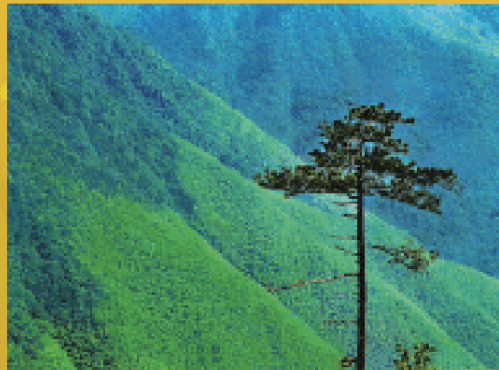
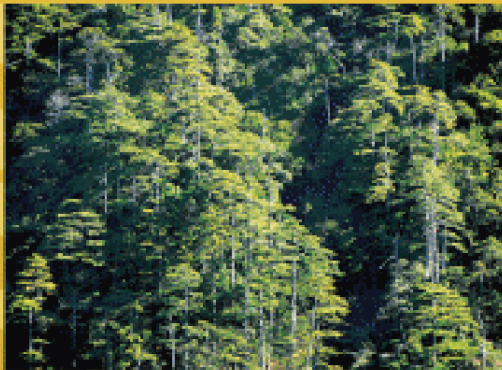




# Building Ecologically Harmonious Civilization



**Wuyishan Biosphere Reserve  
UNESCO Office in Beijing  
Chinese National Committee for MAB  
East Asian Biosphere Reserve Network**



# **Building Ecologically Harmonious Civilization**

**(Wuyishan Biosphere Reserve Learning Site for Sustainable Development  
under World Network of Biosphere Reserves - Demonstration of Joint  
Protection, Coordinated Development, Building a Harmonious and  
Civilized Ecological Zone)**



**Wuyishan Biosphere Reserve  
UNESCO Office in Beijing  
Chinese National Committee for MAB  
East Asian Biosphere Reserve Network**

Note from the Editors

This publication is compilation of research report on **Demonstration of Joint Protection, Coordinated Development, Building a Harmonious and Civilized Ecological Zone** a research project carried out by Wuyishan Biosphere Reserve in coordination with Chinese National Committee for MAB and UNESCO Office in Beijing. The editors changed the format of the report, from which we hope readers to feel comfortable.

The editors give special acknowledgment to Prof. Xu Zhihong, Chairman Chinese National Committee for MAB and Dr. Natarajan Ishwaran, Secretary, Man and the Biosphere (MAB) Programme for their keen interest in compilation of this volume and their valuable contribution to this volume.

**Wu Yishan Biosphere Reserve**  
**UNESCO Office in Beijing**  
**Chinese National Committee for MAB**

Published by UNESCO Office Beijing  
Waijiaogongyu 5-15-3  
Jianguomenwai Compound  
Beijing, 100600 P. R. China  
Tel: +86 10 6532-2828  
Fax: +86 10 6532 4854  
<http://www.unesco.org>

Citation: UNESCO, 2010, Building Ecologically Harmonious Civilization

Disclaimer: The designations employed and the presentation of material throughout this publication do not imply the express of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

© UNESCO

# Forward

As an inter-governmental interdisciplinary initiative, launched by UNESCO in 1971, Man and the Biosphere Programme (MAB) is dedicated to solutions of challenges derived from population, resources and environment problems. The biosphere reserves had been created as an essential component and basis for successful implementation of UNESCO's MAB Programme. Since the first batch of biosphere reserves were set up in 1976, there have already been 531 Biosphere Reserves established in 105 countries globally, covering different types of land areas with diverse biological and geographic features. Such progress has directly led to the formulation of the World Network of Biosphere Reserves (WBRN). By the year of 2009, 28 Biosphere Reserves from China had been enlisted in the WBRN network.

In the past 30 years, biosphere reserves have been an increasingly active and important vehicle for the protection of biological diversity, and ensuring sound provision of ecosystem services. With the emergence and exacerbation of global issues, UNESCO-MAB has been continuously adapting itself to well tackle the challenges for a sustainable future owned by us all. In 2008, Madrid Action Plan was agreed at the 3rd World Congress of Biosphere Reserves that was held in Madrid. At this time, "Biosphere Reserve as a Learning Site for Sustainable Development under the World Network of Biosphere Reserves" was agreed to be one of the overall objective.

China's world biosphere reserves have made a lot of useful exploration in the field of Biodiversity Conservation and Sustainable Development. Wuyishan World Biosphere Reserve is an important part of the success. In order to better summarize and publicize the successful experiences, under the guidance and financial support by UNESCO, Wuyishan Biosphere Reserve has conducted the project of Wuyishan Biosphere Reserve as a Learning Site for Sustainable Development.

This project systematically summed up experiences of Wuyishan Biosphere Reserve in the building of sustainable development, as well as their achievements made in regard to joint protection, coordinated development, and the building of a biosphere reserve of harmonious civilization between man and nature.

Starting from handling the widespread challenge in biosphere reserves on coordinated development and conservation, the research first introduces issues faced by the Wuyishan Biosphere reserves in the building of sustainable development. It has been clearly realized by the Wuyishan Biosphere Reserve authority that, to realize the coordinated conservation and development, cooperation and participation from local communities is of high necessity and a must. In 1994, the Wuyishan biosphere reserve set up the "The Joint Protection

Committee for Fujian Wuyishan National Nature Reserve". The committee has constituted a forum for the participation of local communities in protection works, and managed to mobilize their sense of ownership for protection works. With the support of GEF project, the mechanism of joint protection has been deepened based on scientific and sustainable principles. By supporting alternative livelihood such as plantings of bamboo and black tea, as well as introducing advanced techniques, the conservation works carried out in Wuyishan have extended its benefits to local communities. As a result, the challenge between conservation and development has been tackled in a decent way.

By seizing the principal challenge of coordinated conservation and development, the Wuyishan Biosphere Reserve has pioneered an innovative solution, which is of emulation to other biosphere reserves. Their experiences and methods adopted could be referred by other biosphere reserves in carrying out sustainable development tasks.

**Prof. XuZhihong**

Chairman

Chinese National Committee for MAB

# Forward

Those of us who live in Europe and have gone shopping in London for the great variety of the brands of tea you can find in that city know of Lapsang Suchong Black Tea! But not many of us know that this brand of tea had its origin in the Wuyi Mountains of China. The Wuyishan is a UNESCO biosphere reserve as well as a World Heritage site.

Mt. Wuyi's outstanding universal value justifying its World Heritage status comes from its unique sub-tropical forests and being the birth place of Confucianism. Its biosphere reserve status on the other hand comes from it being a learning laboratory for sustainable development; i.e. the Wuyi authorities' continuous efforts to link nature protection to community well-being through the use science and technology to, as the report points in section 4, reconcile the conflicts between conservation and development.

The participatory approach to nature protection and the impressive scientific achievements to improve bamboo production and the subsequent diversification of the bamboo landscape with the introduction of native tea varieties, including Lapsang Suchong that hails from the Wuyi mountain, are indeed impressive achievements. As a member of the World Network of Biosphere Reserves of UNESCO Wuyishan Biosphere Reserve's effort to share its experience, knowledge and lessons with the remaining 552 biosphere reserves of this global Network deserves the world's appreciation and recognition.

The ambition of China and Mt. Wuyi to contribute towards an ecologically harmonious civilization resonates closely with UNESCO MAB Programme's global commitment to contribute towards sustainable development. As sustainable development practice aims to work out context-specific trade-offs and reconciliation schemes between economic, environmental and social vectors of change, building an ecologically harmonious civilization in a country of more than billion people too calls for judgements and decisions that strives to balance ecological, economic and social well being of communities.

During the on-going UN Decade of Education for Sustainable Development (2005-2014) which is co-ordinated by UNESCO for the overall UN system of organizations, UNESCO biosphere reserves have dedicated themselves to be learning laboratories for sustainable development. The report presented herein is a good example of Wuyishan trying to fulfil its role as such a learning laboratory.

Similar reports of the experience of other Chinese biosphere reserves must be encouraged as a contribution to the implementation of the Madrid Action Plan for Biosphere Reserves (2008-2013). China combines the challenge of growing to meet its people socio-economic aspirations while conserving and protecting its nature and biodiversity. Hence, Chinese

biosphere reserves have an important contribution to make in demonstrating the feasibility of the world evolving into an ecologically harmonious civilization that maintains sustainable land/seascapes where the fine art of balancing conservation and development with the help of science and technology is assigned the utmost priority. It is also an important modality for science and technology to improve ecosystem and human wellbeing in the 21st century.

I wish to congratulate the authorities of the Wuyishan, MAB National Committee of China and the UNESCO Office in Beijing for collaborating in the production of this important publication. I hope there will be similar publications that will emerge from all international biosphere reserves of China.

**Dr. Natarajan Ishwaran**

Director, Division of Ecological and Earth Sciences  
Secretary, Man and the Biosphere (MAB) Programme  
UNESCO



# Table of Contents

Abstract

1.	Introduction to Wuyishan Biosphere Reserve .....	2
2.	Contradiction between protection and development in Nature Reserves ...	4
2.1.	Development Challenges in Nature Reserves .....	4
2.2.	Community Support .....	4
3.	The joint protection measure .....	6
3.1.	The objectives and organization form of the joint protection .....	6
3.2.	Guiding residents to join in the work of joint protection .....	6
3.3.	Let resident become principle part of the joint protection .....	7
3.3.1.	Take the symposium as an important way to joint protection .....	7
3.3.2.	Self-management of resident contributes a lot to the joint protection .....	8
3.4.	Seize the opportunity explore more and make great efforts to improve the organization and measure for joint protection .....	9
3.4.1.	Recognize forest fireproofing as the most important task .....	9
3.4.2.	Improve joint protection during the GEF Project .....	10
3.4.3.	Making the resident enjoy the benefits of ecological protection in management and protection of the ecological forest .....	11
4.	Enhancing the role of science and technology in solving the contradiction between conservation and development .....	12
4.1.	High yield bamboo demonstration test of the region to promote the building of a well-off village .....	12
4.2.	A black tea benefit the community as whole subject .....	12
4.3.	Erecting a new platform for building and development in Nature Reserve to play the leading role of science and technology better .....	14
5.	Making efforts to build a harmonious and civilized demonstration area of ecological protection .....	15
5.1.	Fruitful results achieved by the protection building of Wuyishan Nature Reserves for 30 years .....	15
5.2.	Problems and difficulties of Wuyishan Nature Reserve .....	16
5.3.	To work for building a harmonious and civilized demonstration area of ecological protection .....	17

Annexure – 1: Some specific issues in management of Nature Reserves

# Abstract

Mt. Wuyi is the most outstanding area for sub-tropical forest biodiversity conservation in South-East China and a large refuge for a great number of ancient and relict species, many of them endemic to China. Furthermore, as the cradle of neo-Confucianism, Mt. Wuyi is known for its long-lasting history and cultural diversity. In 1999, Mt. Wuyi was inscribed on the UNESCO World Heritage list, for both natural and cultural.

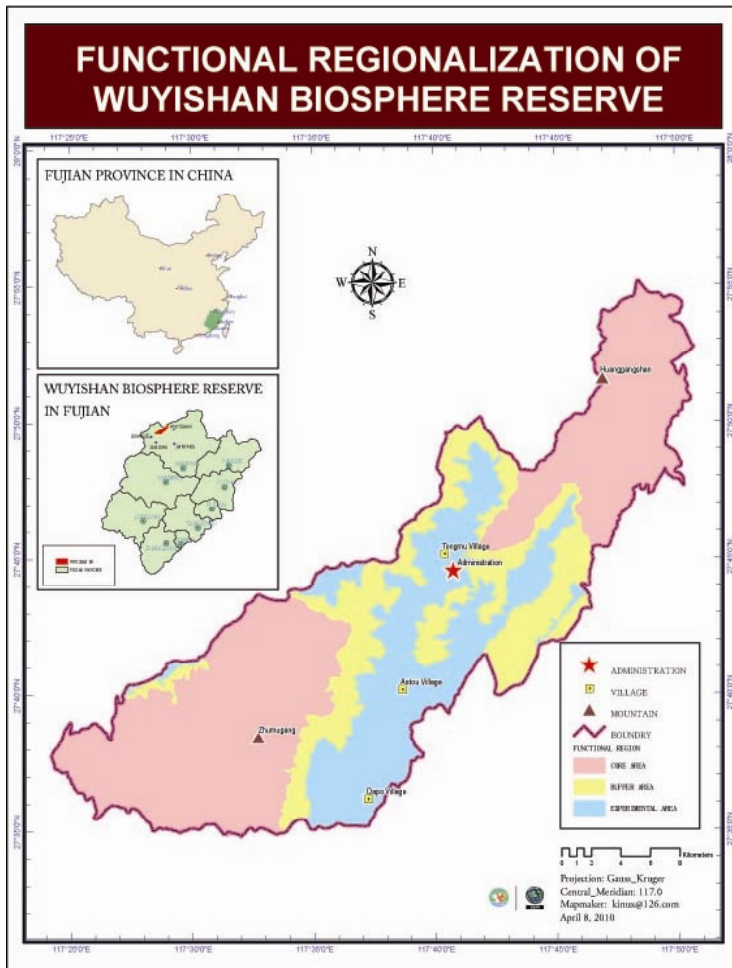
The Wuyishan National Nature Reserve was built in 1979, and in 1986, it was accepted to the UNESCO's Man and Biosphere (MAB) network. Mt. Wuyi Biosphere Reserve (BR) is located in the north part of Mt. Wuyi Range extending to an area of 565 km<sup>2</sup>. It occupies the highest sector of the Mountains covering four counties: Wuyishan, Jianyang, Guangze and Shaowu. While the majority part of the reserve is in Fujian province, its northwest part is next to the Qianshan County in Jiangxi Province. The Wuyishan BR is consists of core area with a size of 292.72km<sup>2</sup>, the buffer zone with a size of 123.95km<sup>2</sup> and the transition (experimental) zone with a size of 148.60km<sup>2</sup>. Over 2,000 local people live within the transition zone of the Wuyi BR, while approximately 10,000 people living in surrounding. They are the direct benefiter of Mt. Wuyi BR.

Under the proper management guidance from the government and the supports from its surrounding communities, Wuyishan BR has been able to firmly stand by the principal of realizing protection while promoting development. This article aims to share the experiences and lessons learned from Mt. Wuyi BR in preserving the nature while promoting the economy development and maintaining the harmony. The content of the report has been divided in to five parts. It starts with general background information on Wuyishan Biosphere Reserve, and continues with the challenges faced in dealing with contradictions between protection and development within the local community. Further describes the joint protection measure unveils detailed information on various of methods for joint protection such as setting up objectives, establishing proper organizations, engaging local communities and identifying opportunities and barriers. In addition, this report provides in-depth views of role of science and technology in solving the contradiction between conservation and development. Finally, it summarizes the achievements and challenges that Wuyishan BR has been facing during its journey of building a well preserved and well developed Biosphere Demonstration site where a harmonious and civilized demonstration area of ecological protection.

# 1.Introduction to Wuyishan Biosphere Reserve

Mt.Wuyi BR is located in the north part of Wuyi mountain range. With an aerial extent of 565km<sup>2</sup>, it covers three Counties in Fujian province as Wuyi city, Jianyan city and Guangzhe County, it borders with Shaowu City in Fujian province and Qianshan County in Jiangxi Province. Occupying the highest sector of the north part of Mt. Wuyi range, Mt. Wuyi BR's average elevation is 1,200 meters while the highest peak, Huanggang peak, goes as high as 2158 meters. As the highest peak in the South-East part of China, Huanggang peak is one of main peaks among Mt. Wuyi range. In 1986, Mt. Wuyi National Nature Reserve has become the part

of the UNESCO's World Network on Biosphere Reserves to preserve subtropical forest biodiversity and rare animal and plant species.



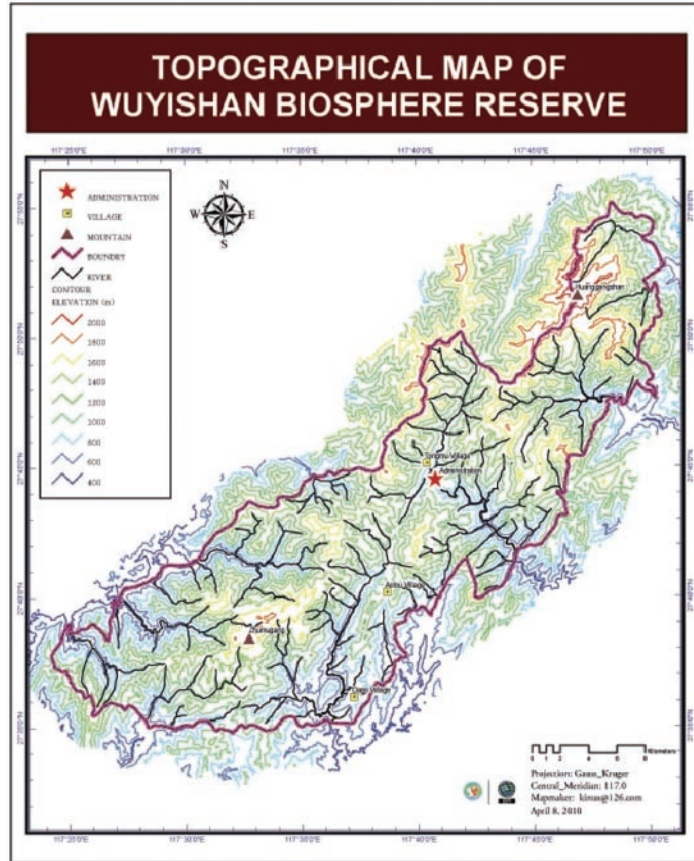
Mt. Wuyi has typical subtropical monsoon weather, the average annual temperature of the BR range from 8.5°C to 18°C and during January average temperature is -1°C to 6°C and in July the average temperature goes up to 16°C to 26°C. Mt. Wuyi BR enjoys plenty of rainfall; its yearly average precipitation varies from 1,486 mm to 2,150 mm. On average, frost can appear as early as October and it ends in March, and this BR has around 253 days to 273 days without frost. Furthermore, its yearly average foggy period can reach 120 days. In summary, Mt. Wuyi BR's climate is characterized as cool temperature, large quantity of precipitation, high humidity, long foggy period and significant vertical weather condition difference.

Mt. Wuyi BR represents the most outstanding forest in southern china. Mt. Wuyi BR is characterized by one

of the most well preserved original forests and secondary forest biodiversity, clear division of the vertical vegetation spectrum as well as its world famous sub-tropical wide-leaf forests. As the transition strip between Holarctic zone and Paletropical zone, Mt. Wuyi BR has rich and diverse flora resources. To elaborate, 840 species of lower plants and 2,888 types of higher plants have been identified in Mt. Wuyi BR. Among which, twenty five were included in the State Important Protected Wild Plants Contents, forty two are strictly protected in Fujian Province, and 101 have been listed on Appendix of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Furthermore, Mt. Wuyi BR has fifty seven species of model samples. In addition to its rich flora resources, Mt. Wuyi BR has outstandingly diverse of fauna resources. 479 species of terrestrial vertebrates have been identified which makes up half of terrestrial vertebrates species in Fujian province and one-fifth of the entire country. Additionally, among the thirty three orders of insects identified in China, Mt. Wuyi BR has 31 orders and over 5,000 species of insects. Fifty seven

species of wild animals are under special state protection, Eighty three species of migrant birds are under international protection.

Over 2,500 local people live within the experimental area of the Wuyi BR, while approximately 10,000 people live in surrounding communities. The Wuyishan BR is divided to three zones, the core area, the buffer area and experimental area. The core area has the size of 292.72km<sup>2</sup> which is 51.8% of the entire BR. The buffer area's size is 123.95km<sup>2</sup> taking up 21.9% of the entire BR, and the experimental area's size is 148.60km<sup>2</sup> which occupies 26.3% of the BR. Different management methods are applied to each zone. Based on years of experience, this BR has developed an efficient manage mechanism with heavy engagement of local communities' participation. In this BR's experimental zone, certain concentrated areas are used for local people living in the BR to plant economic products such as bamboo and tea. In this way, the BR has been able to secure local people's income. Thus, Mt. Wuyi BR's practice of



"using 10% size of the BR for plantation of economical products to preserve biodiversity in 90% of the BR's



size" is approved to be successful. As a result, the local community's living standard is significantly improved. Local villagers' average yearly income has risen from 204 Yuan when the BR was built to over 8,000 Yuan at present. Mt. Wuyi BR serves as a great model of preserving the nature while promoting the economy development for other Natural Reserves in China.

## 2.Contradiction between protection and development in Nature Reserves

### 2.1.Development challenges in Nature Reserve

Wuyishan Nature Reserve of Fujian was established in April 1979, which was approved as a National Nature Reserve by the State Council in July 1979. It was set up in an unconventional way under the instructions of Deng Xiaoping, the former paramount leader of China, in order to save the seriously threatened biological treasure at that time, and to protect the world-famous biological origin of type specimen. Thus, during the early establishment, Wuyishan Nature Reserve is strictly protected. Resident cannot collect tree and herb.



Wuyishan Nature Reserve of Fujian is typical of southern China with mainly collective forest, 60% of which is collective forest. The original area was inhabited by more than 10000 villagers of Wuyishan City, Jianyang County, Jian'ou City, Shaowu City. Villagers who used to live near mountains do not have any farmland. They have to live on "mountains". The

livelihood of villagers was cut off by strict protection measures, which triggered a sharp confrontation between resident and government. As a result, protection work is faced with a serious challenge.

