

Study on Synergy of Grassland carbon sink management in Trans-regional Grassland

Qiang Gu^{1, a}, Jun Ma^{2, b,*}

¹International Business School, Inner Mongolia University of Technology, P.R. China, 010080

²International Business School, Inner Mongolia University of Technology, P.R. China, 010080

^a285133001@qq.com, ^b1731595370@qq.com

*Corresponding author

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Abstract. China has about 400 million hectares grassland, accounting for 41.7% of the land area, from the 2013 China Prairie Conference published data, the Chinese grassland CO₂ absorption capacity of 21.7 billion tons, How to effectively integrate the huge grassland carbon sinks has become a problem. Through integrating Grassland carbon sink resources and collaborative management to enhance grassland carbon sink capacity has become one of the key for achieving a systematic national emission reduction target. According to the related concepts of management synergy theory, this paper finds out the problems of obstructing the management and management of carbon sinks in trans-regional grassland from the perspective of inter-regional grassland carbon sequestration and the current situation, present existing problems and base on cross-regional management Mechanism model to give relevant suggestions to promote cross-regional grassland carbon sink management synergies.

Introduction

According to the forest carbon sink management research, carbon sink management is the core of increasing carbon sinks and reducing carbon emissions, Ma Jun et al define the grassland carbon sink management: One is to study the development of relevant policies, the allocation of funds and the use of management; the second is the grassland carbon sinks related management technology and standards development, scientific research and the promotion of the results of the management; third is the grassland carbon sinks related knowledge and technical training and publicity Activities of the management; Fourth, to absorb and fix carbon dioxide as the main purpose of grassland carbon sinks ecological protection activities management. That is through reasonable scientific manage tools and ways to maintain carbon absorption capacity and enhance the carbon sink capacity of carbon sinks, energize the carbon sink.

Synergistic connotation and current situation of carbon sink management in trans-regional grassland

Cross - regional grassland carbon sink management objectives synergy

Cross-regional grassland carbon sequestration management objectives Collaboration is to recognize the synergistic management of grassland from the overall goal of the region, adjust the interrelationships among the inter-regional management elements. China in the Ninth Congress of the Communist Party put forward that actively participate climate change cooperation, according to national emissions reduction plan and low-carbon development requirement, China's major grassland pastoral provinces in its socio-economic development five-year planning program proposed the development of grassland Carbon sink target. Inner Mongolia, according to its grassland characteristics proposed to enhance the grassland carbon sinks, the establishment of grassland carbon sequestration standard system, cultivate carbon trading market, to promote carbon sink trading objectives. Xinjiang, in its thirteen five-year planning program clearly put forward

efforts to enhance carbon sinks, vigorously promote the meadow construction and management. Tibet, its development plan does not directly put forward the contents of the grassland carbon sinks. Qinghai, did not explicitly put forward the relevant carbon sink development goals, but its further strengthen the ecological protection for the San Jiang Yuan Nature Reserve and other areas to ensure that the relevant grassland area carbon sink capacity maintenance and value-added. Sichuan Province is rich in carbon sink management experience, the operation of Sichuan northwest carbon sink project provides rich management experience, recently its plan to increase the forest, grassland, wetland carbon sinks, effectively reduce greenhouse gas emissions.

Cross - regional grassland carbon sink management organization and structure synergy

Cross-regional grassland carbon sink management to achieve the state which regional management organization system in the scale, level, mode, order and other aspects of the co-ordination and fit, highlighting characteristics of the integral ,and the relevant functional departments can form a network-type cooperation. The main body of the trans-regional grassland carbon sink management is the full-time management department of the region. In the main grassland area of china, there are specialized agencies to manage grassland, Inner Mongolia, Xinjiang, Gansu and Qinghai in the department of agriculture and livestock (or the livestock department) with the Grassland office, Grassland management center, Grassland supervision agency, Animal husbandry academy and Grassland research center is responsible for grassland resources exploration, management and planning, in addition to the relevant regional research institutions to assist the management of relevant institutions. Tibet has not yet established an independent grassland management office, it attached to the functions of the Department of Agriculture.

