0.42
q26	0.87	0.89	0.88	0.89	0.85	0.85	0.84	0.82	0.84	0.84	0.80
q27	0.73	0.83	0.71	0.83	0.90	0.80	0.89	0.90	0.95	0.97	0.98
q28	0.45	0.45	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.32	0.32
q29	0.26	0.26	0.27	0.25	0.25	0.26	0.26	0.26	0.26	0.26	0.26
q30	0.43	0.44	0.46	0.46	0.45	0.46	0.46	0.46	0.46	0.46	0.47
q31	0.22	0.22	0.23	0.24	0.27	0.29	0.30	0.32	0.34	0.35	0.36
q32	0.31	0.20	0.15	0.32	0.20	0.24	0.15	0.25	0.20	0.15	0.16
q33	0.13	0.23	0.30	0.38	0.45	0.53	0.62	0.70	0.79	0.90	1.00
q34	0.82	0.77	0.70	0.62	0.55	0.47	0.40	0.32	0.23	0.15	0.00
q35	0.26	0.43	0.52	0.48	0.43	0.39	0.35	0.48	0.65	0.83	0.00
q36	0.29	0.38	0.39	0.45	0.47	0.47	0.47	0.46	0.44	0.42	0.42
q37	0.24	0.23	0.22	0.22	0.21	0.20	0.19	0.18	0.17	0.16	0.16
q38	0.59	0.58	0.62	0.62	0.67	0.71	0.75	0.75	0.74	0.76	0.77
q39	0.73	0.72	0.73	0.73	0.67	0.61	0.52	0.46	0.44	0.46	0.48
q40	0.56	0.61	0.70	0.77	0.82	0.84	0.84	0.85	0.85	0.92	1.00
q41	0.12	0.16	0.20	0.27	0.29	0.34	0.38	0.40	0.44	0.49	0.36
q42	0.38	0.28	0.23	0.26	0.17	0.12	0.11	0.10	0.01	0.00	0.37
q43	0.17	0.21	0.38	0.32	0.51	0.57	0.64	0.70	0.79	0.89	0.92
q44	0.43	0.24	0.37	0.49	0.42	0.49	0.57	0.61	0.80	0.61	0.51
q45	0.06	0.11	0.14	0.17	0.21	0.28	0.30	0.32	0.34	0.35	0.40