### 2.2. Community Support

Wuyishan National Nature Reserve locates in the Hakka region. Since the Tang and Song dynasties, the local residents have lived their life on bamboo, tea, chestnut and so on. The current situation of conservation district means that it is unable to copy the common mode used around the world that try to move all the resident out of the Nature Reserve and offer them necessary economic compensation. Therefore, how to take care of the life of local resident should be seriously considered and treated as the most important issue. It is inevitable that protection of the Nature Reserve should base on improvement of resident's life.

Clearly realizing the importance of resident's life, Wuyishan Nature Reserve carries out several policies to assist the conservation effort. On one hand, they are trying to restore the destroyed natural resource and environment by supporting the policy of forest conservation. On the other hand, they received the agreement of Forestry Department to ask resident to collect the collapse woods, under the government's help on transportation and sale, to improve the local economic situation. Besides, under the agreement of Provincial Government, local

resident are arranged to grow small amount of bamboos and self woods that further improve the resident's life.

Bamboo is a kind of highly renewable forest resource with a 6-year growth cycle. If properly managed, it can become more and more, not causing much harm. Wuyishan Nature Reserve is rich in bamboo with a total accumulated amount of 21 million hectares,



which are mostly distributed in the experimental area, providing a harvest of about 3 million each year. Wuyishan Nature Reserve issued a multi-year target of 1.118 million, while the actual production was 0.8771 million. What's more, now the number is reduced to 0.5 million or so every year.



While solving the resident's quality of life, Wuyishan Nature Reserve strengthens the management at the same time. Fujian Provincial Government awarded the "Management Measures of Fujian Wuyishan National Nature Reserve" (the "Regulations") has become China's second promulgated provincial rules and regulations, some of which are included in community work, regulating the production and living of the villagers. Protection

work has dramatically changed from pure management towards the overall planning of protection and development.

### 3.The joint protection measure

#### 3.1.The objectives and organizational form of the joint protection



After years of practice, it is realized that without active participation and full cooperation from the local resident stakeholders and community depends on this reserve for livelihood the conservation and management will not succeed. The Joint Protection Committee is an important way to mobilize the resident to participate management of Wuyishan Nature Reserve.

In 1994, Wuyishan Nature Reserve established the "Joint Protection Committee of Wuyishan National Nature Reserve of Fujian", which is the first joint protection committee in China. The Joint Protection Committee is led by the Fujian Provincial Forestry Department. The Deputy Director-General of Provincial Forestry Department, who is in charge of work of Wuyishan Nature Reserve, holds the post of director member. The committee is composed of the city and county prefectures around the Wuyishan National Nature Reserve, the forestry sector of relating counties, the villages and towns in and out of the Nature Reserve, in total more than 20 units. The Committee established a "Joint Protection Statute of the Commission" and the "Joint Convention on the Protection". The Director General of the Nature Reserve Authority holds the post of deputy director member. Under the Joint Protection Committee, five branches following the area of the Nature Reserve were set, and then formed a linkage of "Joint Protection Commission - Joint Protection Branch - Village". The interaction between the linkage and

the "Authority - Management - Checkpoints" three-level management of the Nature Reserve form a three-line network of protection and management.

#### 3.2.Guiding residents to join in the work of joint protection



In order to guide the resident join in the joint protection and attract neighbouring communities to participate the work, the Administrative Bureau of Wuyishan Nature Reserve have actively created some conditions. First, approval by the higher authorities, we adjust function zoning. The adjustment is benefit to not only the protection of natural resources and environment, but also the production and living needs of the resident. Second, we give support to the local industries actively. For example, we apply a fund of 1.5 million for

the development of tea industry. And the money is used for supporting three villages, Tongmu, Aotou and Changjian, to develop the black tea industry. Third, we enjoy some preferential policies according the relevant provisions of the state. And we ask villagers to enjoy the benefit in their production and management, so that add 300,000 Yuan to village's income every year. Forth, the infrastructures of Wuyishan Nature Reserve, such as program-controlled telephone, cable TV, electric power line, etc., are all open to the local community, to support rural public utilities and enterprise development. We also provide support for the road construction and water projects. Fifth, we are concerned about the villagers in the old revolutionary base areas, which were poor and have made great sacrifices for the construction of Wuyishan Nature Reserve. Under the support of the provincial Forestry Department, we gave great support for both the reconstruction of the village Taolin in Guangze County which was affected by floods and the bamboo production of the village Dazhou in the same county. The total investment is 350,000 Yuan of capital and 50,000 Yuan of discount loan. Sixthly, we care for resident in difficult circumstances, and fight for compensation of resident afflicted by natural disaster. We also mobilize the cadres and workers to donate money and goods to them as their friends and family. In this way, the course of nature conservation will have a strong affinity and attraction, so the resident of community will take the initiative in the joint protection.

### **3.3. Let resident become the principle part of the joint protection**

#### ***3.3.1. Take the symposium as an important way to joint protection***

The difference between joint protection and generally speaking protection is the former changes the origin managed objects into the co-operator of protection procedures. Community resident become the important participators of the joint protection actions, who are the principle part of the joint protection actions rather than those who are managed before.



To make resident positively join into the joint protection, besides some specific activities such as joint defence, protection of forests, investigation or else, it is more important to let resident participate into the actions spontaneously and voluntarily, which needs communicating,

organizing and arousing. Community symposium is the essential method to communicate with resident in Wuyishan Nature Reserve, which also becomes the significant rule of decisions in the area.

Although the population of Wuyishan Nature Reserve is only 2500, but they spread in more than 40 villages within the Nature Reserve, which accounts more than 100 km<sup>2</sup>, and it is difficult to operate a resident meeting. Holding a discussion of small village groups by Joint Protection Branches becomes the important information spreading methods between the Nature Reserve and the villagers. There are both symposiums acted by stable time or unstable schedule. After 1998, in which year it was forbidden to fell natural forests throughout China, the Administrative Bureau of Wuyishan National Nature Reserve investigated in every village of the area in 1999, by convening the discussion meetings. The comments of the meetings are firstly spreading the national purpose of forbidding falling natural trees, secondly discussing the way to construct the protection area with resident. Based on the investigations and summaries from the past 20 years, Wuyishan Nature





Reserve promoted that as a protected area of international biology and inherits, it is must be carried out the principle of "protect, research, develop, advocate education", which should be rooted of protection, based on community, predicted by technology, motivated by development, constructing an entire system of protection and controls. To do the best to make the area a beautiful place of resource and environment, entire ecosystem, advanced research level, developed community economics, good stuff of

employees, as a demonstrated protection all over the Country. Community Discussion Meeting becomes the important way to organize the resident to join into the joint protection.

### **3.3.2. Self-management of resident contributes a lot to the joint protection**

Participating in joint protection, for resident who live in the protection region, is to protect and build their own homes, while for resident who live in the surrounding area, is to create harmony environment for the development of their hometown.

The important manifestation of self-management is to allow resident to realize the significances and responsibilities of the joint protection with their self-interests. One of the most important way is to encourage the villagers in the experimental area to carry out the contracted operations of collective-owned things, like bamboo, tea, etc., and using technology to help increasing bamboo production, reducing the fees. As a matter of fact, the villagers will realize the necessity of protection for their immediate interests and could be



able to take the initiative to consciously follow the "Wuyishan World Natural and Cultural Heritage Protection Ordinance" by Fujian Provincial People's Congress, the "Regulations" by the Provincial Government and the relevant provision of forest fire prevention and bamboo harvesting, transportation and sales. That is, transform from the original object of protection and management into the main body of management of the joint protection, which will greatly arouse the enthusiasm of villagers to participate in conservation initiative.

Bamboo production used to be the community's pillar industries on construction and development of the community. While accompanied with processing pollution, bamboos are encroaching broadleaved forests

and make other issues. The Administrative Bureau of Wuyishan National Nature Reserve, guide the transformation of industry and reduce the dependence on the bamboo industry. Bamboo-processing enterprises also transform from producing bamboo mat, bamboo chopsticks, flooring products, improving value-added products, at the same time reducing the difficulty of handling by-product. Now bamboo processing residues are used for fuel of processing bamboo coal and other production, basically solved the pollution problems. To deal



with the bamboo-leaved forest encroachment issue, after a symposium, the Joint Protection Commission, organized the villagers to carry out the "red line drawn bamboo works", that is, make a significant mark on the broad-leaved trees on the edge of bamboo producing areas, register on file for future reference, and mark the areas with red line on the basic map, identified with topographic maps and GPS auxiliary, in order to make sure bamboo production will not exceed the red line. This method solves the problem caused by bamboo expansion, providing a satisfactory answer to the Chinese and foreign experts' concern of the development of protected areas could result in the trend of bamboo expansion each year, reducing the bio-diversity.

Under the coordination of the Administrative Bureau of Wuyishan National Nature Reserve and the local township government, Joint Protection Branch also addressed two historical disputes about bamboo mountain between the resident, and between the resident' groups, by adopting colloquia and repeating consultations. The disputes does not influence large areas, while does deeply influence the solution of the contradiction between protection and development. These contradictions have been existed for many years and with no result even led to access to justice, while now is solved satisfactorily through the coordination of symposia, which does show the improvement of the level of resident's self-management in the Wuyishan Nature Reserve.

### **3.4. Seize the opportunity, explore more, and make great efforts to improve the organization and measure for joint protection**

#### ***3.4.1. Recognize forest fireproofing as the most important task***

There are always a variety of problems when working in nature reverses. The reason why Wuyishan National Nature Reserve can be built successfully in the recent 30 years is that resident seized the opportunity of development. The weak point is fireproofing when the Nature Reserve is initially set up. And the 1986 fire spread from outside of the zone to the thin woods inside, with a total area of 10hm<sup>2</sup>. The Wuyishan National Nature Reserve actively participates the fireproof work in the neighbourhood while it strengthening the fireproof system inside the Nature Reserve. Up to now, the Nature Reserve is still an active participant of the forth joint defence zone in the area of Min, Zhe, Gan. Consequently, it is honoured as "the outstanding group of forest protection and joint defence".

After the foundation of Joint Protection Committee, the committee as well as the Administrative Bureau of Wuyishan National Nature Reserve sees the forest fireproof as their first job. Resident in the community



also recognize that this job is "setting proof for homeland" and they are serious about it. Currently, 16 semi-professional teams have been organized in the whole community, with 240 team members. In 1996 and 1999, two dangerous cases happed separately. However, they are all stamped out in time by these teams, avoiding the fire. Governments of counties and cities adjacent bring the fireproofing of Wuyishan Nature Reserve's correspondent popedom into their responsibilities.

For example, a fire happened in the boundary of west forestry centre in Guangze County and Wuyishan National Nature Reserve in Oct, 1998. The secretary of county committee and the head of the county arrived at the locale directing the fire fighting. They determined that they will stop the fire from spreading into the National Nature Reserve at any expenses. The provincial and Nanping city's forestry department taking charge, four counties adjacent to the National Nature Reserve planed a biological fireproofing forest belt, which is more than 200 km long, surrounding it. This is a pioneering work either in our country's nature reserves' construction or in our forest fireproofing works. 58km of the fireproofing forest belt and 85km fireproofing road in the community have already built. Because of the effective work, Wuyishan National Nature Reserve hasn't experienced a fire for 22 years since 1987, becoming one of the two county's organizations which avoided forest fire for a continuous of more than 20 years.

### **3.4.2. Improve joint protection during the GEF project**

The first administrative improvement of nature reserve that the Global Environment Found (GEF) carried out in China is the GEF project. According to the original standard, Wuyishan National Nature Reserve doesn't fit it. However, after active shooting, it finally became one of the five nature reserves the project carried out. It was as long as 8-9 years from the application launch in 1992 to putting into practice in 1995-2001. The Wuyishan National Nature Reserve, which is constituted with mainly Wuyishan Nature Reserve in Fujian province combined with Wuyishan Nature Reserve in Jiangxi province, has become a model of provincial joint protection



in the project. As soon as the Joint Protection Committee of Wuyishan National Nature Reserve in Fujian founded, Jiangxi Wuyishan Nature Reserve was invited. As a consequence, this committee provided a solid foundation for the practice of GEF project and especially a powerful guarantee for the construction of our country's first biological corridor in nature reserve. The GEF project pointed out that the corridor is used for the genetic communication among the three core area of the protection zones in the two provinces. So not only more than 3000 hectares woodland in the test zone of these places will be managed as a buffer, more than 600 hectares woodland of the forestry centre outside the zone will be added, totally 11 units. This had some difficulties since it was novel, and the fund of GEF project was limited. However, thanks to the perfect foundation of joint protection, this corridor project was successfully carried out and the result was ideal. Furthermore, after the project, the construction of Jiangxi Wuyishan Nature Reserve has been accelerated. It was selected to be a national nature reserve instead of provincial one, and the total area was enlarged from more than 4000 hectares to 20000 hectares. In reverse, this development also facilitates the joint protection of Fujian Wuyishan National Nature Reserve.

### ***3.4.3. Making the resident enjoy the benefits of ecological protection in management and protection of the ecological forest***

After the implementation of the provisions of the national ban on logging in natural forests, the work of Nature Reserve and community development is faced with new problems. Wuyishan Nature Reserve also actively seeks to join the ranks of natural forest protection project in the pilot. To take this opportunity, Wuyishan Nature Reserve complete the work for forest right to registration of certification, issued directly by the provincial government, and put an end to the history of Nature Reserve operating without a license. Through formal implementation of the nationally ecological forest management and protection grants, the community can directly benefit the resident. Grants of the ecological forest management and compensation of forest right can reach more than 380 million each year, and incomes increase by a thousand dollars per capita. Nature Reserve has also employed more than 150 villagers to serve as members of ecological forest management and protection, so that more resident directly involve in management and protection work of Nature Reserve. Furthermore, the region has begun to diversify the income of the resident. And black tea has become a pillar industry, while its revenue is more than bamboo. In addition, bee-keeping and other aquaculture industries also have a certain development, and tourism, catering, transport and others all start to operate, which are given good returns. "Wuyi Mountain News" reported, "because of the good protection of the Candlenut village, everything becomes more worth. And the villagers feel the eco-village brought about the immediate effect." In fact, the entire communities' resident in Nature Reserve are the same as the villagers in Candlenut village and feel the ecological effects of the valuable gifts.



According to the staff survey of community section in Nature Reserve, the villagers in the district of Candlenut village had income of 10,174 Yuan per capita in 2008, was 43 times of 235 Yuan in the initially built area, and resident in Aotou village have income of 8,229 Yuan per capita, which was 63.3 times of 130 Yuan in the initially built-up areas. Dapo Village' income of 9532 Yuan per capita is 63.5 times of 150 Yuan in the initially built area. Region's average income of 9,711 Yuan per capita was 47.6 times of 204 Yuan in

the initial stage of built area, while the real income of the villagers may be even higher than statistics. For example, Candlenut village's director told the People's Daily that the villagers' income from the tea leaves can be up to 8000 Yuan per capita, while the town's leadership in the Aotou also believes that the Aotou villagers' income has more than 10,000 Yuan per capita.

However, the community's rapid economic development has not brought damage or added new pressures for Wuyishan Nature Reserve. Villagers' bamboo and tea production are carried out within the designated production areas of experiment region, and are also under the supervision and guidance of the management of Nature Reserve. The areas involving production account for 5% of the Nature Reserve. Because bamboo needs logging every other year, the actual areas account for 10% of the total Nature Reserve. Wuyishan Nature Reserve allows villagers to use bamboo, tea and other resources on 10% restricted areas which have strong regeneration



and small impact on the environment, to develop production. Then it can solve their life problems and establish a harmonious community. In this way, not only the effective protections of 90% remaining areas are strengthened, but also the region's ecological environment and biodiversity obtain good protection. As a whole, resources conservation of Nature Reserve and economic development of community have entered a virtuous cycle-synchronous orbit.

## **4.Enhancing the role of science and technology in solving the contradiction between conservation and development**

Science and technology are primary productive forces, especially in Nature Reserve. Science and technology are the soul of construction and development of Nature Reserve. In mid-June 1979 when the Nature Reserve began to build, the provincial Science and Technology Commission held the Comprehensive Scientific Survey Plan and academic exchanges of Nature Reserve, and opened a prelude to 10-year scientific expedition of Wuyishan. The whole expedition work lasted until late November 1990 when Conference Summary ended which was held in Fuzhou, up to 11-years and a half in total. The Comprehensive scientific expedition ascertained the background for construction and development of Wuyishan Nature Reserve and provided an important theoretical basis. It also gave the clear emphasis and difficulty on the protection work, and exercised and trained a contingent of scientific and technological backbone.

### **4.1.High-yield bamboo demonstration test of the region to promote the building of a well-off village**

In 1985, in order to play the advantages of local bamboo resources and solve regional production and livelihood of the villagers, Wuyishan Nature Reserve set up "Structure and Biomass of Naturally High-yield Bamboo Forest" task force. And acres of high-yield of bamboo demonstration bases were established in Dazhulan, and the superior varieties and advanced technologies were introduced to cultivate bamboo. Then the yield results were promoted to the community widely, leading to a significant increase in bamboo number,

and the average diameter increased by 30%. Bamboo and its deep processing has become the backbone of the community economy, playing a significant role for solving the production and life of the villagers. In 1990, among three administrative villages in the district, the two became the star of the village in Fujian Province, and the other was the well-off model village in located city.

#### 4.2.A black tea to benefit the community as a whole subject

In order to protect the ecological system and environment of Wuyi Mountain better and gradually reduce dependence on bamboo resource utilization, Wuyishan Nature Reserve has increased the support to the production of tea in recent years.

Wuyishan Nature Reserve is the birthplace of black tea, and it is also the origin of Wuyi Lapsang Souchong black tea, the ancestor of world's black tea. Lapsang Souchong black tea had a glorious history, which swept the British Isles and was the drinks for British Royal Queen. In January 2002, Research Group of Lapsang Souchong tea was established in the Nature Reserve. From in-depth textual research by organized scientific and technological personnel, it



proved that Wuyishan Nature Reserve was the ancestor of world's black tea - Lapsang Souchong tea's birthplace and its main producing areas. After this result was published, the status and worth of Lapsang Souchong black tea enhanced quickly, and local tea production was restored fully. Therefore, it changed the single economic structure that bamboo-based industry. And the incomes of villagers in the region were also significantly improved. A research topic on black tea benefited the whole community. Now, Tongmu and Aotou in the region are richest villages in their own areas where the Wuyishan and Jianyang respectively. Besides, Dapo also becomes a wealthy well-off village. Tea production plays a small impact on resource utilization and environmental protection. Because tea production in Wuyishan Nature Reserve is limited to reclaim the original tea land, not

open up new land, which is more conducive to conservation of biodiversity of Wuyishan compared with bamboo production.



### 4.3. Erecting a new platform for building and development in Nature Reserve to play the leading role of science and technology better

From the practice, Wuyishan Nature Reserve has realized the significance and role of science and technology in building and development of Nature Reserve. During 20 years after the comprehensive scientific expedition, the researchers carried out the studies of bamboo, black tea and others in Nature Reserve closely with construction and development of Nature Reserve, and meanwhile they also continued the research on basic disciplines of the Nature Reserve. Then four monographs were published which contained natural resources, forest ecology, Chrysomelidae insect, Pyralidae insect, etc. And two books, China Rare Wild Flower and Lapsang Souchong tea were also publication. In addition, there also were more than 140 papers published. Nature Reserve also strengthened the cooperation with universities, research units and departments, and selected research projects that were combined with requires. "The Application of Geographic Information Systems (GIS) in Preventing Forest Fire" and a number of issues have been successfully completed and applied. Currently, there are "Resources of Wasp Predators in Wuyishan Nature Reserve ", " Resources Survey of Nectar and the Bees in Wuyishan Nature Reserve ", "Protection Technology of Endangered Species *Tsuga chinensis* " and other research projects.



Ecosystem research station in the subtropical evergreen broad-leaved forest of Wuyi Mountain has been established. It supplies a new technology platform for Wuyishan Nature Reserve, and sets up good climb stairs for enhancing the level of protection and management of Nature Reserve. "Water Cycle Monitoring and Data Collection Focused on Information Technology in Evergreen Broad-leaved Forest of Wuyishan" is classified as the key project plan for social development in Science and Technology of Fujian Province. It has completed fibre-optic data transmission's programs and equipment installation, and has begun the optical data transmission and collection work between wild water cycle plot and experimental plot. Moreover, Nature Reserve has actively participated in construction work of projects of "Biodiversity Information Platform of Wuyi Mountain in Fujian, China" hosted by the provincial Science and Technology Department, making efforts to realize the research's tools and information modernized.

Administrative Bureau of Wuyishan National Nature Reserve puts the Nature Reserve as a natural scientific research base of colleges, universities and research institutes. It enhances use discussion of research projects with the Chinese Academy of Sciences Microbes, Fujian Academy of Forestry, Nanjing Forestry University, Xiamen University and so on. In addition, it enters into the agreement with more than 20 colleges and universities inside and outside the province, to become a base of their teaching practice. These actions build more platforms for scientific research of Nature Reserve, which make science and technology play a leading

role better in the construction and development of Nature Reserve.

## **5. Making efforts to build a harmonious and civilized demonstration area of ecological protection**

### **5.1. Fruitful results achieved by the protection building of Wuyishan Nature Reserve for 30 years**

In the 30 years, Wuyishan National Nature Reserve of Fujian put protection as the root, community as the base, actively responding to the major contradictions between management of protection and community development. It innovated in mechanisms and measures of joint protection, and fully played the leading role of science and technology, initially achieving the goals of coordinated development between nature conservation and community economic development.