Cross - regional grassland carbon sink management production and operation synergy

Grassland both production and ecological functions. In the development of the region, it is reasonable and effective to give full play to the productive function of grassland to enhance the carbon sink potential of grassland. The development of animal husbandry in the china gradually changed from disorder to order. According to Balanced Management Method of Grass and Livestock, the reasonable carrying capacity standard of grassland was established, taking full use of the development of modern animal husbandry and shepherding husbandry combined with livestock feeding to reduce the grassland carbon source leakage. The main grassland region relies on the inherent advantages of the native pasture, at the same time with the promotion of biotechnology and corporatization of the production model of the popularity, in the agricultural area , shifting zone between cropping area and nomadic area to develop artificial grass, not only can get a lot of high quality forage material, and can effectively achieve the carbon sink function, the third session of the 2014 China Grass Industry Conference in Inner Mongolia Hohhot held, it is estimated that the national grass industry output value has reached 300 billion yuan. The main grassland region are optimizing the grassland agriculture, china start implementing policy which growing forage crops instead of grain crops in grassland areas in 2015. The policy has benefited 431 counties, the national quality alfalfa planting area has more than 13 million acres, it has formed a series of high-quality alfalfa planting bases, such as Gansu Hexi corridor, Inner Mongolia Corqin grassland, Ningxia Hei tao irrigation district, etc.

Cross-regional grassland carbon sink management technology and method coordination

The main grassland administrative subject basic management activities based on the Grasslands law of the People's Republic of China, Grass and Livestock Balance Management Approach and other management regulations and methods. The basic management of the main grassland area relies on the Grassland management station, Grassland supervision station and other grassroots management departments to complete, the Ministry of Agriculture had organized the training course for grassland management exploration, maintenance, basic law enforcement standards, especially for advanced information technology GIS and grassland ecological compensation, to ensure grassland ecological compensation standards and compensation information collection and management standards to encourage the corresponding grassland protection behavior, while promoting the corresponding grass industry technology and grassland repair technology promotion and application. With the construction of carbon trading system, promote and standardize the

carbon emission registration standards become an important aspect of regional development, Beijing-Tianjin-Hebei - Inner Mongolia is promoting carbon emissions trading pilot construction, Inner Mongolia actively promotes the grassland carbon sink into the trading system, Simultaneously cultivate third-party certification organizations and grassland carbon sinks certification standards and technology.

Cross-regional grassland carbon sink management co-existence problems

Cross-regional grassland carbon sink management collaboration target implementation lacks the drive mechanism

Although the grassland provinces try to achieve synergies in development of the grassland carbon sink, due to fragmented administrative system, and lack of appropriate network governance structure and assessment incentives, the relevant department collaboration willingness is not obvious. In addition, due to the lack of synergistic pre-value evaluation mechanism, it is difficult to understand the synergistic value of grassland carbon sink management, so that synergistic subject can't be realized the grassland carbon sink management ecological benefits and economic benefits brought by. As a government decision-making supporting scientific research institutions for the grassland carbon value of the pre-evaluation is not perfect, meanwhile the lack of grassland carbon sink management synergy awareness that can't consolidate cross-regional grassland carbon sink management. It's not conducive to the development of grassland carbon sink economy. Furthermore, it is not conducive to take the grassland carbon sink into the carbon emissions trading and carbon emission reduction cooperation making the development of grassland carbon sink economic income is less than ecological management costs, the corresponding incentive effect is not conducive to the overall development of grassland carbon sink resources.

Cross-regional grassland carbon sink management organization lack communication mechanism and platform

Any obstruction of the information flow will make the grassland carbon sequestration management system become disorderly, and disrupt the progress of collaboration. China's State Forestry Administration sets up the Forest Carbon Sequestration Administration and the Forestry Carbon Sequestration Metrology Monitoring Center, the center has prepared the completion of the Forestry Carbon Sequestration Monitoring Technology Guide, put forward the Forestry Carbon Sequestration Monitoring Index System and Standard for Quantitative Monitoring System for Forestry Carbon Sequestration, and through professional forestry carbon sink site As well as the national seven carbon emissions trading pilot provide transaction information and guidance information, to guide the national forest carbon sequestration projects coordinated development. In the Ministry of Agriculture or the State Forestry Administration has not yet set up a unified grassland carbon sink information integration platform, carbon sink certification agencies and third-party platform has not yet appeared. This is the case that make relevant regional governance in their own governance system to promote grassland carbon Management.it is not conducive to cross-regional grassland carbon sequestration management opportunities to identify, resulting in grassland carbon sink management information isolated island.

The feedback mechanism of collaborative environmental assessment of trans-regional grass carbon sink management is not perfect

The regional grassland ecosystem, as an independent self-organization, can interact with the environment. Under the condition of existing external energy flow, information flow and material flow input, the system will form a new time, space or functional order structure through the synergy between a large numbers of subsystems. China is now the lack of a sound assessment of the feedback agencies, it is difficult for inter-regional grassland carbon sink management to provide a unified goal of a unified management path, meanwhile it is difficult to accurately grasp the stability of grassland carbon sink management environment and the coordination of reality and goal of cognitive gap, It is difficult to effectively promote the coordinated environmental construction of grassland location resources, government environmental protection, environmental policy planning, etc., as well as the complementary unity of regional grassland carbon sink management goals.

