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IMPLEMENTING THE BIOSPHERE RESERVE CONCEPT IN CHINA

EVALUATION OF THE EFFECTS ON NATURE RESERVES MANAGEMENT

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Introduction

China, like most of the developing countries around the world is struggling to achieve a balance between nature protection and economic development. A particular challenge is establishing a system of protected areas while meeting local communities' needs for natural resources. Despite the intensive migration from rural towards urban areas, large communities remain in remote areas. The livelihoods of these communities are highly dependent on the natural resources found in the surrounding their communities, many of which are abundant with biodiversity.

Since the 1990s, the Chinese government has responded to the country's immense population growth with economic policies that have provided for strong economic development, but at the expense of intensive exploitation of natural resources and hazardous environmental degradation. Between 1993 and 2013, almost 646 million people were brought out of poverty[1] (World Bank, 2017), but as a result of both population and economic growth there has been irreversible damage of important ecosystems around the country as well as severe pollution within major cities. Furthermore, economic growth has enlarged the middle class, making it possible for an increasingly large number of people to escape highly polluted city environments as tourists in the countryside. This ever-growing tourism demand has put additional pressure on China's natural ecosystems.

China has followed the global trend and put the adoption of sustainable development on the national agenda. China has been one of the first developing countries to formally adopt a sustainable development strategy (Zhang & Wen, 2008) through the Ten Strategic Policies for Environment and Development (NEPA, 1994) as well as by adopting China's Agenda 21. Moreover, China has been one of the first developing countries to join the UNESCO Man and the Biosphere (MAB) Programme by designating three Biosphere Reserves in 1979, namely the Changbaishan, Dinghushan and Wolong Biosphere Reserves (UNESCO, 2017a).

The UNESCO MAB Programme was launched in late 1971 (UNESCO, 1974), when its International Coordinating Committee on its first session outlined the role of the so-called Biosphere Reserves in meeting scientific, economic, educational, cultural and recreational needs. A Biosphere Reserve is a protected area, which demonstrates an integrated approach to nature conservation of important ecosystems and economic development of local communities. As a protected area, a Biosphere Reserve integrates three equally important functions: nature conservation, sustainable

[1] According to international standards: people living on less than $1.90 a day.

development as well as logistical support, which refers to scientific research and education in support of the first two functions (UNESCO, 1995). As of May 2017, there were 669 Biosphere Reserves established in 120 countries across the world, out of which 33 were located in China (UNESCO, 2017b). The active role of China in the UNESCO MAB program is rather intriguing. The Chinese opening-up reform policy has favored economic development over environmental policies (Jahiel, 1998; Zhang & Wen, 2008; Yang et al. 2015). Still, China has been playing an important role in the MAB Programme, which has an agenda of balancing development with nature protection. In this paper we are exploring how China has managed this duality regarding protecting its ecosystems while eliminating poverty of communities living within and around the protected areas. Since most common protected areas in China are Nature Reserves, the initial analysis focuses on detecting challenges in the management of these protected areas. Furthermore, taking into consideration that the Biosphere Reserves in China are closely related to the national Nature Reserves, this paper intends to analyze the effects that the Biosphere Reserve designation brings to Nature Reserves in terms of their management.

1. Management of Nature Reserves in China

1.1. Characteristics of Chinese Nature Reserves

Historically, the concept and the management of protected areas evolved in various ways throughout the Chinese political context (Robbins & Harrell, 2014). China has developed diverse protected areas, such as Nature Reserves, National Parks, Geo-parks, Eco-parks, Mining Parks, and Forest Parks. The first protected areas and the most common ones today are Nature Reserves.

The designation of Nature Reserves in China began in the middle of the last century, with the establishment of the Dinghu Shan Nature Reserve in Guangdong Province in 1956 (Yang et al., 2015). Today, there are 2740 Nature Reserves, of which 446 are National Nature Reserves[2]. Over the decades of Nature Reserves' designation and management, China has followed three principles, namely "emergent rescue conservation; designation first and conservation follows; management improvement system step by step" (Ouyang 2002). For a long time, Nature Reserves' designation and

[2] Chen Ji'ning, Minister of Environment Protection, State Council Report on Nature Reserves establishment and management, July 2016. Retrieved from: http://www.npc.gov.cn/npc/xinwen/2016-07/01/content_1992679.htm, [Accessed: May, 2017].

management in China occurred without standard regulation or law. It was not until 1993 that the National Environment Protection Administration (since 2008, the Ministry of Environment Protection) established the National Principle for Categories and Grades of Nature Reserves[3]. In 1994, the Chinese State Council issued the Chinese Nature Reserve Regulation[4].