Now, the rate of forest coverage of Wuyishan National Nature Reserve of Fujian reaches 96.3%, over the beginning of built-up areas by 4.2%. And its forest accumulation increases by 22.8% than that of the beginning of built-up areas. 29,000 hm<sup>2</sup> native regions in the subtropical forest ecosystem has been well protected, with 11 types of sub-tropical vegetation, 17 kinds of subtypes, 69 formations and 196 association groups. It is possessed with typicality, diversity and systematic of vegetation types in subtropical regions, and includes all sub-tropical vegetation types of China, which is sole in the same latitude band of world. Survey shows in the region 840 kinds of lower plants, 2,888 kinds of higher plants, 479 kinds of terrestrial vertebrates, 31 orders of insects with 5,000 species, of which the numbers of higher plants and animals increase a lot than those of built-up areas in the initial stage. All of the rare flora and fauna are well protected in the Nature Reserve. Therefore, biological diversity of Wuyishan Nature Reserve has gained highly valued. In the "China Biodiversity Country Study" which is compiled by 14 ministries of the country, discussed and passed by the State Council Environment Committee, and announced to the world, reveals that the Wuyi Mountain in Fujian represented by Wuyishan Nature Reserve is listed as one of the 11 key areas of diversity conservation of terrestrial biomes in China. It is only one key area in the entire southeast.

Ecological impact of Wuyishan Nature Reserve not only provides a guarantee of sustainable development for the local community economy, but also brings a valuable brand for the economic development of Wuyi Mountain. Wuyishan Nature Reserve is located on a multi-prone area of over mesoscale natural disasters in China. It has the lowest temperature, the largest rainfall, the longest fog and the largest humidity in Fujian. In addition, the region has an average elevation of 1,200 meters. And its mountain is very high and slope is quite steep. The relative difference in height is up to 1,800 meters and average rainfall can reach 2,500mm annually. In 1998, the flood occurred throughout the country. According to the monitoring of flood warning system of Minjiang River, the rainfall was recorded 4,037mm in Xianfengling of Nature Reserve, of which rainfalls were also as high as 1,636 mm for 13 consecutive days. If the centralized rainfalls occurred in general areas, it would cause severe flooding and landslides disasters and its consequences would be incalculable. However, although the disasters also happened in Wuyishan Nature Reserve, they focused on roads, bridges, poles. They didn't bring much injury for resident in the area or cause the chain disasters outside the area. Therefore, Wuyishan Nature Reserve is considered as an important ecological barrier in northern of Fujian.

Wuyishan Nature Reserve is the important source and catchments of the mother river Minjiang River of Fujian. And it is the origin and upbringing area of Jiuqu Stream that is the essence of Wuyishan Scenic Area. Jiuqu Stream in the Nature Reserve is about 25 km and basin area is about 130 km<sup>2</sup>. Due to a lot of tree logging at the beginning of built-up areas, it caused critical situation that Jiuqu Stream nearly drought up in autumn and winter, even one raft is impassable. Now, all the year it is achieved that double rafts can be put



together except the flood season. Accordingly, Jiuqu Stream becomes the golden waterway of Wuyishan travel which amounts to a billion dollars from ticket sales only drifting of Jiuqu stream each year, and the tourism economy driven is up to 10 billion Yuan or more.

Wuyishan Nature Reserve is fully affirmed and highly praised by domestic and foreign experts and scholars for its hard work and outstanding achievements. In 1997, "China Biosphere Reserve Network Conference and Assessment of Wuyishan Biosphere Reserve" was held in Wuyishan. Through investigating and discussing,



experts and delegates thought that since 1979 when its establishment Wuyishan Nature Reserve grasped the principal contradiction that protection and development generally faced by China's nature reserves. They also believed that it put the community's economic development into management agenda of the Nature Reserve, and that it implemented management of community participatory. Moreover, a lot of groundbreaking works were carried out, which had certain demonstration effect. In 2008, the State Environmental Protection Department, Chinese

Academy of Sciences and other seven ministries and organizations assessed the management of national nature reserves in part of the south provinces and districts. Then Wuyishan Nature Reserve obtained a high degree of recognition of the evaluation team, named the province's first one. In 1999, Molloy, the expert in the World Heritage Committee after their visit to Wuyishan Nature Reserve, considered that the species resources had exceeded the World Heritage sites that China had ratified. And it was the key area for biodiversity conservation in world. Therefore, Wuyi Mountain was able to be well selected into the list of world double inheritance. So far, it was the only one in China which is both a World Biosphere Reserve and the Nature Reserve of natural and cultural heritage of world. And it also marked that the joint protection of Wuyishan had reached a new level and new height.

Since 1999, Wuyishan Nature Reserve in Fujian has been recognized by the State Environmental Protection Administration and other four ministries, the State Forestry Administration, the State Environmental Protection Ministry and other seven ministries. Moreover, it has been awarded "Advanced Group of National Nature Reserve" for many times, and granted as "Ten of Collective Forest Protection" by Fujian Provincial Committee, and also awarded as a "Civilized Unit" for three consecutive years by Fujian Province. This is a good indication that the party and the government have a high reputation on ecological protection work of Wuyishan Nature Reserve.

## 5.2. Problems and difficulties of Wuyishan Nature Reserve

For 30 years of protecting and building, Wuyishan Nature Reserve have made many attempts, which have success, but also have lessons, and there are a lot of work needing to be strengthened and improved. Remote monitoring system of forest fire delays in delivery due to the problem of the construction organization. Bamboo handle processing of the remaining objects has always been a difficulty of protection work. Although it is basically solved through various efforts, the cleaning-up of bamboo branches in their field continues to

be difficult, and it is still a hidden danger of forest fire prevention. The community's economy develops, but the community civilization has yet to be strengthened. There are also new problems in the protection and development, the joint protections of the new situation need to be further explored. There is a large distance to the target "high-quality workers" for Nature Reserve. Moreover, the internal management also needs to be further strengthened.

Wuyishan Nature Reserve has been affected by the climate change of world. The district recorded an unprecedented -19°C low temperature. In 2008, southern snow disaster on forests in Nature Reserve has also caused great harm, especially for heavier damage bamboo. Therefore, the nature conservation work confront with new problems and difficulties.

While the green effect in Nature Reserve becomes more apparent, it is also shocked by waves of forestry commercialization around. The "isolated island" phenomenon is more pronounced, and the invisible protection pressure also increases. Due to ban on logging in Nature Reserve, the plantation timber cannot be cut. And the difficulties of the villagers' bohea production materials and materials used in daily life cannot be solved so far. There is no doubt that the Wuyishan Nature Reserve should face up the problems. Therefore, Wuyi Mountain has the hard work and the long way.

### **5.3.To work for building a harmonious and civilized demonstration area of ecological protection**

Nature conservation cause is the noble cause of the benefit of mankind. The aim of World Biosphere Reserves is "dedicated to the service of humanity's nature conservation and scientific research, but also the standards of the provisions for measuring the impact of humans on their environment", to achieve the sustainable development of human

society. As the world's biosphere and the world double inheritance, protecting biological diversity in Wuyishan Nature Reserve, solving production and livelihood of the resident, and achieving the pairs of harmony of Nature Reserve and community, mankind and nature are the goals of Wuyishan National Nature Reserve. Besides, creating a good ecological environment for regional development



of Wuyi Mountain, and making due contributions to ecological civilization is also the goals. These goals are to build a harmonious and civilized demonstration area of ecological protection in Wuyishan National Nature Reserve of Fujian.

Nature Reserve are currently being implemented in educational promotion and monitoring system, which

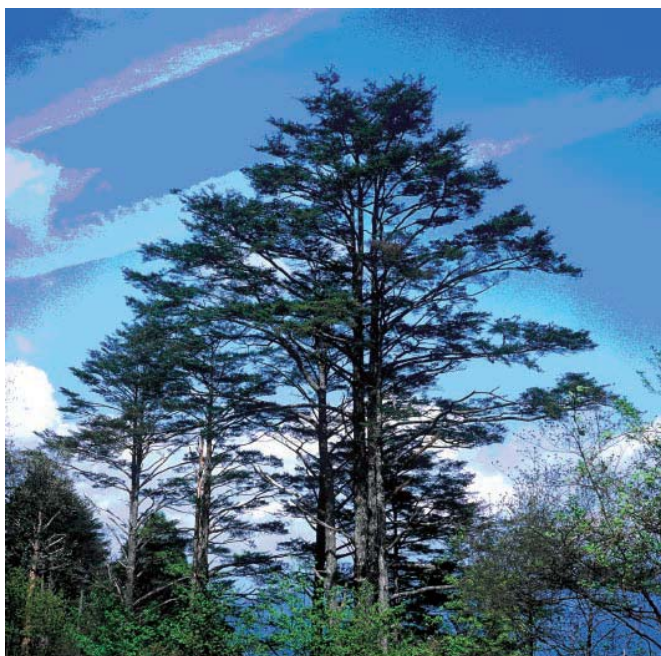
will also greatly enhance the level of publicity and education of Nature Reserve and monitoring efforts of protection. In addition, it can better play its "national scientific and educational base" and the "National Youth Science and Technology Education Base" function. And it can also greatly combine with the subtropical forest ecosystem research station in Wuyi Mountain and the biodiversity research information platform of Wuyi Mountain, to promote the protection and management of Wuyishan Nature Reserve and scientific research work in modern and information. These all draw up the beautiful blueprint that Wuyishan Nature Reserve will turn into the nationally ecological demonstration conservation.

### Sustainable living style of the local residents and environment protection in the Wu Yi Mountain Natural Reserve

Wu Yi Mountain Natural Reserves mainly inducts the sustainable living style of the local residents and environment protection into the following working highlights and community activities:

1. *Guidelines of the reserves:* Wu Yi Mountain Reserves calls for working idea of "protection, harmony, innovation, and people-orientation", continuously carries out the "protection-cantered, community-based, technology-guided, and development-aimed" working concept, set up the significant role of the community and residents of the reserves during the whole process of the management, construction, and development of the natural reserves, and introduces community development into the major agenda of the protection work in the reserves.

2. *Organizational construction:* In July 1994, the Reserves established Joint Protection Association of Wu Yi Mountain Reserves composed of the surrounding 4 counties and cities and 6 township governments under the direct leadership of Fujian Province Forestry Department, Wu Yi Mountain Reserves and related departments



of Fujian and Jiangxi Provinces, together with local villagers associations. The deputy director of the provincial forestry department takes the position as the association director. The heads of the 8 administrative units from the province forestry department, leaders in charge of forestry from the surrounding counties and cities governments, forestry department directors, and main responsible persons of the townships and villages act as members of the joint protection association. The association stipulates the Articles of Joint Protection Association and Joint Protection Association Pact. According to the Articles, annual meeting should be held with the focus on issues like strengthening resources protection and the economic development of the reserves and surrounding areas. At the same time, joint protection branches should be set up among the 5 affiliated management offices under the reserves to

provide communication platform for the sustainable development of the local areas with common concern, participation, and promotion of the society.

3. *Ecological management and protection with community participation:* With strict observation of ecological management and protection plan and procedures, fully coordinate, balance, and mobilize the economic interest and forest protection enthusiasm of the two associations of 3 administrative villages, 32 villager teams, forest rangers, forest farmers, and select 153 forest rangers and 240 half-professional fire-fighters among community

residents to reinforce community forest fire fighting organization, according to the principle of openness, fairness, and justice.

*4. Knowledge Sharing:* Wu Yi Mountain Reserves upholds the working highlight of doing a good job on Knowledge and information sharing, education, community contradiction relief, and unstable factor eradication, actively hosts community workshops, advocates related guidelines and policies from the government, launches community awareness and education activities to publicize laws and regulations such as Forest Law and Wild Animal Protection Law during annual Bird Week, Environment Protection Day, and Wild Animal Protection Month, in order to continuously enhance the environment protection and legal concept of the community residents; Timely organize symposium for the community leaders to facilitate the understanding and support from the people; Actively hold symposium for the legal representatives of the community processing companies. Timely publicize the laws, regulations, guidelines, and policies of the reserves, coordinate and communicate the related community problems. Receive visits from the community villagers; Organize primary and middle school students together with community leaders and residents to visit the reserves. Organize environment educational activities such as symposiums to further strengthen legal concept and nature protection awareness among the community residents; Make timely explanation to gain the understanding from the residents for the existing problems. Annually organize the community backbones to visit, investigate, and take training so as to enhance their protection concept, management level, and constructional ability.



*5. Village infrastructure construction:*

Up to 2009, our reserves have totally invested 40 million Yuan on village infrastructure. Since the establishment of the reserves, 80% of the original houses of the villagers have been modified (from bamboo structure to brick and concrete structure). The living environment has been tremendously improved; in 1988 340 thousand Yuan has been invested on the power grid from Huangkeng to Tongmu co-shared by Tongmu village and Aotou village; In 1991 100 optical cable telephones were set up from Wu Yi Mountain to Tongmu with the investment of 1.5 million Yuan as the first optical cable telephone line cross-village in Fujian Province; In 1994 after the local forestry department forsake the management on the reserves' roads, the management bureau especially set up road management section with average annual road management fee of 200 thousand Yuan and in total 3.4 million Yuan for the 17 years; In 1998, 3.9 million Yuan has been invested on the asphalt pavement for 30 miles from Sangang to Huangxikou; In 1999, in the time of applying for World Natural and Cultural Heritages, our reserves spent 170 thousand Yuan on cement pavement modification in Tongmu village. Concrete pavement has been performed on the side lines of almost 30 miles in some natural villages in Tongmu with the supporting capital of 100 thousand Yuan; In order to solve the drinking water problem for the villagers, the management bureau actively coordinated with the community villages to strive for water transmission project and completely accomplish tap-water project in for the community, based on the research on the production and living problems of the reserves from Fujian Province in 2005; In 2009 together with Gunagze country government our bureau planned and finished concrete pavement of the villagers' roads in the reserves, garnering 500 thousand Yuan on the project; Actively handle

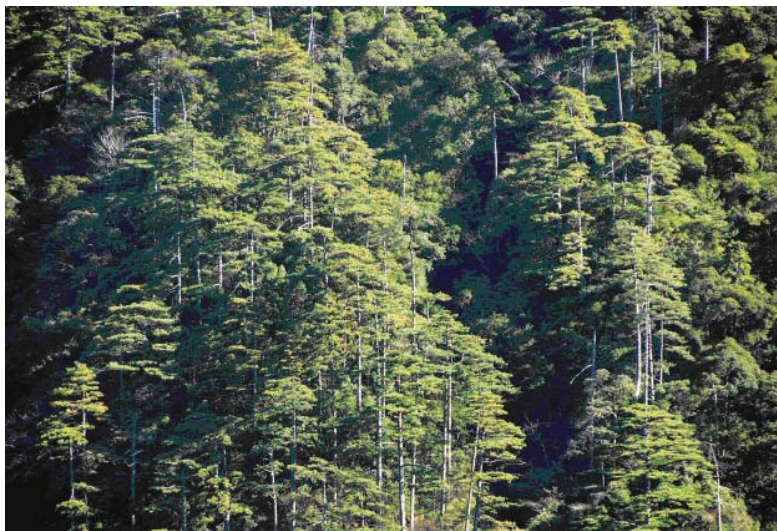
the settlement project for the residents in the geological disaster area of the experimental zone out of the reserves. Guide the reserves residents to build house out of the reserves and win settlement subsidy of 117.5 thousand Yuan; Guide the reserves enterprise in scale to move out of the reserves for development; Coordinate with the local governmental administrative department to launch the project of power modification, village road modification, electronic communication modification, and new village planning construction to effectively improve the living environment for the reserves residents and production and living conditions.

*6. Community economic development:* The reserves should properly handle the production and living requirement of the reserves residents according to related law and regulation. In the experimental zone, Wu Yi Mountain Reserves has helped the villagers benefit from the moso-bamboo production by proper arrangement of fixed moso-bamboo production area of 90 thousand mu; Instruct manufacturing and processing of moso-bamboo, by enabling provincial leading enterprises like Oasis Bamboo Manufacturing Company to develop finishing and foreign trade of moso-bamboo with key focus for the brand build-up; Set up moso-bamboo exemplary base of more than 80 million mu in the collective moso-bamboo forest and spread the model in the community with favourable result; Strive for policy support to collectively decrease tax ratio of the moso-bamboo production and exempt resources protection fee; Strengthen management service, coordinate relationship among bamboo farmers, processing enterprises, and production companies to maintain favourable moso-bamboo production and management order. Promote healthy development of the bamboo production industry and enable it the pillar for the community economy.

*Guide to develop traditional industry:* Stride 6 steps on Lapsang Sauchong black tea:

i. Guide the villagers to develop the tea plantation, recover deserted tea plantation of 1000 mu, and modify low output tea plantation of 7000 mu;

ii. Brand build-up: support the leading enterprises like Tongmu Lapsang Tea Co, Ltd. and Tongmu Tea Firm to develop traditional Lapsang Sauchong black tea industry and promote the development of the modern tea companies in scale. For instance, entitle Lapsang Tea Company to use the reserves name for free, provide land



usage permit, provide support on project and capital, and provide brand image support and quality monitoring for Oasis Tea Company of the reserves with burgeoning of a batch of tea brands like "Wu Yi Hong", "Liang Pin Ji", "Yuang Zheng", and "Tong Mu", etc.;

iii. Propagate black tea culture: committed to the research and popularization of traditional black tea culture. Set up special Lapsang Sauchong black tea research team and disseminate the research result—Ancestor of the World Black Tea-Wu Yi Mountain Lapsang Sauchong Black Tea and How to Make a Pure Black Tea to all walks of life ranging from the counterparts, political and business field, top heads, to the academic arena;

iv. Set up Lapsang Sauchong Black Tea Research Institute. Capitalize the experimental tea firm with Aotou

villagers to carry on traditional technology, engage in innovation, and lead community to develop black tea industry in order to use small might to gain great achievement. At present, Lapsang Sauchong black tea has become emerging industry.

v. Enhance quality: Invite experts like Luo Shaojun, member of the national committee of CPPCC, to give lecture to the tea farmers in the reserves so as to convey market concept, industry perception, marketing and sales, as well as integrity awareness to the farmers.

vi. Adopt high end marketing strategy: We actively promote Lapsang Sauchong black tea to the social elites to achieve pyramid marketing result and explore black tea market in a bid to irradiate the glamour of black tea, which has been overshadowed for more than 400 years.

Scientific utilization of ecological environment resource advantage and controllable development of ecological tourism: Our reserves put forward new concept of ecological tourism. Transform the resources-consumption economy for pure utilization of moso-bamboo to non-resources-consumption economy. According to Ecological Tourism Plan of Fujian Wu Yi Mountain Natural Reserves approved by National Forestry Ministry, our reserves constantly stick to the principle of development with the precedence



of planning, joint participation and mutual benefit of the community. We respect the ecological disciplines, attach great importance to the feature of exclusiveness of the ecological tourism, and consistently standardize and develop cuisine management in the reserves in a healthy and orderly way. Currently there are 8 farmer hotels, 10 restaurants, and 5 specialties sales companies managed by the villagers. The development of the ecological tourism also put great impetus on the operation and development of dried bamboo shoots, honey, torrey grandis, and crafts in the community. The ecological tourism has also become a major contributor to the revenue of the community.

*7. Project impetus and policy support:* Since the establishment, the reserve has accumulated gain of 8.6 million Yuan on the projects for the development of the community economy. The reserves has striven for beneficial policy at various stages from limited utilization to planned sustainable utilization, from planned sales to market-oriented sales to complete self-marketing, as well as reduction and exempt of various fares.

- From 1998 to 2001, GEF project was implemented in our reserves. We compensated and recovered the moso-bamboo and tea plantation in the biological corridor and surrounding areas of Tongmu village with the total compensation worth 2.33 million Yuan;
- Support leading enterprises to develop ecological drifting program. In 2002, we filed an application report to province forestry department for the approval of developing ecological drifting program by Yuanxun Tea Firm in the reserves, which may not only help the company develop, but also lead the processing and tourism industry of the reserves and solve the employment problems of some community residents.

- Implement moso-bamboo tractor road project. In 2005, in order to enhance bamboo mountain operational level, reduce cost, increase revenue, facilitate bamboo industry development, our reserves compiled Construction Plan of Moso-Bamboo Production Road of Fujian Wu Yi Mountain National Natural Reserves (2005-2009), to transform the original bamboo mountain sidewalk into tractor road with rigid implementation to drastically reduce production intensity; If the cost of each moso-bamboo is reduced by 2 Yuan, the total cost can be reduced by 1 million Yuan, provided an amount of 500 thousand moso-bamboo are produced. At the same time, the reserves distribute compensation of 200 thousand Yuan for the community tractor road. 4, Since 2008, According to Min Political Document No. [2008]1, an annual compensation of 1.19 million Yuan is allocated for the community forest property owner.

In 2008, our reserves won 2008-2010 modern agricultural (tea industry) production development fund with annual compensation of 1.5 million Yuan for consecutively three years till 2010. In 2008, our reserves invested the capital in standardized ecological tea plantation of 1600 mu and breed-upgrade plantation of 700 mu in Tongmu, Aotou, and Changjian village. In 2009, we improved tea plantation of 600 mu, the breed-upgrade plantation of 600 mu, and plantation drainage system covering 1550 mu in Tongmu, Guilin, Dapo, and Dazhou village. The ecological plantation construction has laid solid foundation for the sustainable development.

In 2009, the reserves won production support capital of 390 thousand Yuan for the community residents. In



addition, in handling natural disaster, such as unprecedented frost disaster, besides self-salvation, we also actively collected fund, allocated compensation of 1.5 million Yuan, got involved in the self-salvation efforts on production in the community to maintain normal production and living order of the residents as well as the stability of the community.

In short, Wu Yi Mountain Reserves has already introduced the sustainable development of the local residents' lives and environmental protection into every working highlight and community activity on various aspects ranging from protection management, education and creating awareness, economic development, social culture, and living environment.