And the lack of unified understanding and improvement of the reverse environment of the inter-regional grassland carbon sink management synergy for the lack of grassland carbon tax policy system, grassland management mode and local protectionism, creating an obstacle to the identification of management synergies opportunities, delaying the development of grassland carbon sink economy.

Cross-regional grassland carbon sink management collaborative industry and technical elements of the lack of integrated allocation mechanism

At present, the related behavior and ideas of grassland carbon sinks management promote the implementation of cross-regional grassland carbon sequestration management, but the related industrial factors such as animal husbandry and grassland development have not been combined with the economic development of related grassland carbon sinks, lack of corresponding economic mechanism Grassland resources and industrial elements and the combination of grassland carbon sinks, especially in China, "grain feed" pilot, for example, the pilot involves a wide range of regional main body, most of the region are traditional pastoral and agro- The entire pilot project creates significant grassland carbon sinks that lack the appropriate economic mechanism to incorporate them into carbon emissions trading systems or CDM projects. The corresponding grass industry development due to the lack of appropriate integration mechanism, regional grass industry to focus on ecological restoration projects and greening projects, grass industry enterprises to promote grassland carbon sink economic development, such as Mongolian grass drought ecological restoration projects and projects throughout Beijing, But the carbon sink value has not yet been recognized or incorporated into the carbon trading system. The standard and monitoring system of carbon sequestration management has not been fully constructed. The corresponding grassland carbon sink information collection technology is not popularized on a large scale, and it is still necessary to integrate the government, scientific research units, enterprise across the region.

Suggestions on synergistic management of trans-regional grassland carbon sinks

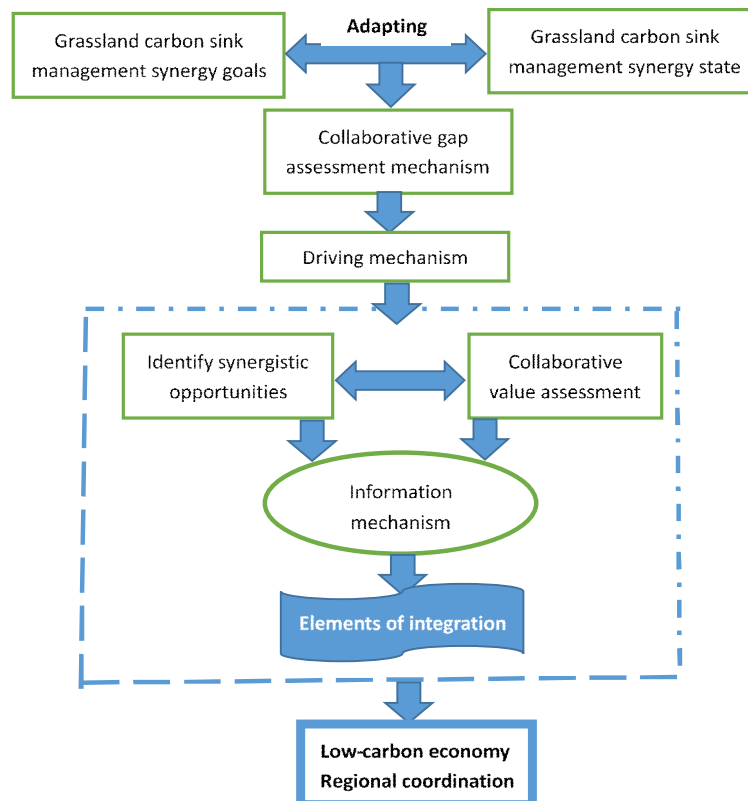


Fig 1, Cross-Regional Grassland Carbon Sequestration Coordination Mechanism Model Framework

promote the implementation of the feedback mechanism of the inter-regional grassland management coordination gap assessment

Cross-regional grassland carbon sequestration management objectives and the development of regional grassland carbon sinks need to adapt to the environment and timely assessment and adjustment, through the inter-regional grassland carbon sequestration management system has the status of resources, capacity level, and face special development environment Factors to find out the gap between the ideal level of the current stage and the inter-regional grassland carbon sequestration management, and further revise the synergistic goals and construct the positive synergistic environment. First of all, under the State Forestry Administration under the guidance of the establishment of forest carbon sequestration management organizations, the establishment of professional institutions and subordinate research institutes to actively study management policies, technical aspects of methodological research for interregional governments and research institutions to provide the basis for assessment work, to guide the related work. Second, under the leadership of the government, independent or fostering relevant scientific research institutions to take the grassland carbon sink management policy, the pilot assessment feedback work, strengthen the assessment of technology and professional training, and actively assume other regional assessment agencies and the central under the professional carbon sink Management of the exchange of communication for the cross-regional grassland carbon sink management to provide appropriate assessment report, modify the target, improve the collaborative environment.