This regulation defines Nature Reserves as: "Areas of land, inland water and ocean where protected objects, such as representative natural ecological systems, rare and endangered wild plants and animals, are naturally concentrated, and where natural heritage with special significance are located. The areas are demarcated according to law and receive special protection and management."[5]

The Nature Reserves are divided according to their:

1. Natural characteristics with three categories (ecosystem reserves, wildlife reserves, and natural heritage reserves), which are then further sub-divided into nine secondary categories.

2. Hierarchical level of designation (grades) as national or local Nature Reserves. The latter are designated at the provincial, city and county levels. Local Nature Reserves can become national reserves if they have particularly significant natural or scientific value.

According to these two criteria, the Nature Reserves' management will be either horizontal or vertical. The horizontal management authorities follow the categories for Nature Reserves and/or their functional jurisdiction, while the vertical management authority is based on the designation grade of the Nature Reserves.

In general, the management of Chinese Nature Reserves takes a hierarchical administrative approach, coupled with horizontal management network. On the one hand, several ministries have authority over various categories of Nature Reserves. However, the distribution of the horizontal power is not clarified in the Chinese Nature Reserve Regulation, and the practice of the horizontal

[3]《自然保护区类型与级别划分原则》- National Principle to Categorize and Rank Nature Reserves (GB/T 14529- 93), Retrieved from: http://www.mep.gov.cn/home/ztbd/rdzl/zgzrbhqzy/kpzs/201512/t20151230_320779.shtml, [Accessed: May, 2017].

[4]中华人民共和国自然保护区条例, Retrieved from: http://www.gov.cn/flfg/2005-09/27/content_70636.htm. [Accessed: May, 2017]. State Council revised the regulation in January 2011.

[5] In Chinese: 本条例所称自然保护区是指对有代表性的自然生态系统、珍稀濒危野生动植物物种的天然集中分布区、有特殊意义的自然遗迹等保护对象所在的陆地、陆地水体或者海域，依法划出一定面积予以特殊保护和管理的区域.

power differs case by case, which has left pressure for coordination efforts. On the other hand, the designation and daily management of Nature Reserves follows the government's vertical hierarchy.

1.2. Challenges in Nature Reserve management

The country's institutional structure, along with the context in which Nature Reserves developed, has various implications for their management. Four main challenges are related to the regulations governing Nature Reserves, various institutional barriers, the limited availability of management resources, and insufficient levels of local community involvement in Nature Reserve management.

(1) Insufficient regulation of economic development

The Nature Reserve Regulation outlines the management principles, focusing predominantly on conservation. Directives regarding development in Nature Reserves are scarce and general. Article 5 states "local economic development and local residents' livelihoods shall be taken into consideration, when establishing and managing the Nature Reserves"[6]. Article 14 states, "zoning of Nature Reserves shall consider the integrity of conserved targets, and the livelihood and economic development of local communities". There are no further detailed regulations regarding how to achieve the general provisions of the law. The recreational value of Nature Reserves and their development are not recognized in the legislation. Therefore, Nature Reserves generally remain strictly protected areas, with a traditional conservation management approach. However, scientists suggest that expanding Nature Reserves for achieving balance between strict protection and sustainable use of natural resources would greatly improve biodiversity conservation while improving human livelihoods (Xu et al., 2017).

(2) Institutional challenges

The management of Nature Reserves is embedded in the government's administrative system but there are ambiguities regarding which authorities have which responsibilities and duties (Cao et al., 2015), generating coordination challenges for the management of Nature Reserves.

[6] In Chinese, 建设和管理自然保护区，应当妥善处理与当地经济建设和居民生产、生活的关系，中华人民共和国自然保护区条例 (Chinese Nature Reserve Regulation). Retrieved from: http://www.gov.cn/flfg/2005-09/27/content_70636.htm. [Accessed: May, 2017].