## **Handling of Reserves Core, Buffer, and Experimental (Transition) Zones with multi-layer management system:**

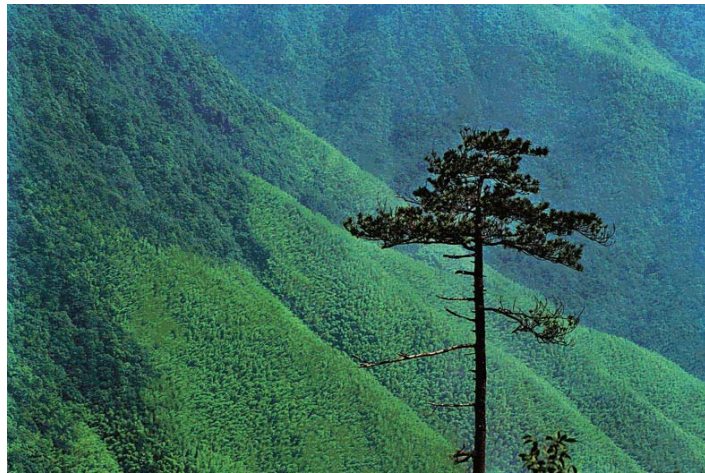
Fujian Wu Yi Mountain National Natural Reserves totally covers an area of 56,527 hectares, with core zone of 29,272 hectares (51.8%), buffer zone of 12,395 hectares (22.0%), and experimental zone of 14,860 hectares (26.2%). The core zone is under absolute protection and is forbidden for access from any unit and individual without special authorization. Buffer zone allows scientific research and observation activity



under the premises of strict formality for approval, for instance, ecological positioning observation station for the observation and monitor of the ecological environment. The Experimental zone allows appropriate scientific and research work, teaching practice, scientific experiment, improve understanding, as well as visit and investigation with proper area separated as fixed production area for moso-bamboo and tea production to coordinate the relationship between human and nature. In order to improve the livelihood of 2,453 villagers in the experimental zone, our bureau actively took part in the exploration of community development concept of promoting biological variety protection of 90% of the area with ecological industrial development of 10% of the land, defined 10% of the total field as fixed production area, and guided the villagers to develop non-consumption ecological industry like bamboo, tea, and honey production in a scientific way to constantly increase revenue for the community residents, solve the production and living problems of the residents, and realize the coordination and unity of resources protection and community development.

## **Scientific and Cultural perception of local residents in Wu Yi Mountain Natural Reserve**

At the outset of the establishment of reserves, Fujian province Science Association led and organized thousands of people from 43 units around the country in 6 teams to perform comprehensive scientific investigation on Wu Yi mountain for 10 years, figuring out the essence for the construction and development of Wu Yi mountain and providing significant theological foundation for the reserves development.



In 1985, in order to give full play to the moso-bamboo resources and solve the production and living problems of the villagers, Wu Yi Mountain Natural Reserves set up research team on Natural Moso-Bamboo High Production Structure and Biomass Research, established moso-bamboo production exemplary base of thousands of mu in Da Zhu Lan, and introduced good breeds and advanced technology for moso-bamboo cultivation, comprehensively spread the fruitful result to the society to drastically increase the bamboo culms in the whole area with an average increase of DBH by 30%. Moso-bamboo and deep processing has become the pillar of the community economy and played an important role in tackling the production and living problems of the villagers. In the 1990s, two of the three administrative villages have become star villages of Fujian province with the other one as the exemplary village for moderately prosperous village in its own region.

In January 2002, with reference work made by the Lapsang Sauchong black tea research team of Wu Yi Mountain Reserves, Wu Yi Mountain Reserves has been confirmed as the world black tea ancestor---origin and major producing area of Lapsang Sauchong black tea. In order to further explore Lapsang Sauchong black tea culture and traditional manufacturing technology, since 2008, we have made research on the marketing prospects of Lapsang Sauchong black tea, according to the concept of industrialization. Cultural advantage transformed into economic advantage. Black tea quickly gained reputation with full recovery of the tea production in the reserves. Since then, unitary economic pattern with bamboo production as main focus has been changed. The revenue of the villagers has increased conspicuously. At present, Tongmu and Aotou villages have become the riches villages in their own administrative regions respectively. Dapo village has

also become the moderately prosperous village.

Ecological civilization dissemination requires incessant efforts in the long run for the reserves. Our bureau has provided an ideal place for education on science popularity by constructing and improving museum, education museum, ecological positioning station, precious plants garden, ecological educational path of Tao Yuan Yu, and natural moso bamboo exemplary base of Da Zhu Lan, receiving honorary title of "National Educational Base for Science Popularity", "National Base for Youth Education", and "Ecological Culture Education Base of Fujian Province". In 2009, there were as many as 40 thousand people received ecological civilization knowledge and education in the reserves.

The whole process of scientific research and cultural dissemination includes interview with the residents to know the weather history, natural disaster, wild animal and income, as well as cooperation with forestry bureau of the surrounding counties and cities to jointly set up fire-prevention belt at the boarder of the reserves to facilitate active cooperation and participation of the local government and community.

## **Sustainable Development Principle of Wu Yi Mountain Natural Reserve**

After years of exploration, with the guideline of "effective protecting natural resources and environment and appropriately developing resources with strong renewability under good control", Wu Yi Mountain Reserves actively supports and guides residents to develop production, establish management mechanism with the participation of the community, effectively promotes community economic development, realizes coordination and unity of the resources protection and community development, and enable the protection management and development in a sustainable way.

The major efforts are:

1. Strengthen legal education and enhance legal concept and protection awareness. Widely advocate legal knowledge of natural reserves and wild animal and plant protection as well as related policy in the reserves through brochure and pictorial, environmental education in primary and middle schools and villages, as well as symposiums. Constantly enhance the legal concept and protection awareness of the community residents and strengthen their understanding and confidence in natural reserves work.
2. Carry out specific measures, support community construction, and develop community economy. Voluntarily shoulder the maintenance work of the abandoned main road of the reserves from the local forestry department to guarantee smooth passage for thousands of residents; Allocate fixed production area in the experimental zone under the premises of guaranteeing ecological safety for the community residents to conduct moso-bamboo and tea production and provide developing potential for in-depth ecological industrial development. Guide the villagers to build up ecological brand image and enhance marketing strategy for revenue increase by spreading research result of moso-bamboo exemplary base and world black tea ancestor Lapsang Sauchong black tea history. In addition, the reserves also took active actions in winning community economic development project and capital for further economic development of the community. These measures fit the developing condition and guarantee the stable and sustainable development of the community.
3. Establish joint management mechanism and promote coordinated development. Along with the constant development of the community economy, the production and living of the residents have been stabilized with increased income. The villagers have strengthened understanding on natural reserves work, constantly increased concept of voluntary participation of the resources protection, and formed characteristic community-involved management mechanism. In July 1994, in accordance with the related management regulation of the reserves issued by the Fujian Province government, Wu Yi Mountain Natural Reserves together with Fujian

Province forestry department, Nanping municipal forestry bureau, government and forestry department of Wu Yi Shan city, Jiayang city, Guangze county, and Shangwu city, 6 surrounding townships, and 15 village farms established joint protection association, forming three-layer management network of "management bureau-management office-checkpoint" and "joint protection association-joint protection team-village and plantation" with two lines intertwining. In August 1999, with high attention from province forestry department and Nanping forestry association, 4 surrounding counties and cities invested nearly 800 thousand Yuan in constructing a biological fire-prevention belt of 208 miles circling the reserves. In 2001, just in time of the pilot work of ecological forest project, the forest ranger will be hired in the whole reserves. 6% of the residents directly participated in the resources management work. The reserves also spent ecological forest compensation on organizing every village and plantation to set up 12 half-professional fire-fighting teams with 240 people mainly composed by veterans and youth to make our forest fire-prevention and outdoor patrol and monitoring work to have qualitative breakthrough.

## **Community involvements in the activities of Wu Yi Mountain Natural Reserve**

At the beginning of the reserves, the residents cast doubt on the series of resources protection measures and even demonstrated resisting mood; in 1998 after natural forest was forbidden for felling, the reserves stalled wood logging practice, resulting in sharp revenue reduction of the village and villagers, which also intensified such mood. The reserves adopted the following measures based on the actual situation:

*1. Intensify community awareness:* Widely advocate legal knowledge of natural reserves and wild animal protection and related policies of the reserves. Print Wu Yi Mountain Reserve Case Anthology for improving the understanding; Hold symposium in the villages to advocate Party and government policies and guidelines on forestry and nature protection for the villagers, make introduction on related situation of the reserves construction and development, and get to know the existing problems of the community development. Enhance mutual understanding between the reserves and the community and strengthen confidence of the residents toward nature protection work through symposiums.

*2. Start from solving basic living problems for the people:* Strive for beneficial policies. Develop characteristic industry in moso-bamboo, tea, and ecological tourism. Strengthen support on community. Give priority to community economic development together with natural resources protection. Support the economic development on policy, capital, and technology. Help the community find new source for economic growth. Develop the economy based on Management Plan of Fujian Wu Yi Mountain National Natural Reserves, Operational Plan of Fujian Wu Yi Mountain National Natural Reserves, Ecological Tourism Plan of Fujian Wu Yi Mountain National Natural Reserves.

*3. Actively launch community coordination and service:* The administrative office and 5 management departments should give full play of their function: First, strengthen coordination and service of the community. Hold annual community symposium to advocate related national policies, get hold of the community requirement, and enhance communication and understanding between the reserves and the community based on the community situation; Second, Coordinate community disputes. For instance, coordinate the existing problems on the allocation of the ecological forest in Xia Shiyuan Village of Guangze County. Actively apply for the compensation for the 4 villagers locating in geographic disaster area of Tongmu village; In 2007, under attentive coordination of leaders and staff of the management bureau, the 20-year boarder disputes on the bamboo forest of more than 800 mu in Huangkeng area relating with the interest of 4 villages named Jiufeng, Guilin, Aotou, and Changjian have been successfully settled to further improve the harmonious development of the community. In order to improve reserves environment, conduct annual inspection of the moso-bamboo processing firm and approval process of new firm; In the long run, continue

investigate the poor family in and around the reserves each year. The community has gradually strengthened understanding of the reserves and supported the reserves' work after incessant efforts.

*4. Joint Protection Association:* Widely contact and unify the residents from superior department, reserves, local government and surrounding areas to jointly protect and save endangering species, maintain biological variety, reasonably develop and utilize natural resources, and launch scientific research and protection management work. The Joint Protection Association timely communicates information, cooperates on fire prevention, and cracks down the illegal forest-destruction behaviours like wanton felling of trees and wanton poaching through meetings, visits, and joint actions.

*5. Community Meetings:* Organize responsible persons of the village plantation for the meeting (local symposium) to discuss with the villagers on the future development strategy.

*6. Monthly routine meeting for the forest rangers of each management office in the reserves:* The reserve has 153 forest rangers in each natural village. They are all outstanding and reverend comrades from each village, capable of providing timely feedback of the comments and suggestions from the masses in the routine meeting to provide evidence for decision making on the community protection and development.

## **Challenges and Opportunities for Local Government in Managing Wu Yi Mountain Natural Reserve:**

Fujian Wu Yi Mountain Natural Reserves management bureau, under the jurisdiction of Fujian province forestry department, is the institution financially controlled by the province and managed according to the public service law. The management bureau established Party Committee, consisting of 12 departments and offices such as offices, department of accounting, department of project, department of protection management, and community management, as well as 5 management offices. 11 checkpoints have been set up on the major transportation roads in the reserves under the approval of the provincial government. The reserves forest police station sets up 4 forest police branches and 1 police duty point in 5 management offices to conduct dual management. The checkpoint and police branches are the third-class management organizations.

Wu Yi Mountain Reserves is located in Wu Yi Shan city, Jiayang city, and Guangze county of Fujian province, boarding with Shaowu city and Qianshan county of Jiangxi province. In 1994, Wu Yi Mountain Reserves set up Joint Protection Association of Fujian Wu Yi Mountain National Natural Reserves (Joint Protection Association for short) composed of province forestry department, governments and related departments of the surrounding 4 counties and cities, natural reserves and related counties and townships of Jiangxi province, as well as plantations and related departments in the reserves or in the surrounding counties and townships as the coordinated organization for the biology's variety protection of the reserves and surrounding regions. Since the set-up of the Joint Protection Association, the deputy head of the province forestry department always took the position as the director of the association with forestry leaders of surrounding counties and cities governments, director of the forestry bureau, as well as main responsible persons from each county, township, and village plantation as the members. After 17 years of operation and practice, the association has been improved constantly and played important role in coordinating the conflict between the protection and development.

Wu Yi Mountain Reserves management mechanism is in line with its own characteristics and protection development trend. First, Wu Yi Mountain Reserves is the institution under direct jurisdiction of Fujian province forestry department with the enforcement of public service law. Such mechanism not only provide long-term and stable guarantee on the organization, personnel as well as finance, but also will not be effected by the local government's efforts in development, which is helpful for the enforcement of related national and

reserves' laws and regulations. Second, the management mechanism of Wu Yi Mountain Reserves is in abreast with the requirement of international biosphere reserves. The participative management may skilfully handle the contradiction between community economic development and resources protection. Third, the reserves is not in direct control of local government, which may be conducive to giving full play of the reserves' independent functional role, in particular of stipulation of protection regulations, institutionalization of related laws and regulations, and enforcement of the law. Such mechanism may appropriately tackle the problem of particular emphasis on development on handling the balance between protection and development from the local government. For instance, the conduct of developing tourism in the surrounding areas, expanding land operation areas, and increasing community economic parameters may bring about serious threat to protect the reserves resources. Some departments even occupied and illegally transferred land for mining and investment at the cost of environment. Fourth, the establishment of the association may smoothly handle the relationship between protection and development. In particular in recent years, the government has attached great importance to the reserves construction and implement biological forest compensation system. Fujian province took the lead to stipulate special policy to support reserves development. Wu Yi Mountain Reserves focuses on ecological and cultural construction, explores and publicizes black tea culture, in order to boost



the community economy. The Joint Protection Association has played a tremendous role in resources protection and economic development.

From the policy and theoretical perspective, the government should support and push forward the construction and development of the biosphere reserves. However, the government role is constantly changing in actual work. It may promote and restrain the work efficiency of the biosphere reserves with main focus on promotion. The government coordinates and supports the related work in the reserves in the following three aspects:

1. Introduce fire-prevention into the work responsibility scope of the local government to effectively enhance protection efficiency of the forest resources;
2. Support with the comprehensive social security management work in the reserves to maintain the security

and stability of the reserves;

3. Provide policy and some capital support on public infrastructure construction such as water, electricity, communication, and transportation. Effectively improve the production and living conditions of the reserves residents. However, the government will adopt several restrictive measures to refrain and reduce the work efficiency of the biosphere reserves, if the resource protection work is conflicting with the government

measures for economic development of the region.

## **Challenges for sustainable development in Wu Yi Mountain Natural Reserve**

According to the actual management situation, Wu Yi Mountain Reserves adopted various kinds of measures in tackling challenges for sustainable development in order to suit to different conditions:

- First, make proper adjustment on function division for natural resources and environment protection with full consideration of production and living needs of the villagers under the approval of the superior department;
- Second, actively support the industry of the reserves. For example, apply for Fujian province modern agriculture(tea) development project fund of 3 million Yuan (2009-2009) for the black tea industry development in 6 villages named Tongmu, Aotou, Dapo, Changjian, Guilin, and Dazhou;
- Third, let the villagers benefit more from the beneficial policies on the reserves from the government with an annual income increase of 300 thousand Yuan for the village;
- Fourth, open the infrastructure of the reserves, such as program-controlled telephone, cable, and special power line, to the public. Support public affairs and company development of the villages. Provide financial support on road construction and drinking water project of the villages within the reserves;
- Fifth, take care of the village of old revolutionary base point sacrificing for the reserves construction. Give support on the reconstruction of the flood-stricken Taolin village and moso-bamboo production of Dazhou village of Guangze county with total investment of 350 thousand Yuan and discount interest loan of 50 thousand Yuan;
- Sixth, pay visit to the community impoverished residents. Strive for compensation for the disaster-affected people and mobilize managers and staff to make donation to the impoverished masses.

Self-management can be particularly shown in letting the people get to know the meaning and responsibility of the participation in joint protection from their own interest. One of the most important methods is to support the villagers to carry out household contracted responsibility on the collectively owned moso-bamboo forest and tea plantation in the experimental zone. Help the villagers increase output of the moso-bamboo through technology. Reduce charging standard. Let the villagers feel the necessity of the protection work from their own interest to voluntarily make self-management in accordance with Articles of Fujian Province Wu Yi Mountain World Natural and Cultural Heritage Protection, Wu Yi Mountain Reserves Management Method, and related regulations on fire-fighting as well as logging, transportation, and sales of moso-bamboo to change the role of the residents from the object of the protection management to the subject of the joint protection management and mobilize the initiatives of the villagers to participate in the resource protection efforts to the greatest extent.

Moso-bamboo production has once become the pillar industry of the community and has made great contribution to the community development. However, problems like processing pollution and invasion of moso-bamboo into broad-leaved forest has seriously impacted on the protection of the environment and biological variety. The reserves management bureau should timely guide the industry transformation in the community economic development to weaken reliance on bamboo industry and change the product of bamboo sleeping mat and chopsticks to bamboo floor so as to enhance added value of the product and reduce handling

difficulty of the discarded material. The processing residues are mainly used for processing bamboo charcoal or as fuels for the production, which may basically solve the pollution problems.

## **Cooperation Management of Wu Yi Mountain Natural Reserve**

The cooperation management mainly consists of:

1. Investigate interest of various partners and involve different social groups into management and decision-making process for the natural reserves work;
2. Define the encouraging measures for the protection and sustainable utilization of the natural resources;
3. Develop and establish mechanism-Joint Protection Association for management, coordination, and overall management of various plans and activities in the reserves;
4. Successively establish natural operation exemplary station for Da Zhu Lan moso-bamboo forest, Lapsang Sauchong black tea research institute, and Aotou experimental tea firm to guide the community masses to utilize non-consumption biological resources like moso-bamboo and tea for economic development in the scientific way.

## **Participation of Wu Yi Mountain Natural Reserve in networking activities**

The management network participation is mainly realized in the following four channels:

1. Attend or host domestic and international biosphere reserves network meeting;
2. Implement or participate in the evaluation of the domestic biosphere reserves network;
3. Strengthen communication among members of domestic and international biosphere reserves network. Make regular work status report to secretariat of China biosphere reserves committee; Conduct long-term management status communication with members of domestic network; Make careful summary of protection management experience and actively contribute articles to biosphere reserves magazines;
4. Conduct persistent investigation and communication activities among network members. Organize outstanding young talents to visit advanced reserves for on-job practice and learning;
5. Collect and study related magazine on human and biosphere. Keep timely abreast with the working principles, targets and requirement of the world biosphere reserves management.

Since joining in the World Network on Biosphere Reserves in 1987, Wu Yi Mountain Reserves has received delegations from domestic and international biosphere reserves members in total of more than 200 times. In addition, Wu Yi Mountain Reserves attaches great importance to the contact with secretariat of Chinese National Man and Biosphere Reserve Committee and conduct evaluation on ten years' membership of Wu Yi Mountain Reserves in the network relying on the secretariat. Wu Yi Mountain Reserves published an exclusive article on comprehensive introduction on Wu Yi Mountain Reserves hosted 11th East Asia Biosphere Reserve Network and China Biosphere Reserves Network Meeting, conducted Wu Yi Mountain Reserves evaluation activity with the participation of members from 8 countries, attends network meetings and activities organized by the secretariat, keeps acquaintance with Seville Implementation Program and Madrid Action Plan, defines objectives and requirement of world biosphere reserves development, strictly follow principle of protection,

scientific research, development, and education of the international biosphere reserves with the concept of protection as essence, community as foundation, technology as driving force, and development as momentum, to constantly establish and improve standardized and effective protection and control system, strengthen resources protection and surveillance, actively explore sustainable development for the natural reserves with Chinese characteristics. The forest resources protection has achieved effect. The community foundation has been further consolidated. Every work has been pushed forward.

In addition Wu Yi Mountain Reserves

1. Present comment and suggestions on the sustainable development of the biosphere reserves to each domestic and international biosphere reserves network meeting, according to its own management experience;
2. Present reasonable proposal for improvement to the evaluated reserves during the biosphere reserves evaluation activities organized by the management network;
3. Participate in or make survey on biosphere reserves network and objectively reflect the urgent existing problems during the biosphere reserves construction and development to provide scientific evidence for decision-making of the management network heads.

## **The Outreach of Wu Yi Mountain Reserve**

The common understanding on the biosphere is promoted and popularized in the following aspects:

1. Awareness and education: Advocate the meaning of the establishment of the biosphere reserves and the common understanding achieved from various types of biosphere reserves through different channels;
2. Joint management of the community: Involve people from all walks of life to participate in the construction of Wu Yi Mountain Reserves through different approaches to directly feel the role of the biosphere reserves in the whole society;
3. Participation of community in Projects: The community villagers get to know the role of the biosphere reserves by the implementation of projects like GEF and try to accommodate the advocated sustainable development principle in the biosphere reserves on living style.

## **Sustainable Development Plan for Wu Yi Mountain Reserve**

Mainly in four aspects:

1. Investigate various interest groups. Fully involve people from all walks of life to participate in the management and decision making process for the natural reserves;
2. Define encouraging measures on protection and sustainable development of natural resources;
3. Develop and establish mechanism conducive to management, coordination and overall management of various plans and activities of the biosphere reserves;
4. Set up Da Zhu Lan moso-bamboo natural operation exemplary base.