Improve the motivation mechanism of grassland carbon sequestration management across grassland

By the impact of the existing partition management system, cross-regional grassland carbon sink management of the main functions is mixed, the responsibility is unclear. To solve this problem, it is necessary to clarify the responsibility target of low-carbon and green co-development undertaken by cross-regional bodies in grassland carbon sequestration management. The goal of coordinating the responsibility is the first part of the implementation of cross-regional grassland carbon sequestration management cooperation, through integrating originally scattered grassland carbon sink development management objectives, reasonable and clear set of system responsibility objectives can guarantee the success of the follow-up stage. First of all, interregional entities should formulate the implementation of the road map based on their respective socio-economic development plans and national and interregional ecological development plans, through full consultation each other, jointly develop grassland carbon sink development goal, which is a guide to the implementation of relevant actions; Second, interregional governments should make implementation details according to the overall goals, through the implementation of the responsibility level, the formation of the target chain around the overall goal. The realization of the responsibility target relies on the reasonable formulation of the responsibility target and the effective decentralization. And strengthen the grassland regional integration collaborative governance assessment mechanism, through the development of local performance assessment unified grassland ecological carbon sink development assessment criteria, assessment procedures, assessment methods, integrate the development of grassland regional ecology and carbon sequestration into the assessment criteria of regional and related officials.

Promote the cooperative sharing mechanism of grassland carbon sink information for the participation of multivariate regional bodies

Multi-regional participation in information communication mechanism is the basis for the successful implementation of cross-regional grassland carbon sequestration management, Play a role as a link and bridge for the unification of the objectives and implementation of carbon sequestration across the inter-regional grasslands. Inter-regional Management Synergy Opportunity Identification and Collaborative Value Pre-evaluation Only through an integrated information decision-making sharing mechanism to conduct extensive and effective mutual consultation, sharing decisions can be widely recognized and implemented by regional management entities. In order to better cooperate with inter-regional grassland carbon sequestration management, the regional needs to increase the public information of grassland environmental information, breaking

the inter-regional information barriers, improve the transparency of information, on the basis of public information to build an integrated and collaborative leadership mechanism, and identify corresponding synergistic opportunities in cross-region grassland carbon sinks management based on common sharing of information, identify environmental impacts, coordinate implementation and implement system objectives. And undertake the responsibility of environmental response, in response to grassland carbon sink management functions of the main body for the management of the process of mutual information needs, especially the corresponding grassland carbon sink compensation mechanism for the implementation of standard information and other management behavior, as well as timely and effective responses from the general public and society to problems arising from the management of grassland carbon sinks and feedback to the appropriate organizational system. Secondly, we promote high-level grassland carbon sink public service information network with high degree of unified data as a core, and promote regional and national grassland carbon sink information resources sharing among regions.

Using Carbon Sequestration Economic Mechanism to Promote Integration of Factors in Collaborative Management of Interregional Grasslands

Carbon sinks economic development of important aspects of grassland carbon sinks, through actively construction of the national carbon emissions trading market, take advantage of the economic development of forest carbon sequestration to promote grassland carbon sequestration economy international cooperation. On the basis of collaborative opportunity identification, pre-evaluation of collaborative factor value and common decision-making of information, the main body of cross-region grassland carbon sink management integrates the elements of ecological value, industry, human resources, technology and other factors into the grassland carbon sink economy through such ways as connection, integration and infiltration, advance inter-regional economic links among grasslands and grass-low-carbon economy communities development to promote eco-husbandry, eco-grass industry and eco-tourism industries and other green industries to realize the ecological value and economic value of carbon sinks. At the same time, we use the carbon sink economic mechanism to effectively integrate the main bodies of inter-regional grassland carbon sink management to achieve synergies and cooperation, enhance the participation of industry players, close cooperative relationship, take advantage of the systematic advantages of grassland carbon sink resources and achieve the harmonious and sustainable development of grassland carbon sink management.

Conclusions

The low-carbon economy and the regional coordinated development are the order variables of the cross-region grassland carbon sinks management system and the fundamental goal and the final state of synergy management of cross-region grassland carbon sinks, the management and implementation of this sequence variable requires the joint efforts of various regional governments to build a complete synergy mechanism to integrate grassland carbon sink resources in the region. This is the first step to realize the synchronization of trans-regional grassland carbon sink management, which requires constant and close cooperation between regional bodies.

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