The institutional complexity of Nature Reserves in China creates persistent difficulties for their effective management. A major issue is institutional overlap and conflicts between the Nature Reserves and the management structures of other protected areas. Additionally, lack of clarity regarding administrative authorities' responsibilities and jurisdictions poses challenges for the effective management of Nature Reserves. There were initiatives on setting up a coordinated Nature Reserves law submitted to National People Congress Standing Committee since 2006, which triggered discussions around the reforms in Nature Reserve management. The Chinese Communist Party (CCP) Central Committee initiated National Park Institutional Reform (52nd article) at the Third Conference of 18th Chinese Communist Party Central Committee in November 2013. Both Ecological Civilization Reform Comprehensive Plan[7] and Building National Park Comprehensive Plan[8] address the problems associated with institutional complexity of Nature Reserves management. In 2017, pilot projects have been established in ten Nature Reserves (Xu et al., 2017), to test the proposed institutional reform aiming to improve the coordination of Nature Reserves management and balance between development and conservation.

(3) Lack of resources for management

The management agencies[9] have been struggling with lack of adequate resources, including in terms of funding, authority, staff, time, and personnel management expertise. A particularly important hurdle relates to financial resources (Han, 2000; Ouyang et al., 2002; Su, 2006; Wang et al., 2011). With China's rapid economic growth more financial resources have been allocated to biodiversity conservation, particularly through the ''Wildlife Conservation and Nature Reserve Construction Project'' and the ''Special Fund for Capacity Building of National- level Nature Reserves'' in 2001 (Mei and Zhang, 2006). Nature Reserves receive most of their financial resources

[7] In Chinese: 中共中央，国务院印发《生态文明体制改革总体方案》(CCP Central Committee and State Council delivered Ecological Civilization Reform Comprehensive Plan). Retrieved from: http://www.gov.cn/guowuyuan/2015-09/21/content_2936327.htm. [Accessed: February, 2018].

[8] In Chinese: 中共中央办公厅，国务院办公厅印发《建立国家公园体制总体方案》(General Office of CCP Central Committee and General Office of State Council delivered Building National Park Comprehensive Plan). Retrieved from: http://www.gov.cn/zhengce/2017-09/26/content_5227713.htm [Accessed: February, 2018]

[9] Nature Reserves' management agencies are established and funded by the Chinese government. According to Article 21, 22, and 23 of the Chinese Nature Reserve Regulation, the government administration, which has authority over Nature Reserves, has responsibility to establish a management agency, designate staff, and provide funding for each Nature Reserve. In some cases, the State Council also provides partial funding for Nature Reserves' management.

from the government with a smaller share obtained from ecotourism as well as domestic and international donors. Although the government provides the main funding for Nature Reserves, there is a significant difference in allocation of financial resources to different Nature Reserves (Li et al., 2013). The funding level depends on a Nature Reserves' category (depending on which government institution it is managed by) and grade (national reserves get more governmental funding than local ones). Some Nature Reserves are solely funded by the government. A survey found that 34% of national Nature Reserves receive insufficient funding for their expenses (Li et al., 2013). In some cases lack of financial resources has encouraged revenue generation to cover management costs and staff salaries, which results in pro-development practices. In such Nature Reserves, the management agencies tend to put more efforts into maintaining their financial sustainability through the use of the natural resources rather than their conservation. Management agencies are captured in contradictory roles.

(4) Local communities' participation

The engagement of local communities has been a persistent challenge for effective management of Nature Reserves in China. The key message of the Nature Reserve Regulation is conservation and not the livelihoods of the people living inside and around the protected areas, which are only vaguely considered. Historically, establishment and management of the Nature Reserves were often implemented at the cost of local residents' interests. Such practice generated harsh conflicts between local communities and the management agencies, which resulted in ineffective Nature Reserve management. The management deadlocks motivated some of the Nature Reserve management agencies to abandon the traditional strict-conservation approach and take into consideration the needs of local communities although this is not everywhere the case. Community involvement depends much on the local context, and such factors as the power and capacity of local communities and the willingness of the local management agency to put community engagement on the agenda (e.g. Jiuzhaigou and Wuyi Nature Reserves).