Currently prepare to set up Aotou tea ecological exemplary base to make sustainable utilization of the important biological resources of the region. Moso-bamboo, a regenerated resource, characterizes fast



growing speed, short logging cycle, and high economic value, is the major economic resource of the villagers. The experimental zone of the moso-bamboo covers the area of 80 thousand mu. The management bureau guides the community to properly manage moso-bamboo resources, transforms the extensive operation to scientifically intensive operation, enhances moso-bamboo output, and effectively restrains the area expansion of pure moso-bamboo forest. In addition, in-depth processing of the moso-bamboo increases moso-bamboo utilization rate and output value.

Tea is the major economic crop of Wu Yi Mountain Reserves, which currently accommodates an area of 8,000 mu. Lapsang Sauchong black tea is famous for its uniqueness worldwide. The community villagers have more than 400 years of history and tradition to plant the tea. The reserve has promoted the great development of the community tea industry through tea plantation management, skilful marketing and sales, and expansion of brand image to become the biggest pillar industry in the community economy.

In Wu Yi Mountain Reserves the sustainable development is mainly demonstrated in dedication to policy making on the best balance model between protection and development as well as technology emphasis on three specific areas of environment, economy, and the society.

The reserves defined 10% of the total area in the experimental zone as the fixed production area to guide the villagers to develop non-consumption ecological industry in moso-bamboo, tea, and honey production in the scientific way, constantly increase income for the community masses, realize coordination and unity between resource protection and community development, and explore the protection and development model of promoting biological variety protection of 90% of the area with 10% for ecological industrial development, which is feasible and sustainable on policy making. Technically speaking, the reserves has maintained biological variety through actual protection of the forest and wild animal and biological resources in the reserves, realize the economic sustainability by developing community economy, and gain recognition from the society by scientific research, awareness creation and education, as well as leisure and recreation.

Evaluation on protection, scientific research, community development, and science popularization based on sustainability evaluation form of Swiss Berne Environment Protection Coordination Office has shown that the reserves can fully meet the requirement of the evaluation form after 30 years of construction, which proves to be a successful case for feasible and sustainable development.

Since the foundation, the reserve has always been baffled by the relationship between protection and development. There are some existing environmental, economic, and social problems, such as illegal logging of forest, forest fire, diseases, forest-nibbling problems by interest groups, sustainable development, further implementation of scientific research and cooperation, update of the form and content of education, as well as interference and side-effect of the leisure and recreation to forest resources, etc. Careful treatment and analysis of the root cause of these problems and exploration of the measures and means to tackle the problems is critical to test the ability for emergency analysis and handling. In fact, the reserve has its own theory and practice on emergency analysis. The reserves has set up several forest protection forces such as police branch, forest administration, forest armed police, and forest protection team to guarantee the resource safety through regular patrol, education, and special crack down, targeting possible behaviours for forest destruction; Strive for development project and capital support and guide the community to develop economy so as to improve community economic development and production and living status of the residents; Properly resolve the negative impact of scientific research, education, as well as leisure and recreation by voluntary communication, intensified cooperation, and standardized management. In recent years, due to inaccurate understanding of the community residents to the protection and development policies, some residents even lodged an appeal to the reserves management department. After communication, education, and support from the community, these incidents have been resolved smoothly, which has also enhanced the ability to handle

emergent issues.

## **Institutional Mechanisms of Wu Yi Mountain Reserve**

Currently the reserve has institutionalized protection, scientific research, and internal management. First, protect in conformity with the law with the combination of crackdown and prevention. The reserves has always given priority to protection management work on natural resources and environment by setting up complete management organization and improving management measures. The whole reserve is divided into 5 parts for management with 11 checkpoints at the main access of the road. The reserves hires forest rangers and half-professional fire-fighting members, establishes various kinds of management system such as resources management, law enforcement, and forest fire prevention, conducts long-term education for the reserves and surrounding areas to enhance the protection awareness of the masses, and at the same time gives play to the functional role of forest police to crack down illegal behaviour of natural resources destruction.

Second, the joint protection, in terms of the actual needs of the protection and development of reserves, Wu Yi Mountain Reserves sets up the three-layer management network of “Joint Protection Association-Joint Protection Branch-village plantation” and “management bureau-management office-checkpoint” with two lines intertwining. In order to meet the requirement from the government to the natural reserves construction and community development and skilfully handle production and living problems of the villagers, the reserves management bureau constantly improves the internal organizational structure by setting up community management department, black tea research institute, and project department, actively strive for beneficial policy for the people, guide and support appropriate utilization of natural resources, develop moso-bamboo and black tea industry, explore and conclude the innovative experience of “promoting biological variety protection of 90% of the area with 10% for ecological industrial development”. The people’s living standard has been improved conspicuously and has become a successful example for well handling conflict between protection and development in Chinese natural reserves.

Institutionalization of the internal management, through strengthen employees’ education management and financial management through improved management system. Strengthen post training by arranging follow-up training, professional training, and special training for the leaders and employees to update knowledge and enhance comprehensive quality of the management team. Stabilize the workforce, to understand government policy, law, and regulation, create favourable working style of the Party, and shape good situation for coordinated development of political, material, spiritual, and ecological civilization.

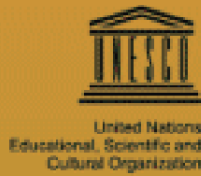
Institutionalization of scientific research management, from the practice, Wu Yi Mountain Reserves has deeply felt the significant meaning and tremendous role of technology has played in the reserves’ construction and development. With close reliance on the actual situation of the reserves’ construction and development, the reserves has conducted research on moso-bamboo and tea and continued research on basic subjects of the reserves with hundreds of articles and books published. The establishment of the ecological system of Wu Yi mountain mid-subtropical evergreen broad-leaved forest positioning research station has provided a new technological platform for Wu Yi Mountain reserves as well as a good ladder to enhance protection management standard in the reserves. The reserves currently has complete management organizations and strong scientific and research team. Active involvement in the scientific research and communication with the related scientific research institute and universities has gained fruitful result and cultivated a batch of management talents at the same time.

At the outset of the foundation of the reserves (1980), Fujian Wu Yi Mountain Reserves management department set up a research office. In 1996, Fujian Wu Yi Mountain biodiversity Research Centre was established after the approval by the Fujian province compilation association. In 2000, the ecological system

of Wu Yi mountain mid-subtropical evergreen broad-leaved forest positioning research station was approved by the State Planning Committee and State Forestry Ministry for establishment.

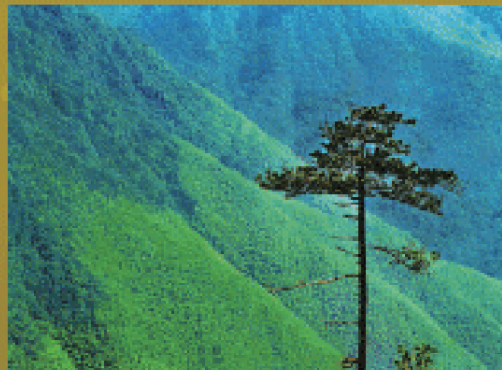
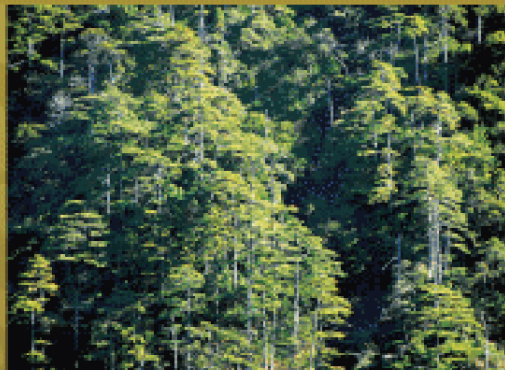
The reserves are an important base for research on sustainable development, which reveals natural change, guiding natural resources protection and recovery of the natural environment, maintaining ecological balance, and finally realize harmonious development between human and nature.

The research on sustainable development of the reserves is based on the platform of research on ecological positioning of Wu Yi mountain mid-subtropical evergreen broad-leaved forest, with the focus on research on service function of forest ecological system together with central work on reserves protection management to conduct research and monitoring on protection of biodiversity, protection of endangered wild animals and plants, as well as research on sustainable development of the reserves, in order to develop the reserves into the demonstration base with biodiversity for research on mid-subtropical evergreen broad-leaved forest ecological system, and research and monitoring of the natural reserves for sustainable development.



# 构建和谐生态文明

武夷山国家级自然保护区作为世界生物圈保护区网络可持续发展学习地的  
实践总结：联合保护，协调发展，建设和谐文明的生态保护示范区  
——福建武夷山自然保护区30年



武夷山国家级自然保护区管理局  
联合国教科文组织驻华代表处  
中国人与生物圈国家委员会  
东亚生物圈保护区网络

# 构建和谐生态文明

武夷山国家级自然保护区作为世界生物圈保护区网络可持续发展学习地的实践

总结：联合保护，协调发展，建设和谐文明的生态保护示范区

——福建武夷山自然保护区30年



武夷山国家级自然保护区管理局  
联合国教科文组织驻华代表处  
中国人与生物圈国家委员会  
东亚生物圈保护区网络

编者案：

本书是武夷山自然保护区管理局，联合国教科文组织驻华代表处与中国人与生物圈国家委员会共同开展的，武夷山地区“**联合保护，协调发展，建设生态和谐文明示范区**”项目的研究成果汇报。为了方便读者，编辑人员对报告的格式进行了适度调整。

在此，本书编辑人员特向中国人与生物圈国家委员会主席，许智宏教授，人与生物圈计划秘书长，Natarajan Ishwaran博士，致以诚挚的感谢。他们对本书编写的指导，是本书得以出版的关键。

**武夷山保护区管理局**

**联合国教科文组织驻华代表处**

**中国人与生物圈国家委员会**

**由联合国教科文组织驻华代表处出版**

**地址：建国门外外交公寓5-15-3**

**中国，北京**

**电话：+86 10 6532-2828 传真：Fax: +86 10 6532 4854**

**网址：<http://www.unesco.org>**

引用：联合国教科文组织，2010，建设生态和谐文明

声明：本报告中所引用的称谓、材料，以及有关国家、城市、地区的法律地位，不代表联合国教科文组织的意见与立场。

© UNESCO

# 前言

人与生物圈计划(Man and the Biosphere Programme, 简称MAB计划), 是联合国教科文组织(UNESCO)针对全球面临的人口、资源、环境问题, 于1971年发起的一项政府间跨学科的大型综合性研究计划。生物圈保护区是在UNESCO/MAB计划下发起建立的, 它是MAB计划最重要的实施基地。自1976年在世界范围建立第一批生物圈保护区以后, 到目前为止, 已在全世界105个国家建立了531个生物圈保护区, 基本上覆盖了全球陆地上各类生物地理区域, 形成世界生物圈保护区网络(WBRN)。至2009年, 中国已有28个保护区被批准纳入该网络。

在过去的三十多年中, 生物圈保护区在应对保护生物多样性、提供生态系统服务等方面发挥着重大作用。现在, 各种全球性问题不断出现或者加剧, 为了适应新的挑战, 联合国教科文组织人与生物圈计划也在不断变革。2008年, 世界生物圈保护区大会通过《马德里行动计划》, 将“生物圈保护区作为可持续发展的学习地”列为总体目标之一。

中国的世界生物圈保护区在生物多样性保护与可持续发展方面已做出大量有益的探索。武夷山世界生物圈保护区就是其中之一。为了更好总结和宣传经验, 在联合国教科文组织资助下, 武夷山保护区完成了“武夷山作为可持续发展的学习地”项目。

“武夷山作为可持续发展的学习地”项目系统地总结了武夷山世界生物圈保护区在建设可持续发展学习地探索中的经验, 以及在联合保护, 协调发展, 建设和谐文明的生态保护区方面所做出的成就。

本研究从保护与发展这一自然保护区普遍面临的主要矛盾入手, 首先介绍武夷山世界生物圈保护区在可持续发展方面面临的问题。武夷山自然保护区充分认识到要达到保护与发展的协调一致, 必须有社区群众的全面配合和积极参与。1994年, 武夷山自然保护区在国内率先成立了“福建武夷山国家级自然保护区联合保护委员会”, 通过联合保护委员会把社区群众引导到联合保护工作中来, 让社区群众在联合保护工作中发挥主体作用, 实现自我管理。并在实施GEF(全球环境基金)项目中深化联合保护工作。发挥科技先导作用, 通过扶持毛竹产业、发展红茶课题、建立科研平台等方式, 与群众共享利益, 以解决保护与发展的矛盾。

武夷山世界生物圈保护区, 抓住了中国自然保护区普遍面临的保护与发展的主要矛盾, 做出具有开创性的工作, 具有一定的示范作用。其经验与方法, 对我国其他保护区的可持续发展工作开展有一定的借鉴意义。

中国人与生物圈国家委员会主席 许智宏

# 前 言

生活在欧洲的人们，如果有机会去伦敦买茶的话。在琳琅满目的茶叶的产业专柜中，不难发现正山小种红茶的身影。但是，我们中的很多人都不知道这种茶叶的故乡，就在中国福建的武夷山。武夷山不仅是联合国教科文组织生物圈保护区，也是驰名遐迩的世界自然遗产保护地。

武夷山秀美的亚热带自然森林风光，加之儒家思想发源地的独特文化渊源，诠释了武夷山作为世界遗产地的独特地位。此外，武夷山作为联合国教科文组织生物圈保护区，更使其具备了可持续发展学习实践课堂的重要功能。武夷山保护区所发挥的作用，都与武夷山保护区管理局不断的努力息息相关。本报告的第四部分，就重点阐述了武夷山保护区管理局，通过引进先进技术，将自然资源保护与社区福利有机结合起来，成功化解保护与发展之间矛盾的成功经验。

武夷山保护区积极开展参与式保护，并通过引进先进科学技术，提高了毛竹产量。同时，通过原生茶树品种的引进，比如武夷山当地的正山小种红茶，增加了竹景观多样化。这些成就的取得令人瞩目，这些成就所折射出的经验与意识，更值得我们仔细研究、探讨。作为联合国教科文组织世界生物圈保护区网络552个成员之一，武夷山保护区所取得的成就值得世界范围的肯定与认可。

在武夷山保护区和整个中国体现出的，对于生态和谐文明的宏愿，与联合国教科文组织人与生物圈计划的全球承诺不谋而合。二者都以可持续发展为核心。在世界范围内，可持续发展所蕴含的广博内涵，与经济、社会、环境三方面的平衡，揭示了不同领域之间的和谐与共融。与之相似，在中国这样一个拥有十几亿人的大国，开展生态和谐建设，同样需要在生态、经济和社会层面上的不懈决心，真知灼见与开拓进取。

在过去的“联合国可持续发展教育十年规划”（2005-2014年）中，联合国教科文组织做为整个联合国系统的协调机构，一直不断致力于将联合国教科文组织生物圈保护区开发成为可持续发展的实践学习试基地。本报告中，也展现了武夷山自然保护区在此方面所发挥的积极作用。

在这里，我们更希望看到来自其他中国生物圈保护区的报告。与本报告一起，它们都将成为促进生物圈保护区〈马德里行动计划〉（2008-2013年）开展，所不可或缺的部分。中国面临着发展社会经济满足人民需求，与保护自然与生物多样性资源的双项挑战。因此，中国的生物圈保护区，更需要向世界展示，建设生态和谐文明的可能性。通过引进先进科学技术这一要点，实现在促进社会经济发展的同时，巧妙地保护陆地、海洋景观，促进可持续发展的实现。

我想借此机会祝贺武夷山国家及自然保护区管理局，中国人与生物圈国家委员会



以及联合国教科文组织驻华代表处，他们的精诚合作，使这一重要报告得以成功发布。我还希望看到，能有更多的来自联合国教科文组织生物圈保护区中国成员的报告在未来出版，进一步促进生态和谐文明的建设。

Natarajan Ishwaran 博士  
生态与地球科学部 司长  
人与生物圈计划 秘书长  
联合国教科文组织

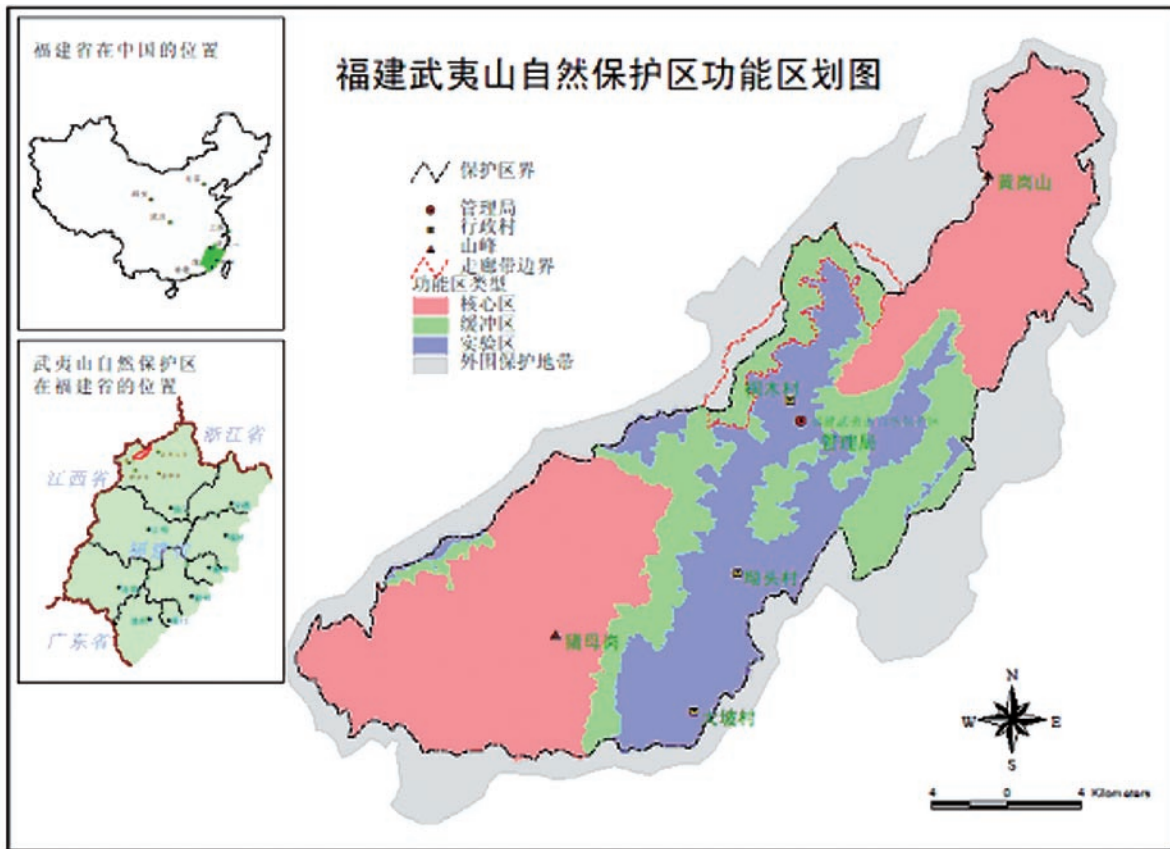
# 目 录

1. 武夷山保护区介绍 .....	1
2. 保护与发展是自然保护区普遍面临的主要矛盾 .....	3
2.1 保护区所面临的社区发展挑战 .....	3
2.2 夯实社区基础是保护区必须认真研究的课题 .....	3
3. 武夷山自然保护区在联合保护工作中的探索 .....	4
3.1 联合保护的目标及组织形式 .....	4
3.2 把社区群众引导到联合保护工作中来 .....	4
3.3 让社区群众在联合保护工作中发挥主体作用 .....	5
3.3.1 座谈会是沟通认识，动员群众的重要途径 .....	5
3.3.2 自我管理是周边群众参与联合保护工作的重要方式 .....	6
3.4 抓住机遇，不断探索，努力创新联合保护的机制和措施 .....	7
3.4.1 把森林防火作为联合保护的重要工作 .....	7
3.4.2 在实施GEF项目中深化联合保护工作 .....	8
3.4.3 在公益林管护中让群众享受生态保护的效益 .....	8
4. 让科技在解决保护与发展的矛盾中发挥先到作用 .....	9
4.1 毛竹丰产示范试验推动了区内小康村的建设 .....	9
4.2 一个红茶课题造福整个社区 .....	10
4.3 搭起新平台，在保护区建设发展中更好地发挥科技的先导作用 .....	10
5. 为建设和谐文明的生态保护示范区而努力 .....	11
5.1 通过30年保护建设，取得丰硕成果 .....	11
5.2 武夷山自然保护区存在的问题与困扰 .....	12
5.3 为建设和谐文明的生态保护示范区而努力 .....	12
附录 关于保护区管理问题的探讨 .....	13

# 1. 武夷山保护区的介绍

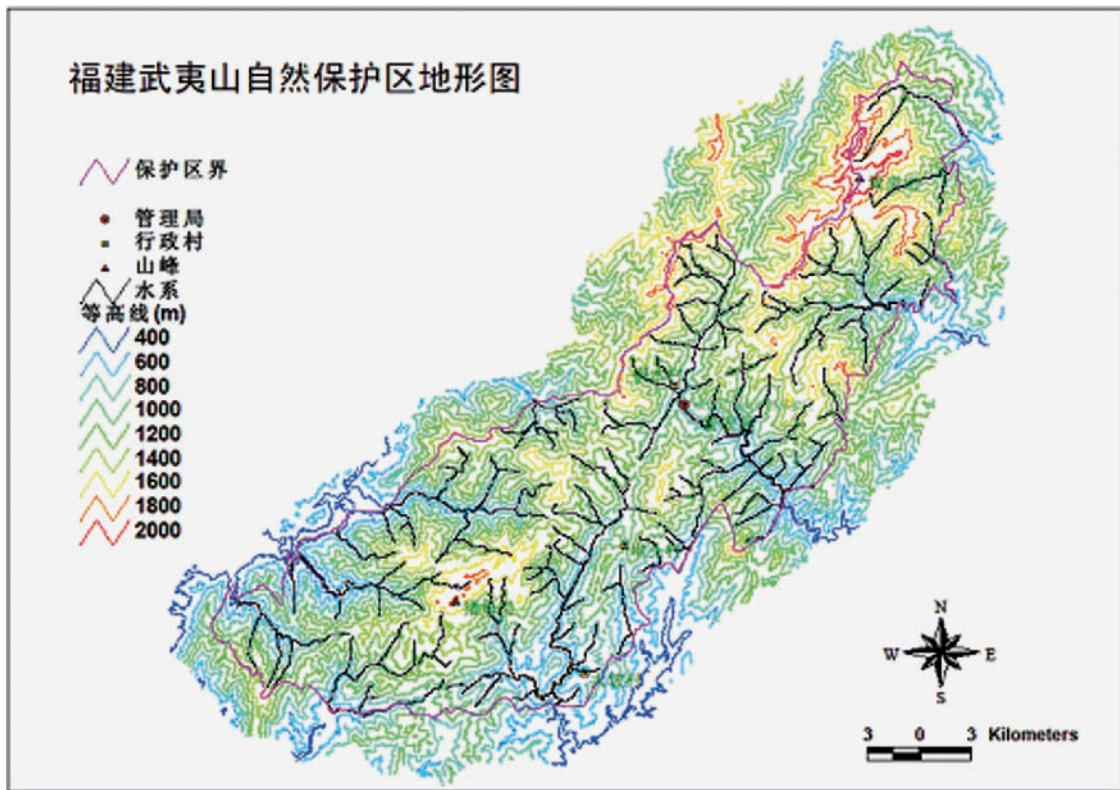
武夷山保护区位于武夷山脉北部最高地段，地处武夷山市、建阳市和光泽县三市（县）境内，与邵武市和江西省铅山县毗邻，地理坐标为北纬 $27^{\circ} 33' - 27^{\circ} 54'$ ，东经 $117^{\circ} 27' - 117^{\circ} 51'$ ，面积 $565\text{km}^2$ ，是武夷山脉的主体部分，全区平均海拔1200米，最高峰黄岗山海拔2158米，是武夷山脉的主峰，也是我国东南大陆最高峰。1986年加入联合国教科文组织国际“人与生物圈”保护区网，主要保护对象为中亚热带森林生态系统及珍稀动植物。

武夷山保护区属于典型的亚热带季风气候。区内年平均气温 $8.5\sim 18^{\circ}\text{C}$ ，一月份平均气温为 $-1\sim 6^{\circ}\text{C}$ ，七月份平均气温为 $16\sim 26^{\circ}\text{C}$ 。年平均降雨量为 $1486\text{mm}\sim 2150\text{mm}$ ，年平均相对湿度



78~84%，早霜10月份，终霜3月份，无霜期253~273d。年平均雾日达120d。气候上具有气温低、降水量多、湿度大、雾日长、垂直变化显著等特点。

武夷山保护区是南方典型的以集体林为主的保护区，区内原始林和原始次生林面貌整齐，生态系统完整，植被垂直带谱明显，并分布着中国最大的亚热带常绿阔叶林。武夷山保护区是泛北极植物区与古热带植物区的过渡地带，植物资源十分丰富，现已查明的低等植物有840种，高等植物有2888种。其中列入国家重点保护野生植物名录的有25种，列入福建省重点保护的有42种，列入世界贸易保护公约附录II的种类有101种。此外，武夷山植物模式标本产地种57种。动物资源也非常丰富，区内已查明的陆生脊椎动物有479种，约为福建省的1/2、全国的1/5。全国昆虫33个目，保护区已定名的有31个目的5000多种。区内有国家重点保护野生动物57种，鸟类中属国际保护候鸟有83种。



武夷山保护区内居住着有2500名村民，周边还涉及1万多名群众。保护区实行三区划管理，核心区面积为292.72km<sup>2</sup>，占保护区总面积的51.8%；缓冲区面积为123.95km<sup>2</sup>，占总面积的21.9%；实验区面积为148.60km<sup>2</sup>，



占总面积的26.3%。保护区管理局经过多年的探索，实施社区参与管理机制，在实验区内划定固定的生产区域，充分利用毛竹、茶叶等可再生资源，较好地解决村民的生产生活问题，探索总结出“用10%面积特色产业发展，推进90%面积生物多样性保护”的创新性经验，由此，区内村民的人均收入已由建区初的

204元提高到现在的8000多元，群众生活水平显著提高，成为中国自然保护区较好解决保护与发展矛盾问题的一个成功典范。

## 2. 保护与发展是自然保护区普遍面临的主要矛盾

### 2.1 保护区所面临的社区发展挑战

福建武夷山自然保护区成立于1979年4月，同年7月被国务院批准为国家级自然保护区，是在邓小平同志亲笔批示过问下以超常规方式建立起来的保护区，目的是拯救这座当时受到严重威胁的生物宝库，保护好世界著名的生物模式标本产地挂墩、大竹岚。因此，武夷山自然保护区建立初期，实行严格的保护措施，不许群众动区内的一草一木。



福建武夷山自然保护区是中国南方典型的以集体林为主的保护区，区内林地60%为集体林。区内原居住着武夷山、建阳两市的2500村民，周边还涉及三市县六个乡镇万多名村民的权益。区内村民没有农田，依山而居，“靠山吃山”。严格的保护措施断绝了村民的生计，因而引发了与群众的尖锐对立，保护工作面临严重的挑战。



### 2.2 夯实社区基础是保护区必须认真研究的课题

武夷山自然保护区地处客属客家区域，自唐宋以来，迁居此地的居民世代以毛竹、茶叶、板栗等为生，保护区的实际情况决定了武夷山不能照搬世界上通用的模式，没法把区内群众绝对迁离出来，也无力对社区群众进行必要的经济补偿。因此，必须把群众的生产生活摆到保护区工作议程上来，作为最重要的事项解决好。事实证明，社区是保护区的基础。解决好群众的温饱问题也就是解决保护区自身的生存基础问题。这是保护区无法回避的现实问题。

认识清楚后，武夷山自然保护区一方面积极支持各村“封山育林”，努力恢复遭到破坏的自然资源和环境；另一方面主动征得省林业厅的同意，组织村民拣伐木场撤离时丢弃的“困山材”，热情地为他们解决运输、销售等困难，使群众的生活有了保障，村集体经济也有积累。之后，通过省政府批准，保护区每年有计划地安排村民生产适量的毛竹和少量的自用材，保证村民的收入逐年有所增长。



毛竹是再生性很强的森林资源，6年为1生长周期，管理得好，可以做到越采越多、越采越大，不会对资源造成大的伤害。武夷山自然保护区有丰富的毛竹资源，总蓄积量2100万根，大部份分布在实验区内，年可供采伐毛竹约300万根。武夷山自然保护区下达采伐毛竹指标多的年份为111.8万根，而实际生产为87.71万根，现在每年更减到50万根左右。



关心和解决群众的生产生活的同时，武夷山自然保护区加强了各项管理工作，由福建省政府颁发了《福建省武夷山国家级自然保护区管理办法》（简称《管理办法》），成为中国第二部省级颁布的保护区规章。其中即纳入社区工作等有关规定，也规范了村民的生产生活活动。保护区工作从单纯管理走向保护与发展统筹规划的道路，有了重大的变化。

### 3. 武夷山自然保护区在联合保护工作中的探索



#### 3.1 联合保护的目标及组织形式

武夷山自然保护区从多年的实践中认识到，要达到保护与发展的协调一致，必须有社区群众的全面配合和积极参与。联合保护委员会是动员组织群众参与保护区管理的重要方式。

1994年，武夷山自然保护区在国内率先成立了“福建武夷山国家级自然保护区联合保护委员会”。联合保护委员会由福建省林业厅牵头，由分管保护区工作的副厅长任主任委员，参加的有保护区周边的市县政府、地县有关林业部门、保护区内、外的乡镇村场等20多家单位，订立了《联合保护委员会章程》和《联合保护公约》。保护区管理局局长为联合保护委员会常务副主任委员。联合保护委员会下面，按保护区的辖区分设5个分会，形成“联合保护委员会—联合保护分会—村场”三级联动。这与保护区的“管理局—管理所—哨卡”三级管理组成了两线交织的三级保护管理网络。

#### 3.2 把社区群众引导到联合保护工作中来

为了把区内群众引导到联合保护工作中来，把周边群众吸引到联合保护工作中来，武夷山自然保护区管理局积极为群众参加联合保护工作创造条件。一是经上级主管部门批准，适当调整功能区划，使之既有利于自然资源与环境的保护，又充分考虑村民的生产生活需求；二是积极对区内产业进

行扶持，如申请茶叶发展资金150万元，全部用于扶持桐木、坳头、长见三个村开展红茶产业；三是在村民的生产经营中主动把国家有关规定保护区享有的优惠政策让利于民，使乡村因此每年可增收



30万元；四是让保护区基础设施，如程控电话、闭路电视、电力专线等，都向当地社区开放，支持乡村公共事业和企业的发展，并为区内乡村的道路建设和饮水工程等予以资助；五是关心周边为保护区建设做出很大牺牲而当时十分贫困的老区基点村，在省林业厅的支持下，先为受洪灾的光泽县桃林村的重建，后又为光泽县大洲村的毛竹生产予以支持，共计投入资金35万元、贴息贷款5万元；六是对社区困难群众进行

走访慰问，为受灾群众的生产争取补偿，并发动干部职工为生活困难的群众捐款捐物，把他们当作自己的亲朋好友。这样，自然保护区就有了很强的亲和力和吸引力，社区群众才会主动自觉地投入到联合保护工作中来。

### 3.3 让社区群众在联合保护工作中发挥主体作用

#### 3.3.1 座谈会是沟通认识，动员群众的重要途径

联合保护与普通意义上的保护的区别在于把原来的管理对象转变成了保护工作的合作者。社区群众成了联合保护工作的重要参与者，是联合保护工作的主体而不再是管理的对象。

要让群众积极地参加到联合保护工作中来，除了要有具体的活动，如联防、护林、考察等，更要让群众自觉自愿地投入到联合保护行动中来，这需要沟通、组织与动员。社区座谈会是武夷山自然保护区与群众沟通的重要途径，也成为保护区重要决策的依据。



武夷山自然保护区内村民虽然仅有2500人，但分散在40多个自然村，方圆百多平方公里内，难以召开群众大会。通过联合保护分会直接在村组中召开座谈会，就成了保护区与村民沟通的重要信息途径。座谈会有定期举行的，也有不定期的。保护区管理局于1999年在全区各村组展开一次全面的调研，办法就是召开村

通过联合保护分会直接在村组中召开座谈会，就成了保护区与村民沟通的重要信息途径。座谈会有定期举行的，也有不定期的。保护区管理局于1999年在全区各村组展开一次全面的调研，办法就是召开村

民座谈会，一是宣传国家实施天然林禁伐的目的意义，二是与村民商讨保护区日后的建设发展策略。在调研和总结前20年工作的基础上，于2000年提出，作为世界生物圈和世界双遗产的保护区，必须遵循“保护、科研、发展、宣传教育”的原则，以保护为根本、社区为基础、科技为先导、发展为动力，建立完善有效的保护控制体系，努力把保护区建设成为资源环境优美、生态体系完整、科研水平先进、社区经济发展、生态旅游规范、职工素质优良的全国生态保护示范区。目前，社区座谈会已成为联合保护分会组织动员群众参与联合保护工作的重要渠道。



### 3.3.2 自我管理是周边群众参与联合保护工作的重要方式

对于保护区内的群众，参加联合保护，就是参与保护和建设自己的家园；对于周边的群众，参与联合保护活动，就是为家乡的发展创造一个优良的生态环境。



自我管理的重要体现就是让群众从自身利益中认识到参与联合保护工作的意义和责任。其中一个最重要的方式是支持村民对区内实验区中集体所有的毛竹林、茶叶地实行家庭责任承包经营，运用科技力量帮助村民提高毛竹的产量，并降低收费标准，使村民从切身利益中感悟保护工作的必要，能主动自觉地按照省人大常委会颁布的《福建省武夷山世界与文化遗产保护条例》、省政府的《管理办法》和保护区关于森林

防火及毛竹采伐、运输、销售等有关规定，做好自我管理，也就从原来的保护管理的对象转变为联合保护的管理主体，极大地调动了村民参与资源保护的积极性。

毛竹生产一度是保护区社区的支柱产业，为社区的建设发展做出过很大贡献。但随之也就产生加工污染和毛竹林蚕食阔叶林等问题。保护区管理局及时对社区经济发展进行产业转型引导，减少对竹产业的依赖。毛竹加工企业也从生产竹凉席、筷子等转向生产竹地板等产品，提高了产品附加值，又减少了加工下脚料的处理难度。现在的毛竹加工剩余物都用于加工竹炭或用作生产中的燃料，基本解决了污染问题。针对毛竹林蚕食阔叶林问题，联合保护委员会经过座谈沟通以后，组织村民开展“毛竹划红线工程”，即在村民毛竹生产区边缘的阔叶树上做出明显标志，建档备查，并在基本图中对这一区域用红线进行标注，用地形图及GPS辅助确定，不得逾越红线进行毛竹生产。这就解决了过去困扰多年的因毛竹扩鞭而造成毛竹林逐步拓展的难题，较好地回答了中外专家对武夷山自然保护区因



竹产业发展，“又可能造成竹林逐年扩大的趋势，降低生物多样性”的担忧。

联合保护分会还通过座谈沟通、反复协商的办法，在保护区管理局和当地乡镇政府的协调下，解决了建区前遗留下来的村与村之间、村民组与村民组之间的毛竹山场的两起历史纠纷。这些纠纷所涉及的范围不大，但对解决好保护与发展的矛盾很有影响。这些纠纷存在多年，过去还曾诉诸司法也无结果，现在通过座谈协调得到圆满解决，也说明了保护区社区群众自我管理的能力和水平的提高。



### 3.4 抓住机遇，不断探索，努力创新联合保护的机制和措施

#### 3.4.1 把森林防火作为联合保护的首要工作



保护区工作总会有各种各样的困难出现。武夷山自然保护区能在30年中比较顺利地发展，在于抓住了发展机遇。建区初期，防火是薄弱环节，1986年曾发生过区外失火蔓延到区内疏林地的火灾，面积达10hm<sup>2</sup>。武夷山自然保护区在加强区内防火工作的同时，积极参与周边地区的森林防火工作，至今仍是闽浙赣毗连地区第四联防区的积极参与者，多次被评为“护林联防先进集体”。

联合保护委员会成立以后，不仅保护区管理局抓森林防火，联合保护委员会也把森林防火作为首要工作。武夷山自然保护区的社区群众，都把森防工作当作“为家园设防”而认真抓好。现在全区社区中已成立半专业扑火队16支，有队员240人。1996和1999年，区内曾各发生一次火险，均是村民扑火队为主及时扑灭的，防止了火灾的发生。周边的县市政府也把保护区相应辖区的森防工作纳入本级政府行为，1998年10月，光泽县的西口采育场与武夷山自然保护区交界处发生一起森林火灾，县委书记、县长亲临现场，指挥扑救，不惜一切代价，决不让林火蔓延到保护区内。在省林业厅和南平市林业局主持下，武夷山自然保护区与周边四县市还规划营造环绕保护区的200多公里生物防火林带。现已建成防火林带58km，区内也修建防火路85km。由于防控工作得力，从1987年以来，武夷山自然保护区已实现连续22年无森林火灾，成为福建省仅有的两个“保持20年以

上无森林火灾”的县级单位之一。

### 3.4.2 在实施GEF项目中深化联合保护工作

GEF项目是全球环境基金会在中国保护区实施的第一个加强保护区管理项目。按原定的标准，武夷山自然保护区不属于遴选的目标。福建武夷山自然保护区积极争取，终于成为项目实施的5个保护区群之一。GEF项目从1992年启动申请到1995~2001年正式实施，前后长达8、9年。武夷山自然保护区以自身为主，联合江西武夷山自然保护区参加，成为项目中的省际保护区实施联合保护的典型。福建武夷山联合保护委员会在成立之初便已邀请江西省武夷山自然保护区参加，因此，联合保护委员会为GEF项目在武



夷山福建、江西两省保护区的实施打下了坚实的基础，特别为建立我国保护区内的第一条生物走廊带提供了有力的保障。建立生物走廊带是GEF项目提出的，为两省保护区的三块核心区之间建设一条便于生物基因交流的走廊。为此，不仅要在两省保护区的实验区内划出3000多公顷林地按缓冲区管理，而且要在保护区外侧的采育场、林场划出600多公顷的林地加入，共涉及11个单位。这是项创新性工作，GEF项目经费又有限，所以实施难度很大。由于联合保护工作的良好基础，终于使走廊带项目顺利实施并取得理想效果。GEF项目的实施，保护区管理人员得到广泛的培训，管理能力有了很大的提高，管理工作逐步与国际接轨。实施GEF项目后，江西武夷山自然保护区大大加快了建设步伐，由省级保护区上升为国家级自然保护区，面积也由原来的4千多公顷扩大为2万 $\text{hm}^2$ 。江西武夷山自然保护区的发展又为福建武夷山自然保护区的联合保护工作提供了更有利的条件。

### 3.4.3 在公益林管护中让群众享受生态保护的效益

国家全面禁伐天然林规定实施后，保护区工作和社区发展都面临新课题。武夷山自然保护区又积极争取，加入了天然林保护工程的试点行列。趁此机会，武夷山自然保护区完成了林权登记发证工作，直接由省政府核发林权证，结束了保护区无证经营的历史。国家正式实施生态公益林管护补助以后，社区群众直接受益，每年可得公益林管护补助和林权补偿款达380多万元，人均增加收入千多元。保护区还聘请150多名村民担任公益林管护员，让更多群众直接参与了保护区的管护工作。而区内的群众的收入已开始多元化，红茶已成为支柱产业，其收益已超过毛竹。此外，养蜂等养殖业也有一定的发展，旅游、餐饮、运输等均开始经营，并都获得



不错的收益。《武夷山资讯》报道，“因为保护，如今桐木村的一切都变得值钱起来。桐木村民切身感受到生态带来的效应”。其实，整个保护区的社区群众都如同桐木村民一样感受到生态保护所馈赠的宝贵效应。

据保护区社区科工作人员的调查，2008年，区内的桐木村人均收入为10174元，是建区初期235元的43倍，坳头村人均收入8229元，是建区初期130元的63.3倍；大坡村人均收入9532元，是建区初期150元的63.5倍。全区平均人均收入9711元，是建区初期204元的47.6倍，而村民的实际收入可能比统计数字还高。如桐木村主任即对人民日报记者说过，村民从茶叶上人均收入即可达8000元，而坳头村所在镇的领导也认为，坳头村民的人均收入已超过万元。



而社区经济的快速发展却没有给武夷山自然保护区的保护造成破坏或增加新的压力。村民的毛竹、茶叶生产都在实验区内的指定生产区域内进行，在保护区管理所的指导监督下进行。这些生产，每年涉及的面积占保护区面积的5%。因为毛竹须隔年采伐，所以实际涉及的面积占保护区总面积的10%。武夷山自然保护区即通过让村民有限制地利用10%面积上的再生性强而对环境影响小的毛竹、茶等资源发展生产，解决他们的生活问题，建立和谐社区。这样，不仅顺利地加强其余90%地区的有效保护，而且全区的生态环境和生物多样性也都得到良好的保护。保护区的资源保护和社区经济发展进入了良性循环的同步轨道。

## 4. 让科技在解决保护与发展的矛盾中发挥先导作用

科技是第一生产力，这在保护区中尤其如此。科技是保护区建设发展的灵魂。在保护区建区之初的1979年6月中旬，省科委即在保护区内召开保护区综合科学考察规划和学术交流会，揭开武夷山10年科考的序幕。整个科考工作持续到1990年11月下旬在福州召开总结学术会议结束，前后达11年半。综合科考为武夷山自然保护区的建设发展摸清了本底，提供了重要的理论基础，明确了保护工作的重难点，锻炼和培养了一支科技骨干队伍。

### 4.1 毛竹丰产示范试验推动了区内小康村的建设

1985年，为发挥区内毛竹资源的优势，解决区内村民的生产生活问题，武夷山自然保护区成立了“天然竹林高产结构及生物量研究”课题组，在大竹岚建立了上千亩的毛竹丰产示范基地，引进优良品种和先进技术进行毛竹培育，并把取得的丰产成果在社区全面推广，使全区毛竹的立竹数有了很大的增加，平均胸径增大30%。毛竹及其深加工成了社区经济的支柱，为解决村民的生产生活发挥了重大的作用。90年，代区内的三个行政村，两个成为福建省的明星村，另一个也是所在市的小康榜样村。

## 4.2 一个红茶课题造福整个社区

为了更好地保护武夷山的生态体系和环境，逐步减少对毛竹资源利用的依赖，武夷山自然保护区近年来加大了对茶叶生产的扶持。

武夷山自然保护区是世界红茶的发源地，是世界红茶始祖——武夷正山小种红茶的原产地。正山小种红茶有过辉煌的历史，风靡英伦三岛，是英国皇室的御用饮料。2002年1月，保护区成立正山小种红茶研究课题组，组织科技人员深入考证研究，证明了武夷山自然保护区是世界红茶始祖——正山小种红茶的发源地和主产区。这一成果发布后，正山小种红茶的地位和身价迅速得到