The common models of community participation in Chinese Nature Reserve management include regular or irregular meetings to inform the local communities, joint protection activities on forest fire prevention, patrolling, joint protection committees and regular consultation with local communities (Zhu'ge, 2000). Participation in decision-making processes is not common for Chinese Nature Reserves. However, some of the cases in China show that participation of local communities may take various forms, including direct participation in the nature protection activities, as well as

participation in economic development actions. For example, in the Jiuzhaigou case, local communities have participated in tourism development and benefit sharing by working for the Nature Reserve management agency or contributing to establishing tourism companies. One of the characteristics of the Jiuzhaigou benefit sharing system is that the management agency holds majority ownership (51%) and decision-making power over tourism development in the Jiuzhaigou Nature Reserve, whereas the local communities enjoy most of the tourism profit. The revenues from admission fee and the tourism service center are shared between the management agency and the local communities; nevertheless residents also profit from family businesses related to tourism (Ren, 2005; Gu et al., 2013). Another example is demonstrated in the case of Wuyi Nature and Biosphere Reserve, where local management agency has taken some actions to improve local communities livelihoods and to engage local communities in activities that support nature conservation goals. Wuyi Management Agency provided technical training for local residents on moso bamboo and black tea production. The agency further supported the communities to select quality bamboo seeds and promoted the indigenous black tea (UNESCO, 2010), which significantly increased the production and the average income per capita (Huang & Chen, 2015). Furthermore, the management agency hired local residents as forest rangers and road maintainers, and established the Forest Fireman Brigade, which employed only local community residents (Huang & Chen, 2015). These forms of community engagement have contributed to more effective overall management of the Nature Reserve.

2. Implementation framework of the UNESCO MAB Program in China

There is a close connection between Nature Reserves and Biosphere Reserves in China. Mainly national Nature Reserves are nominated as Biosphere Reserves. In 1993, the Chinese National Committee for the UNESCO MAB Program, responsible for the implementation of the MAB Program in China, created a so-called China Biosphere Reserve Network (CBRN). at the end of 2016, list was composed of 161 protected areas[10] (Chinese National Committee for MAB, 2017a), out of which 33 were the already designated Biosphere Reserves under the UNESCO MAB Programme. The other members on the list are mainly National Nature Reserves, which have the potential to become

[10] Chinese National Committee for Man and Biosphere Reserves Program, training session. Retrieved from: http://www.mab.cas.cn/px/ [Accessed: September, 2017].

Biosphere Reserves. Basically, the CBRN serves as a pool of Biosphere Reserves, which could be nominated to join the World Network of Biosphere Reserves (WNBR).

Once included in the World Network, the Biosphere Reserves in China are qualified to apply for support from the government (McBeath & Leng, 2006, p.175). Furthermore, being part of the international network increases the opportunities for capacity building, particularly through research as well as through exchanging knowledge and experience by cooperating with other Biosphere Reserves from the World Network.

The Chinese National Committee for MAB plays the bridging role between the Chinese Nature Reserves and the Biosphere Reserves. Since its establishment in 1978, the Secretariat of the Committee has been operating in the Chinese Academy of Sciences (CAS). As the ex officio Chair member of the Committee, CAS provides funding and staff support for the Committee (Chinese National Committee for MAB, 2017b). The Ministry of Environment Protection, the Ministry of Agriculture, the State Forest Administration, and the Chinese National Commission for UNESCO are ex officio deputy-chair members of the Committee (Statutes of Chinese National Committee for MAB, 2015). While the Committee enjoys autonomy from the (central) government (McBeath & Leng, 2006), it benefits from a wide network of experts, media, research institutes, associations, and private companies. The main activities of the Chinese MAB National Committee focus on capacity building, for example, providing training for local Nature Reserve management staff on communication, monitoring, policy briefing, use of advanced technologies, etc. Furthermore, its activities include: support for the national Nature Reserves to be designated as Biosphere Reserves, management of the CBRN, facilitation of networking among Biosphere Reserves, organization of trainings and support for scientific research (Chinese National Committee for MAB, 2017b). Furthermore, the national MAB Committee developed schemes to recognize and award the efforts in the Biosphere Reserve implementation, such as, awards for managers and rangers but also supporting research related to Biosphere Reserves through providing research grants and organizing the young scientists award. The national recognition of excellence is an incentive for improvement of the existing Nature Reserves aiming to become Biosphere Reserves.

3. The effects of the Biosphere Reserve designation on the Nature Reserves management

In China the Biosphere Reserve designation is considered more like a certification value, which demonstrates whether the Nature Reserves have reached a certain internationally recognized

standard. This recognition of the international branding in China represents a value for a particular quality. At the national level it is regarded as a title of excellence, rather than as a tool to change management practices. Therefore, the Biosphere Reserves in China do not necessarily aim at testing different approaches to balancing nature conservation and economic development but rather serve as a motivation of Nature Reserves to accomplish this balance in order to get the deserved internationally renowned designation.