提升，区内茶叶生产全面恢复，改变了区内以竹产业为主的单一经济格局，区内村民的收入也得到明显的提高。一个红茶的研究课题造福了整个社区。现在，区内的桐木，坳头分别成了各自所在的武夷山、建阳市的首富村，大坡也成为富甲一方的小康村。茶叶生产对资源利用和环境保护的影响都很小，武夷山自然保护区的茶叶生产只限于垦复原有的茶叶地，不开辟新的茶地，较之毛竹生产更有利于武夷山生物多样性的保护。

## 4.3 搭起新平台，在保护区建设发展中更好地发挥科技的先导作用

武夷山自然保护区从实践中深刻体会到科技在保护区建设发展中的重要意义和巨大作用。综合科考之后的20年，保护区的科研人员，一边紧密结合保护区建设发展的实际开展对毛竹、红茶等的研究，一边继续有关保护区的基础学科研究，出版了有关武夷山自然资源、森林生态、叶甲科昆虫、螟蛾科昆虫等4部专著及正山小种红茶、中国珍稀野生花卉2部著作，先后发表论文140余篇。保护区还加强与大专院校、研究单位及有关部门的合作，每年都结合工作需要，选定科研课题。“地理信息系统（GIS）在森林防火中的应用研究”等一批课题都已经顺利完成并得到应用。当前还在进行“武夷山自然保护区小蜂天敌资源研究”、“武夷山自然保护区蜜粉源及蜂种资源调查”、“濒危植物南方铁杉保护技术研究”等课题研究。



武夷山中亚热带常绿阔叶林生态系统定位研究站的建立，为武夷山自然保护区设立了一座新的科技平台，为提高保护区的保护管理水平设置了很好的登攀台阶。《武夷山常绿阔叶林水分循环监测及数据集中采集信息化研究》被列为福建省科技计划社会发展类重点项目，已完成了光纤数据传输方案和设备安装调试，开始野外水循环样地与实验室之间光纤数据传输与采集工作。保护区还积极参加省科技厅主持的《中国福建武夷山生物多样性研究信息平台》有关项目的建设，努力使科研手段和信息现代化。

武夷山自然保护区管理局也把保护区当作大专院校和科研院所的天然科研基地，与中科院微生物所、福建省林科院、南京林业大学、厦门大学等加强科研项目的使用探讨，与省内外20多所大专院校订立协议，成为它们的教学实习基地，为保护区的科研搭建更多平台，让科技在保护区的建设发展中更好地发挥先导作用。

## 5. 为建设和谐文明的生态保护示范区而努力

### 5.1 通过30年保护建设，取得丰硕成果

30年来，福建武夷山国家级自然保护区，以保护为根本，以社区为基础，积极应对保护管理与社区发展的重大矛盾，创新联合保护工作的机制和措施，充分发挥科技的导向作用，初步达到自然保护与社区经济协调发展的目标。

现在，福建武夷山自然保护区的森林覆盖率为96.3%，比建区初提高了4.2个百分点，林木蓄积量比建区初上升了22.8%。区内2.9万 $\text{hm}^2$ 原生性中亚热带森林生态系统得到良好保护，拥有中亚热带11种植被类型，计有17种亚型69个群系196个群丛组。具有中亚热带地区植被类型的典型性、多样性和系统性，囊括了中国中亚热带所有植被类型，在全球同纬度带也是仅有的。区内已查明的低等植物840种，高等植物2888种，陆生脊椎动物479种，昆虫31目5000种，其中高等植物和动物的数量都比建区初期数有较大的增加。保护区的珍稀动植物均受到良好的保护。因此，武夷山自然保护区的生物多样性得到高度评价，在国家



14部委联合编撰，由国务院环境委员会讨论通过并向全世界公布的《中国生物多样性国情研究报告》中，以福建武夷山自然保护区为代表的武夷山地区被列为我国陆地生物多样性保护的11个关键地区之一，为整个东南部仅有的一处关键区。

武夷山自然保护区的生态影响，不仅为区内社区经济提供了可持续发展的保障，而且为整个武夷山地区的经济发展带来宝贵的品牌效应。武夷山自然保护区

是我国中尺度以上自然灾害的多发区，是福建省气温最低、雨量最多、雾日最长、湿度最大的地区。全区平均海拔1200米，山高坡陡，相对高差达1800米。年平均降水2500mm。1998年，全国水灾。据闽江洪水预警系统监测，保护区先锋岭曾记录到降水量4037mm，其中连续13天的降水竟达1636mm。这样

的集中降雨，在一般的地区早已引起严重的洪灾和泥石流灾害，后果将难以估计。但在武夷山自然保护区，虽也成灾，损失集中在道路、桥梁、电杆上，没有给区内群众造成其它更多的伤害，更没有引发区外的连锁遭灾。武夷山自然保护区堪称福建北部的重要生态屏障。

武夷山自然保护区是福建母亲河闽江的重要源头和集水区，是武夷山风景名胜区的精髓九曲溪的发源地和养育所。九曲溪在保护区内流程约25km，流域面积约130km<sup>2</sup>。保护区建区初期，由于此前大量林木的砍伐，曾造成秋冬季九曲溪近乎断流的危急情况，连单张竹筏都无法通行。现在，除洪水季节外，全年均可实现双排顺利联放。九曲溪成为武夷山旅游的黄金水道，每年仅九曲溪漂流的门票收入即达上亿元，所带动的旅游经济更在10数亿元以上。

武夷山自然保护区以其努力的工作，出色的保护成果得到国内外专家学者的充分肯定和高度称赞。1997年“中国生物圈保护区网络大会暨武夷山生物圈保护区评估会”在武夷山市举行，通过对保护区的考察、研讨，专家、代表们认为，“武夷山自然保护区自1979年建区以来，抓住了中国自然保护区普遍面临的保护与发展这一主要矛盾，将社区的经济发展纳入保护区管理议事日程，实施社区参与式管理，做了大量具有开创性的工作，有着一定的示范作用”。2008年，在国家环保部、中科院等7部委组织的对南方部分省、区国家级保护区进行的管理评估中，武夷山自然保护区的工作得到评估组的高度认可，被评为全省第一名。1999年，世界遗产委员会的专家莫洛伊对武夷山自然保护区考察后认为，“武夷山的物种资源超过中国已批准的世界遗产地”，“武夷山是全球生物多样性保护的关键地区”，因而武夷山得以顺利入选世界双遗产名录，成为中国迄今仅有的一个既是世界生物圈保护区又是世界自然与文化遗址地的保护区。这也标志着武夷山联合保护工作达到了新水平、新高度。

1999年以来，福建武夷山自然保护区先后受到国家环保总局等4部委、国家林业局、国家环保部等7部委的表彰，多次被评为“全国自然保护区先进集体”，被福建省委省政府评为全省“森林保护十佳集体”，连续三届被福建省评为“文明单位”。这是党和政府对武夷山自然保护区生态保护工作的高度肯定。

## 5.2 武夷山自然保护区存在的问题与困扰

30年的保护建设，武夷山自然保护区进行过许多尝试，取得过成功，也有过教训，有许多工作还有待加强与改进。森林防火的远程监控体系建设，因施工单位的问题，迟迟不能交付使用；毛竹加工剩余物件的处理，一直是保护工作的难点，经多方努力，现基本解决，但山场中毛竹枝丫的清理仍很困难，还是森林防火的一个隐患；社区的经济虽然发展了，但社区的文明建设还有待加强；保护与发展还有新的问题出现，联合保护的新情况还需要进一步探讨；保护区离“职工素质优良”的目标还有较大的距离，内部的管理还需要进一步加强。

世界气候变化对武夷山自然保护区已有影响，区内记录到前所未有的-19℃低温。2008年的南方冰雪灾害，对保护区的林木也造成很大的危害，特别对毛竹林伤害较重。因此，自然保护工作又面临新的课题和难点。

在保护区的绿色效应日臻显现的同时，受周边林业商品化浪潮的冲击，成为“孤岛”的现象也更加明显，无形的保护压力也日益加大。限于保护区的禁伐令，区内的人工林木材也不能采伐，给村民的红茶生产用材和生活用材造成的困难至今无法解决。毫无疑问，这都要武夷山自然保护区勇敢面对。武夷山任重而道远。

## 5.3 为建设和谐文明的生态保护示范区而努力

自然保护事业是造福人类的崇高事业。世界生物圈保护区的目标是“致力于为人类服务之自然保

护和科学研究，亦系为测量人类对其环境之影响规定之标准”，实现人类社会的可持续发展。作为世界生物圈和世界双遗产的保护区，保护好武夷山自然保护区的生物多样性，解决好保护区内群众的生产生活，实现保护区与社区、群众与大自然的双和谐，为武夷山地区的发展创造良好的生态环境，为生态文明做出应有的贡献，是福建武夷山国家级自然保护区为建设和谐文明的生态保护示范区的既定目标。

目前正在保护区内实施的宣教及监测体系建设，将大大提升保护区的宣传教育水平及保护监测力度，使武夷山自然保护区更好地发挥其“全国科普教育基地”和“全国青少年科技教育基地”的功能，与武夷山中亚热带森林生态系统定位研究站和武夷山生物多样性研究信息平台一起，促进武夷山自然保护区的保护管理和科研工作的现代化、信息化，勾勒武夷山自然保护区成为全国生态保护示范区的美丽蓝图。

## 附录

### 武夷山生物圈保护区当地居民的可持续发展的生活方式和对环境保护工作

武夷山自然保护区主要在以下几个方面将当地居民的可持续发展的生活方式和对环境保护的考虑融入到保护区的以下工作重点和社区活动中：

一、在保护区建设指导思想上：武夷山保护区坚持树立“保护、和谐、创新、为民”的工作思路，坚持贯彻“以保护为根本、社区为基础、科技为先导、发展为目的”的工作理念，确立了保护区涉及的社区及村民在自然保护区管理、建设、发展全过程中所处的重要地位，将社区发展纳入保护区工作重要议程。

二、在组织建设上：1994年7月，保护区成立了由福建省林业厅直接领导，周边4个县市、6个乡镇政府、福建、江西两省武夷山保护区以及相关单位部门、当地村民委员会共同组成的武夷山保护区联合保护委员会，委员会主任由省林业厅分管副厅长担任，省林业厅8个职能处室，周边县市分管林业的领导和林业局局长，各乡镇、村场主要负责人作为联保会成员。联保会制定了《联保章程》和《联保公约》。根据章程规定，每年召开联合保护委员会全体会议，重点研究加强保护区及周边地区的资源保护和经济发展等问题。同时在保护区下属5个管理所成立联保分会，为社会共同关注、参与、推动当地社区可持续发展提供交流平台。

三、在社区参与生态管护上：严格按照生态管护工作方案和操作流程，全面协调、平衡和调动区内3个行政村两委、32个村民小组、护林员和林农的经济利益和护林积极性，按照“公开、公平、公正”的原则在社区居民中选聘了153名护林人员240名半专业扑火队员，强化了社区护林防火组织的建设。

四、在开展宣传工作上：武夷山保护区坚持以“做好社区宣传教育、化解社区矛盾、消除不稳定因素”为重点，积极组织召开社区座谈会，宣传国家有关大政方针、政策；开展社区宣传教育活动，如利用每年的“爱鸟周”、“环保宣传日”、“野生动物保护宣传月”等活动宣传《森林法》、《野生动物保护法》等法律、法规，不断提高社区群众的环境保护意识和法制观念；根据需要及时组织召开社区干部座谈与沟通，促进社区群众的理解和支持；积极组织召开社区加工企业法人座谈会，及时宣传了保护区的法律法规、方针政策，协调和沟通了社区相关问题，接待社区村民来访；组织开展社区部分中小學生、社区干部群众参观保护区、举办知识讲座等开展环境教育活动，进一步增强了社区群众的法制观念和自然保护意识；同时通过下乡走访了解情况，针对存在的问题及时进行宣传解释工作，取得群众的理解。在每年保护区还组织社区骨干人员开展参观、考察、培训等各类活动，以综合提高他们的保护意识、管理水平、建设能力。

五、在支持乡村基础设施建设上：截止2009年，我区为支持乡村基础设施建设上投资总额达到4000万元。自建区以来，村民原有住房80%已重新改造（木竹房改为砖混结构），人居环境大为改善；1988年投资34万元建成黄坑至桐木电网，与桐木村、坳头村共用；1991年投资150万元建成武夷山至桐木100门光缆电话，成为福建省首条通村光缆电话；1994年地方林业部门弃养入区道路后，管理局专门成立了养路段，主动承担起养护工作，平均每年用于公路养护经费20万元，17年来累计出资340万元；1998年，为铺设三港至黄溪口30公里沥青路面投资390万元；1999年，申报“世界自然与文化遗产地”时，我区投入17万元用于桐木村部的水泥路改造，对通往桐木村部分自然村近30公里支线路面进行硬化改造，扶持资金10万元；为解决社区村民饮水问题，管理局在2005年福建省政府对保护区社区生产生活问题调研的基础上，积极配合社区村争取地方村村通水工程，全面完成了社区自来水工程的改造；2009年，我局经过调研，与光泽县政府等部门一起制定并实施了进入保护区的分村道



路水泥硬化，并为此工程解决建设资金50万元；积极做好实验区内处于地质灾害点群众搬迁区外工作，引导区内居民区外建房居住，争取搬迁补助资金11.75万元；同时引导区内规模企业搬迁区外发展；同时配合当地政府职能部门单位开展了保护区社区的电力改造、农村道路改造、通信通讯改造、新农村规划建设等，有效促进了社区居民人居环境、生产生活条件的改善。

六、在引导社区发展经济上。依据有关法律法规，保护区应合理安排区内村民的生产生活的要求。在实验区内，武夷山保护区通过合理划定9万亩的毛竹固定生产小区，让村民从毛竹生产经营上获取部分经济收入；引导毛竹加工升值，重点扶持绿洲实业竹制品公司等一批省级龙头企业发展毛竹精加工和对外贸易，并创立品牌；在集体毛竹林中建立了8000多亩毛竹丰产示范基地，在社区中加以推广，取得良好效果；争取政策，统一下调毛竹经营的税费比例、免收资源保护费；加大管理



服务，协调竹农、加工企业、生产单位的关系，维持良好的毛竹经营管理秩序，促进了竹产业的健康发展，使竹产业成为社区经济的支柱。

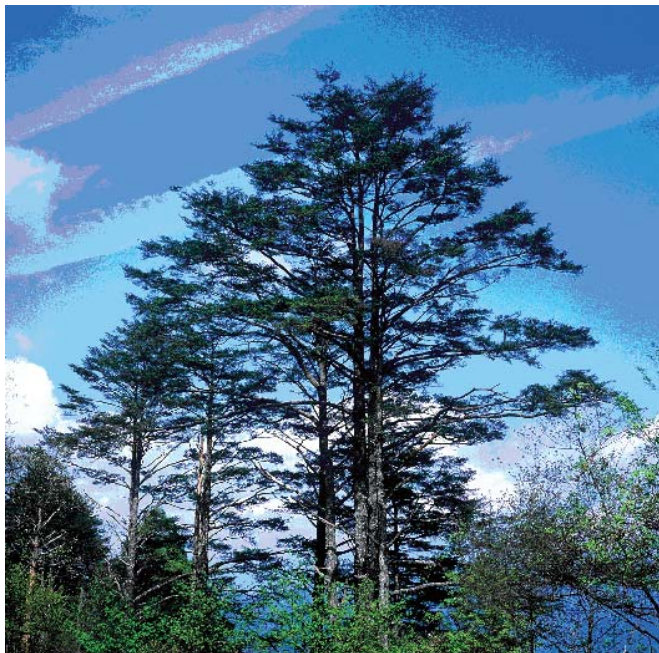
在引领发展传统产业——正山小种红茶产业上，迈出六大步伐：一是引导村民对原有茶园进行垦复，恢复荒芜茶园1000亩、改造低产茶园7000亩；二是打造品牌：扶持桐木村正

山茶叶有限公司、桐木茶厂等一批龙头企业开发发展传统的“正山小种”红茶产业，促进现代化茶企业规模建设，如给予正山茶叶公司免费使用保护区名称、征地许可、项目与资金扶持，给予保护区联系单位绿洲茶叶公司品牌扶持和品质监制，社区“武夷红”、“梁品记”、“元正”、“桐木”等一批红茶品牌应运而生；三是传播红茶文化：致力于传统红茶文化的研究推广，专门成立了正山小种红茶课题组，并将研究成果——《世界红茶的始祖 武夷正山小种红茶》和《怎样泡一杯纯红茶》两本专著向同行、政界、商界、高管、科研院校师生等社会各界广作推介；四是成立了正山小种红茶研究所，与坳头村民共同出资成立实验茶厂，弘扬传统工艺、并进行创新，带动社区发展红茶产业，起到了“四两拨千斤”的效果。当前正山小种红茶产业已成为区内社区经济发展的朝阳产业。五是提质提升，邀请全国政协委员、茶叶专家骆少君等知名茶叶专家到保护区现场为社区茶农授课，将市场观念、产业观念、市场营销、诚信信念等送到农民家门口。六是实施高端营销策略：我们积极向社会各界精英人士推销正山小种红茶，起到“金字塔”式的营销效果，很快打开了红茶产品的市场，使这一沉寂400余年的红茶重新焕发出前所未有的夺目光辉。

在科学利用生态环境资源优势，有控制地发展生态旅游上，我区提出发展生态旅游的新思路，从单纯利用毛竹的资源消耗型经济转移到发展非资源消耗型经济上来。根据国家林业局批准的《福建武夷山自然保护区生态旅游计划》，我区始终坚持先规划后开发，坚持社区共同参与、共同受

益的原则，遵循生态规律，注重生态旅游排它性的特点，不断规范区内的餐饮业管理，使之健康、有序地发展。目前，村民经营的农家宾馆8家，餐饮业10家，农家土特产销售企业5家。生态旅游的发展还极大地带动了社区笋干、蜂蜜、香榧等土特产和工艺品的经营和开发，村民年生态旅游也成为社区经济收入的重要来源。

七、在项目带动，政策扶持上。建区以来，保护区通过项目扶持社区发展经济累计达860余万元。自建区来毛竹资源开发利用从限制利用到规划持续利用、从计划销售到市场销售到完全自产自销，及各种费用的减免取消，争取各个阶段的优惠政策。一是1998—2001年GEF项目在我区实施。我区对桐木村生物走廊带内和周边的毛竹、茶叶进行补偿或恢复，共补偿资金233万元；二是扶持龙头企业开发生态漂流旅游项目。2002年，我们还报经省林业厅同意准许元勋茶厂在区内开发生态漂流旅游项目，不仅企业自身得到发展，企业不断壮大，同时带动了社区的加工业和旅游业，解决了部分社区群众的就业问题。三是实施区内毛竹经营机耕路工程项目。2005年，为进一步提高竹山经营水平，降低经营成本，促进社区竹农增收，加快社区竹业发展，我区编制上报了《福建武夷山国家级自然保护区毛竹生产道路建设规划（2005—2009年）》，利用原有竹山便道，修建机耕路，并严格加以实施，大大降低了生产强度；每根毛竹成本降低2元，按年生产毛竹50万根计，可降减低成本100万元，取得了良好的社会效益。同时，为社区机耕路发放补助款20万元。四是自2008年起，根据闽政文[2008]1号文，每年增加社区林权所有者补偿119万元。



2008年，我区为社区争取到2008—2010年现代农业（茶业）生产发展资金项目，每年补助资金150万元，到2010年分3年实施。2008年，我区利用项目资金，在社区桐木村、坳头村和长见村建设标准化生态茶园1600亩，品种改良700亩。2009年，在桐木村、桂林村、大坡村和大洲村开展茶园改良600亩，品种改良600亩，茶园排、蓄水系统建设等，辐射面积达1550亩。生态茶园的建设，为社区茶业的可持续发展奠定了坚实基础。

2009年，为社区群众争取发展生产扶持项目资金39万元。

此外，在应急自然灾害上，如百年不遇的严重冰冻灾害方面，我区在生产自救的同时，积极筹集资金、安排补助资金150万元，深入社区、指导开展生产自救，维护了社区群众正常的生产生活秩序、辖区治安的安定稳定。

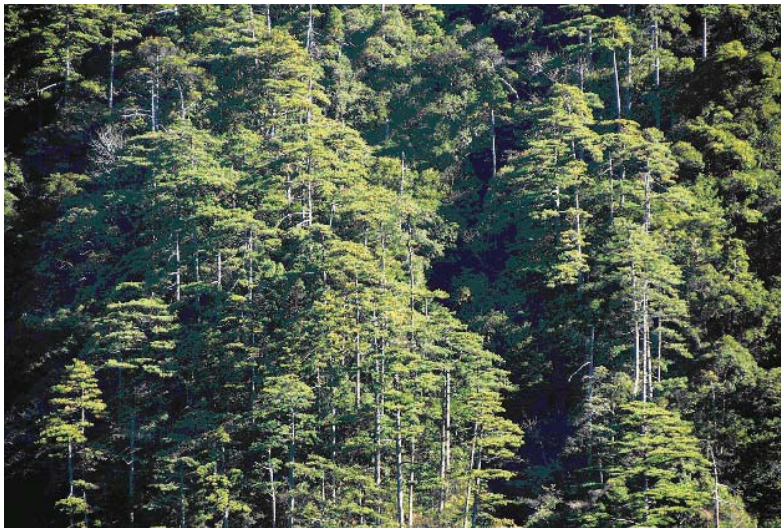
总之，武夷山保护区已从保护管理、教育宣传、经济发展、社会文化、人居环境等各方面整体上将当地居民的可持续发展的生活方式和对环境保护的考虑融入到保护区的各项工作重点和社区活动中。