Historically, when Nature Reserves were established on the basis of strict conservation measures, this tended to trigger resentment and resistance from local communities. The management difficulties pushed the Nature Reserves' management agencies to consider the interests of local communities and their economic development concerns. Considering that the Biosphere Reserve concept aims to address the duality between nature conservation and economic development, the designation of a Nature Reserve as a Biosphere Reserve is expected to enforce a balanced approach in conservation and development.

The Biosphere Reserve status however, unlike the World Heritage status, has less binding power. It is envisioned as a bottom-up voluntarily motivated designation, which offers flexibility in its implementation according to local needs. This feature of the Biosphere Reserve status along with the Nature Reserves' regulatory ambiguities in terms of balancing conservation and development resulted in a variety of implementation practices, which differ from case to case. Therefore, various Nature Reserves with a Biosphere Reserve status may vary significantly in fulfilling the MAB Program criteria. In this section we discuss the effects of the Biosphere Reserve designation to the national Nature Reserves from four different aspects, including the balance between development and conservation, their institutional systems, their management resources and the level of community participation in their management.

(1) Development vs. conservation leverage

The national MAB Committee requires the local Nature Reserve management agency to submit a Management Plan as part of their application process for a Biosphere Reserve designation. As potential new Biosphere Reserves, Nature Reserves are encouraged to consider their recreational value, rather than to focus only on conservation. For this purpose the national MAB Committee provides expertise as well as training for managers.

The Nature Reserve Regulation is in line with the zoning system[11] established by the MAB Program. Each Biosphere Reserve is composed of three zones: core, buffer and transition. These generally correspond to the three functions of Biosphere Reserves: nature protection, sustainable development and logistic support. The Biosphere Reserve designation brings no change in the land use management of the Nature Reserves established after the Regulation was adopted in 1994. Nevertheless, the Nature Reserves designated as Biosphere Reserves before 1994 are encouraged to submit a Zoning Plan according to the Regulation. Usually in such Nature Reserves human activities are limited and strictly regulated. Some of these Nature Reserves are encouraged to introduce eco-tourism activities, which would benefit the economic development of the local communities as well as generating revenues for the management of the Nature Reserve or potential Biosphere Reserve.

(2) Management authority

As an intergovernmental scientific program, MAB does not aim at altering the institutional setting of Chinese Nature Reserves nor does it directly attempt to influence policy-making at the national level. The establishment of a Biosphere Reserve alters neither the Nature Reserve's inter-department coordination nor its hierarchical institutional coordination. The institutional management structure is not affected by receiving a Biosphere Reserve designation. However, the debates on institutional structure of Nature Reserves often encourage drawing lessons from Biosphere Reserve management experiences in other countries. The MAB Programmes' resource pool includes information and knowledge from practice, networking and joint research projects. Moreover, the staff in the MAB Committee comes from the Ministry of Environment Protection, the State Forest Administration and other high level organizations represent the most relevant stakeholders for Nature Reserve management in China. It is difficult to measure how much these policy makers draw from the work of the MAB national Committee due to the lack of information about the Chinese policy-making process. It is clear however, that the national MAB Committee provides consultancy for policy-making related to Nature Reserve management, which enables both information and expertise transfer to the national level.

[11] The zoning system of Biosphere Reserves is outlined in the Statutory Framework of World Network of Biosphere Reserves (UNESCO, 1995).

(3) Management resources

Although the UNESCO MAB Program does not provide funding for Biosphere Reserves (Nature Reserves) management, the Nature Reserves can apply for support from the Chinese government upon their designation as a Biosphere Reserve. The Biosphere Reserve designation may furthermore bring expertise, which may significantly increase management capacity. Moreover, the national MAB Committee educates the Nature Reserve management agencies on reported challenges to achieving balance between conservation and development through training programs, such as those on eco-tourism. Furthermore, the Chinese MAB Committee promotes and organizes activities related to experience sharing, communication, networking, and joint research. The Committee also provides international and national training related to Biosphere Reserves, for example, the 7th East Asia Biosphere Reserves Training for biodiversity monitoring in 2017.[12] These international cooperation programs are organized to improve the capacity of management staff working in Biosphere Reserves.

The international recognition of designated Nature Reserves as Biosphere Reserves offers opportunities to exchange management experience with other sites, which are part of the World Network of Biosphere Reserves. For example, through the cooperation between the German and the Chinese national MAB Committees, various exchange activities for Biosphere Reserve managers of both countries were organized (German MAB National Committee, 2005). Another example is the large-scale Sino-German Cooperative Ecological Research Project, with a budget of USD2.48 million. Within this project both Chinese and German Biosphere Reserves benefited through research, exchange visits, seminars, training of personnel, provision of instruments and equipment (Chinese National Committee for MAB, 2013).

(4) Local communities' involvement

The MAB Program aims at improving the overall relationship between people and their environment (UNESCO, 2017c). One of the main characteristics of the Biosphere Reserve concept is its focus on a multi-stakeholder approach with particular emphasis on the involvement of local communities in management (UNESCO, 2017d). The Biosphere Reserve concept requires involvement of local communities in the management of Nature Reserves, which is evaluated

[12] Chinese National Committee for Man and Biosphere Reserves. Retrieved from: http://www.mab.cas.cn/tzgg/201708/t20170810_379513.html; http://www.mab.cas.cn/tzgg/201705/t20170522_373742.html; [Accessed: September 2017].

through a so-called periodic review process conducted every ten years. There is a very comprehensive evaluation procedure for designated Biosphere Reserves in China. The evaluation process is organized by the MAB National Committee but it also includes a significant number of academic experts, such as university professors, management experts, as well as representatives from other sites. Designated Biosphere Reserves are required to report on their activities regarding community engagement, including their communication strategies with communities, community cultural development initiatives, and solutions for sustainability issues at the individual and community levels[13]. Community involvement, as one of the criteria for a designated Biosphere Reserve to be positively evaluated through the review process and remain part of the World Network of Biosphere Reserves, encourages Nature Reserve management agencies to take local communities' interests into consideration.

Conclusion

The UNESCO MAB Programme leaves open opportunities for interpretation of the Biosphere Reserve concept. There is a broad spectrum of principles for organization of Biosphere Reserves around the world. The mechanisms for governance and participation and the mechanisms for protection differ greatly among Biosphere Reserves. What is particular to China's case is that Biosphere Reserves are nominated from already established protected areas (National Nature Reserve), which have striven to fulfill Biosphere Reserve criteria in order to be included in the World Network of Biosphere Reserve. Biosphere Reserves in China hold an institutional anchorage in the national Nature Reserves, that brings with it particular management objectives, strategies and traditions that concern the protection of nature. There is an already established set of objectives, rather than objectives being negotiated while nominating a Biosphere Reserve, which is a more commonly used mechanism worldwide.

There are, however, significant differences among Chinese Biosphere Reserves in terms of their effects on existing Nature Reserves. Differences in performance are linked to the ambiguity of relevant laws and regulations opening up the potential for various interpretations of their goals and objectives. There is legal ambiguity when it comes to the question of how development and

[13] MAB UNESCO, Periodic Review For Biosphere Reserve, January 2013. Retrieved from: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/TBiosphere Reserve_Periodic_Review_en.pdf, [Accessed: May, 2017].

conservation can be brought together. There is significant institutional complexity but only limited management resources. Furthermore, there are significant differences in levels and methods of community engagement within the Nature Reserves designated as Biosphere Reserves. However, Nature Reserve management authorities are being strongly encouraged to increase community involvement through the process of Biosphere Reserve nomination as well as through the Periodic Review Process.

The Biosphere Reserve designation does not influence the institutional setting of Chinese Nature Reserves neither does it include policy advocacy. The institutional challenges regarding Nature Reserve management are addressed against the broader background of Protected Areas' institutional transformation. The implementation of the MAB Programme through the Biosphere Reserves rather provides incentives and resources for advancing the management of Nature Reserves designated in the World Network of Biosphere Reserves. The MAB Programme represents a pool of assets, intelligence and alternatives for Nature Reserve management in China, articulated by the Chinese National MAB Committee.

In general, the Biosphere Reserve concept of the MAB Programme and its practice takes a deliberative approach in its negotiations with Chinese Nature Reserves. Through the mechanism of experience sharing, research and education, publication, networking and training, the Biosphere Reserve concept and practice not only attracts attention and resources for the management of Nature Reserves, but it also contributes to negotiating and changing the approach and practice of Nature Reserve management. Chinese Nature Reserves designated as Biosphere Reserves within the framework of the MAB Programme generally tend to have more resources and better management quality.

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