## 武夷山生物圈保护区通过多层次管理机制综合有效的管理三个区域

福建武夷山国家级自然保护区土地总面积56527公顷。核心区29272公顷，占保护区总面积的51.8%，缓冲区12395公顷，占保护区总面积的22.0%，实验区14860公顷，占保护区总面积的26.2%。核心区实行绝对保护，未经特别批准，严禁任何单位和个人进入；缓冲区仅在严格审批的前提下，允许从事科学研究观测活动，安排科研项目，如：生态定位观测站，同时进行生态环境动态监测；实验区则在规划和不破坏生物多样性的前提下，适度开展科研工作、教学实习、科学实验、宣传教育、参观考察，划出适当面积的固定生产区经营毛竹、茶叶，以协调人与自然的的关系。为解决实验区内2453名村民的民生问题，我局积极探索“用10%面积的生态产业发展，推进90%面积生物多样性保护”的社区发展思路，在实验区内划定了约占全区总面积10%的固定生产区域，科学引导村民发展毛竹、茶叶、养蜂等资源非消耗性的生态产业，不断提高社区群众的经济收入，较好地解决了社区群众的生产生活问题，实现了资源保护与社区发展的协调统一。

## 当地居民如何从科学和文化这两个角度来诠释生物圈保护区的具体情况

保护区建区之初，由福建省科委牵头，组织了全国43个单位上千人组成6个专业组对武夷山进行了综合科学考察，历时10年，为武夷山自然保护区的建设发展摸清了本底，提供了保护区发展的重要的理论基础。



1985年，为发挥区内毛竹资源的优势，解决区内村民的生产生活问题，武夷山自然保护区成立了“天然竹林高产结构及生物量研究”课题组，在大竹岚建立了上千亩的毛竹丰产示范基地，引进优良品种和先进技术进行毛竹培育，并把取得的丰产成果在社区全面推广，使

全区毛竹的立竹数有了很大的增加，平均胸径增大30%。毛竹及其深加工成了社区经济的支柱，为解决村民的生产生活发挥了重大作用。上世纪九十年代，区内的三个行政村，两个成为福建省的明星村，另一个也是所在市的小康样榜村。

2002年1月，经武夷山自然保护区正山小种红茶研究课题组考证，确认武夷山自然保护区是世界红茶始祖——正山小种红茶的发源地和主产区。为进一步深入发掘正山小种红茶文化及其传统的制作工艺，2008年开始，有计划地按照产业化发展思路研究正山小种红茶的市场前景，是文化优势转化为经济优势，红茶地位迅速上升，区内茶叶生产全面恢复。从此，改变了区内以竹产业为主的单一经济格局，区内村民的收入也得到明显的提高。现在，区内的桐木、坳头分别成了各自所在行政区的首富村，大坡也成为富甲一方的小康村。

传播生态文明，是保护区长期以来持续的努力。我局通过建设和完善博物馆、宣教馆、生态定位

站、珍稀树木园、桃源峪生态教育径、大竹岚近自然毛竹丰产示范基地等科普教育场所，为社会提供了一处理想的科普教育场地，先后获得了“全国科普教育基地”、“全国青少年教育基地”、“福建省生态文明教育基地”等荣誉称号。2009年，入区接受生态文明宣传和教育的人次达4万次。

科学研究和文化传播的整个过程均有通过访问社区村民，了解历史上的天气、自然灾害、野生动物及经济收入情况，与周边县市林业局联合开展保护区边界防火林带建设等方式带动当地政府及社区积极合作和参与。

## 生物圈保护区的可持续发展原则

经过多年的探索，武夷山保护区在坚持“有效保护自然资源和自然环境，有控制性地合理发展部分更新性强的资源”的方针下，积极扶持和引导区内村民发展生产，建立社区参与管理机制，有效促进了社区经济发展实现了资源保护与社区发展协调统一，使保护管理与发展步入可持续发展的良性轨道。我们的主要做法：**一是加强法制宣传教育，提高法制观念和保护意识。**通过向社区周边群众印发宣传手册、画报，深入社区中小学校、村组开展环境教育、座谈会等形式，广泛宣传自然保护区和野生动植物保护等法律知识和保护区的有关政策规定。不断提高社区群众的法制观念和保护意识，增进社区群众对自然保护工作的理解和信心。**二是落实具体措施，支持社区建设，发展社区经济。**主动承担被地方林业部门弃养的区内公路干线的养护工作，保障区内上千名群众进出活动生命线的畅通；以

不违背生态安全为前提，在实验区内划定固定的生产区域，供社区群众生产毛竹、茶叶，并深度挖掘生态产业发展的潜能，通过推广运作毛竹林丰产示范研究成果和世界红茶始祖正山小种红茶史研究成果，引导村民打造生态品牌和提高营销策略来推动社区群众增收；此外，保护区还积极争取社区经济发展项目和资金用于推进社区的经济发展。由于这些做法适应形势发展的需要，确保了社区经济稳定可持续发展。**三是建立共管机制，促进协调发展。**随着社区经济的不断发展，社区村民的生产生活得到稳定，收入逐年提高，近而加深村民了对自然



保护工作理解，主动参与资源保护的意识不断增强，形成了颇具特色的社区参与管理机制。1994年7月，根据福建省人民政府颁布的保护区管理办法的有关规定精神，武夷山自然保护区与福建省林业厅、南平市林业局及武夷山市、建阳市、光泽县、邵武市等政府及其林业主管部门、周边6个乡镇、15个村场一起成立了“联合保护委员会”，形成了“管理局——管理所——哨卡”和“联合保护委员会——联保小组——村、场”两线交织的三级管理网络。1999年8月，在省林业厅和南平市委的高度重视下，由周边四县市投资近80万元在区外建造一条208公里环绕保护区的生物防火林带。2001年，以生态公益林试点工作为契机，每年在全区范围内聘用生态公益林护林员，有6%的区内群众直接参与了资源管护工作。保护区还利用公益林补偿资金组织各村场建立以复员军人、青壮年为主的半专业化扑火队12支240人，使我区的森林防火和野外巡护监测工作有了质的突破。

## 周边社区如何了解和参与生物圈保护区的管理工作

保护区成立初期，区内村民对在保护区采取的一系列资源保护措施不甚理解，曾一度产生抵触情绪；1998年天然林禁伐后，保护区内停止了木材采伐，村集体和村民靠采伐木材的收入锐减，也曾一度加剧了这种情绪。保护区结合实际情况，采取了下列的措施：

一是加强社区宣传，广泛宣传自然保护区和野生动物保护等法律法规知识和保护区的有关政策规定，印制了《武夷山保护区案例选编》等宣传材料；深入社区村组召开座谈会，向村民宣传党和国家关于林业和自然保护的大政方针，介绍保护区建设发展的有关情况，了解社区发展中存在的问题。通过座谈活动，增进了保护区与社区之间的相互理解，增强了社区群众对自然保护工作的信心。



二是从解决群众基本生活问题入手，争取优惠政策，在社区发展毛竹、茶叶、生态旅游等“特色产业”，加大对社区的扶持力度，把发展社区经济作为重要的基础工作，与自然资源保护工作同部署同落实，在政策、资金、技术上积极给予支持，帮扶社区寻求新的经济增长点，依法依规把社区村社会、经济的发展纳入《福建武夷山国家级自然保护区管理计划》、《福建武夷山国家级自然保护区经营方案》、《福建武夷山国家级自然保护区生态旅游计划》等各项规划、方案、计划中实施。

三是积极开展社区协调与服务。我区的机关职能科室及五个管理所充分发挥职能作用：一是加强社区的协调与服务，根据社区情况，每年召开社区座谈会，宣传国家有关政策，了解社区需求，加强保护区与社区的沟通与理解；二是协调社区矛盾纠纷，如对光泽下史源村公益林分配中存在的问题进行协调、积极为区内桐木4户处于地质灾害点村民的搬迁申请补助资金；2007年，在管理局干部职工的悉心调解下，圆满解决黄坑辖区内一起延续二十多年，涉及九峰、桂林、坳头、长见4个村场群众利益的800多亩竹林界限争议，进一步促进了社区和谐发展。为美化区内环境，开展区内的毛竹加工厂点进行年度审核检查及新办厂的审批工作；长期以来，每年坚持调查慰问区内和周边社区困难户。经过坚持不懈的努力，社区逐渐加深了对保护区的了解并支持保护区工作。

三是积极开展社区协调与服务。我区的机关职能科室及五个管理所充分发挥职能作用：一是加强社区的协调与服务，根据社区情况，每年召开社区座谈会，宣传国家有关政策，了解社区需求，加强保护区与社区的沟通与理解；二是协调社区矛盾纠纷，如对光泽下史源村公益林分配中存在的问题进行协调、积极为区内桐木4户处于地质灾害点村民的搬迁申请补助资金；2007年，在管理局干部职工的悉心调解下，圆满解决黄坑辖区内一起延续二十多年，涉及九峰、桂林、坳头、长见4个村场群众利益的800多亩竹林界限争议，进一步促进了社区和谐发展。为美化区内环境，开展区内的毛竹加工厂点进行年度审核检查及新办厂的审批工作；长期以来，每年坚持调查慰问区内和周边社区困难户。经过坚持不懈的努力，社区逐渐加深了对保护区的了解并支持保护区工作。

## 地方政府对保护区的管理情况，以及他们从事管理的力度、弱点、面临的挑战以及机会

福建武夷山国家级自然保护区管理局是隶属于福建省林业厅，为省财政核拨的参照公务员法管理的事业单位。管理局成立党委，下设办公室、计财科、项目科、保护管理科、社区管理科等12个科室和5个管理所，经省政府批准在入区的主要交通干道设立了11个哨卡。保护区森林公安分局在5个管理所下设4个森林公安派出所和1个公安执勤点，实行双重管理。哨卡和派出所为三级管理机构。

武夷山生物圈保护区地处福建省武夷山市、建阳市和光泽县三市（县）境内，与邵武市和江西省

铅山县毗邻。1994年，武夷山生物圈保护区成立了由省林业厅的有关单位，保护区周边四县市的政府和主管部门，江西省的自然保护区及有关乡镇，区内及周边地区的乡镇村场和有关单位组成的福建武夷山国家级自然保护区联合保护委员会（简称联保会），作为保护区及周边地区生物多样性保护的协调机构。武夷山联保会成立以来，委员会主任均由省林业厅分管副厅长担任，林业厅有关职能处室，周边县市政府分管林业的领导和林业局局长，各乡镇、村场主要负责人作为联保会成员。经过17年的运作和实践，委员会机制不断完善，在促进保护和发展的矛盾方面发挥了重要的协调作用。

武夷山生物圈保护区管理体制非常适应自身的特点和保护发展趋势。第一，武夷山生物圈保护区是有省林业厅垂直管理的参照公务员法管理的事业单位，这种机制体制，不仅使机构、人员、财政得到了长期稳定的保障，还不容易受地方政府注重开发的影响，有利于国家和保护区有关政策法规的完整落实和执行。第二，武夷山生物圈保护区的管理体制是适合国际生物圈保护区要求，采取参与式管理，较好的处理好社区经济发展与资源保护之间存在的许多矛盾。第三，保护区不隶属地方政府管理，有利于发挥保护区的职能作用，特别是制定保护的规章制度和有关法律法规的实施制度化、开展行政执法等方面保持独立性和不受干扰。这种体制可以很好地克服因地方政府在强调保护与开发方面，偏重开发，如在保护区周边开展大众旅游、扩大土地经营区域、增加社区经济指标等行为而对保护区资源保护产生很大的威胁，甚至有些部门牺牲环境，侵占、非法转让土地开发矿产、投资建设项目等不利因素使保护回归本位。第四，联保会的成立，很好地理顺了保护与发展的关系，尤其是近年来，国家对保护区建设非常重视，实行了生态公益林补偿机制，福建省在全国率先专门制定政策性文件，扶持保护区社区发展，武夷山生物圈保护区注重生态文化建设，挖掘和宣传红茶文化，让区内社区经济蓬勃发展。联保会在资源保护和经济发展方面发挥了极大的作用。

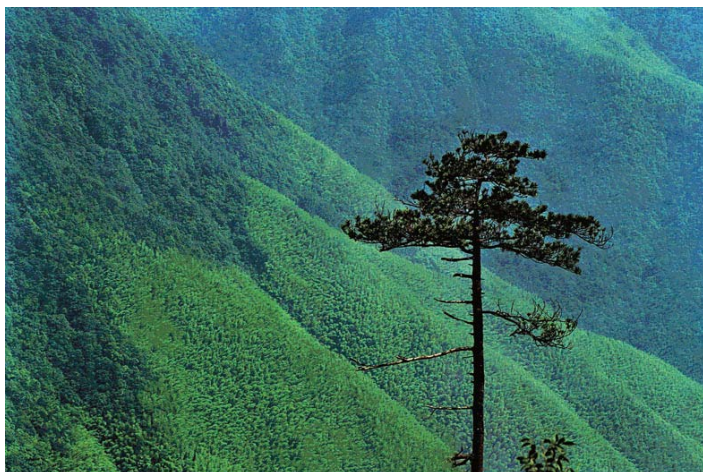
## 生物圈保护区在实现可持续发展中遇到的挑战

根据管理实际，武夷山生物圈保护区因地制宜采取各种方式解决可持续发展中存在的各种挑战：一是经上级主管部门批准，适当调整功能区划，使之既有利于自然资源与环境的保护，又充分考虑村民的生产生活需求；二是积极对区内产业进行扶持，如申请福建省现代农业（茶叶）发展项目资金300万元（2008-2009年），全部用于扶持桐木、坳头、大坡、长见、桂林、大洲等6个村发展红茶产业；三是在村民的生产经营中主动把国家规定保护区享有的优惠政策让利于民，使乡村因此每年可增收30万元；四是将保护区基础设施，如程控电话、闭路电视、电力专线等，向当地社区开放，支持乡村公共事业和企业的发展，并为区内乡村的道路建设和饮水工程等予以资助；五是关心周边为保护区建设做出很大牺牲而当时十分贫困的老区基点村建设，先后为受洪灾的光泽县桃



林村的重建、光泽县大洲村的毛竹生产予以支持，共计投入资金35万元、贴息贷款5万元；六是对社区困难群众进行走访慰问，为受灾群众的生产争取补偿，并发动干部职工为生活困难的群众捐款捐物。

自我管理的重要体现就是让群众从自身利益中认识到参与联合保护工作的意义和责任。其中一个最重要的方式是支持村民对区内实验区中集体所有的毛竹林、茶叶地实行家庭责任承包经营，运用科



技力量帮助村民提高毛竹的产量，降低收费标准，使村民从切身利益中感悟保护工作的必要性，能主动自觉地按照《福建省武夷山世界自然与文化遗产保护条例》、《武夷山保护区管理办法》和保护区关于森林防火及毛竹采伐、运输、销售等有关规定，做好自我管理，使区内群众从原来的保护管理的对象转变为联合保护的管理主体，极大地调动了村民参与资源保护的积极性。

毛竹生产一度是社区的支柱产业，为社区的建设发展做出过很大

贡献。但随之也产生诸如加工污染和毛竹林蚕食阔叶林等影响环境和生物多样性保护的问题。保护区管理局及时对社区经济发展进行产业转型引导，减少对竹产业的依赖，使毛竹加工企业从仅生产竹凉席、筷子等转向生产竹地板等产品，提高了产品附加值，又减少了加工下脚料的处理难度。现在的毛竹加工剩余物都用于加工竹炭或用作生产中的燃料，基本解决了污染问题。

## 武夷山生物圈保护区的合作管理

合作管理的方式主要有：①调查各类合作者的利益，充分吸收这些不同的社会群体参与自然保护区的管理和决策过程；②制定有关保护和持续利用自然资源的鼓励性措施；③发展和建立有助于管理、协调及统筹管理生物圈保护区各项计划与活动的机制—联合保护委员会；④相继建立大竹岚毛竹林近自然经营示范片、正山小种红茶研究所及坳头实验茶厂，科学引导社区群众利用本地区毛竹、茶叶等非消耗型生物资源发展经济。

## 武夷山生物圈保护区如何参与管理网络

主要是通过以下四个途径参与管理网络：①应邀参加或承办国内、国际生物圈保护区网络会议。②实施或参与国内生物圈保护区网络的评估活动。③加强国内外生物圈保护区网络成员间的信息交流。定期向中国生物圈保护区国家委员会秘书处报送工作动态；与国内有关网络成员单位长期互通管理动态信息；认真总结自身保护管理经验，并积极向生物圈保护区网络杂志投稿。④常年开展网络成员间的考察交流活动，组织派送年青优秀人才到管理先进的网络保护区进行挂职锻炼与交流学习。⑤收集和学习“人与生物圈”相关刊物，及时了解世界生物圈保护区管理网络的工作原则、目标和要求。

自1987年加入世界人与生物圈保护区网络以来，武夷山保护区接待国内外生物圈保护区网络成员单位的考察交流活动累计达200余次。此外，武夷山保护区注重加强与中国生物圈保护区国家委员会

秘书处的联系，依托秘书处的桥梁纽带作用，实施了武夷山生物圈保护区入网10年评估、在《人与生物圈》杂志刊登了一期全面介绍武夷山保护区的专刊、承办了第11届东亚暨中国生物圈保护区网络国际会议、开展了有8个国家网络成员（包括国内56个生物圈保护区）参加的武夷山保护区评估活动、参加秘书处组织的历次网络会议及活动，及时了解和熟悉《塞维利亚实施纲要》和《马德里行动计划》，明确世界生物圈保护区发展的行动目标和要求，并严格遵循国际生物圈保护区“保护、科研、发展、宣传教育”的原则，以保护为根本、社区为基础、科技为先导、发展为动力，不断建立完善规范有效的保护控制体系，加强资源保护与监测，积极探索有中国特色的自然保护区可持续发展之路，森林资源保护管理取得成效，社区基础进一步巩固，各项工作得到扎实推进。

除此之外，武夷山保护区主要是在三方面以管理者的身份参与管理网络：①在历次国内、国际生物圈保护区网络会议上，根据自身的管理实践经验，向大会提出生物圈保护区可持续发展的意见和建议；②在管理网络组织的生物圈保护区评估活动中，对被评估保护区提出合理化改进意见；③参与或组织生物圈保护区网络问卷调查，客观反映生物圈保护区建设发展中存在的亟待解决的问题，为管理网络高层制定管理决策提供科学依据。

## 当地生物圈保护区在促进以及普及有关生物圈所达成的共识上所作的努力

一是宣传教育方面，通过各种渠道宣传建立生物圈保护区的意义以及各类生物圈保护区组织所达成的共识；二是社区共管方面，通过各种方式让社会各界人士参与到武夷山生物圈保护区的建设中来，最直接的感受生物圈保护区在整个社会中的作用；三是项目带动，通过GEF等项目的实施，社区村民认识生物圈保护区的作用，在生活方式上努力的适应生物圈保护区所提倡的可持续发展原则。

## 武夷山生物圈保护区的可持续发展计划

武夷山保护区主要从四方面推动可持续发展：一是调查各种利益群体的情况，充分吸收社会各界人士参与自然保护区的管理和决策过程；二是制定有关保护和持续利用自然资源的鼓励性措施；三是发展和建立有助于管理、协调及统筹管理生物圈保护区各项计划与活动的机制；四是以建立大竹岚毛竹林近自然经营示范片，目前又在着手建立坳头茶叶生态示范片，以推进可持续利用本地区的重要生物资源。

毛竹是一种可再生资源，具有生长速度快、主伐周期短、经济价值高的特点，是村民的主要经济来源，区内实验区毛竹林面积约8万亩。管理局引导社区合理经营毛竹资源，改粗放型经营为科学集约型经营，提高毛竹的产量，从而有效限制纯毛竹林面积的扩展。此外，通过毛竹深加工提高毛竹利用率、产值。

茶叶是武夷山保护区的主要经济作物之一，保护区现有茶叶面积约8000亩，“正山小种”红茶以其独特风味名誉海外。社区村民有400余年的种茶采茶历史和传统，保护区通过加强茶园管理，搞好营销、扩大知名度等措施促进了社区茶产业极大发展，现成为社区经济的第一大支柱产业。

在武夷山生物圈保护区，可持续性发展主要体现在致力于寻求保护和发展的最佳平衡模式方面的政策层面，以及更为具体的由环境、经济和社会三个方面组成的技术层面这两个层面上。

保护区在实验区内划定了约占全区总面积10%的固定生产区域，在这些区域内科学引导村民发展毛竹、茶叶、养蜂等资源非消耗性的生态产业，不断提高社区群众的经济收入，实现了资源保护与社区发展的协调统一，探索出了“用10%面积的生态产业发展，推进90%面积生物多样性保护”的保护和社区发展模式，这在政策层面上是可行的和可持续发展的。在技术层面上，保护区通过切实保护区内的森林和野生动植物资源来维护生物多样性得到发展，通过发展社区经济实现经济领域的可持续性，通过



提供科学研究、宣传教育、休闲休憩等活动取得社会的认知与认可。

根据瑞士伯尔尼环境保护协调办公室“可持续性评估表”的相关内容对保护区在保护、科研、社区发展和科普宣教等方面进行评估，结果表明，经过30年的建设，保护区能充分体现该评估表所列部分项目的要求，被证实是可行和可持续的发展案例。

保护区成立以来一直为解决“保护和发展”关系所困扰。在环境、经济和社会方面均存在一定的问题，如森林资源的盗伐问题，森林火灾、病灾，森林被各种利益群体日益蚕食的现象，社区经济发展的持续问题，科学研究与合作的继续推进问题，宣传教育的形式和内容的更新问题，休闲休憩活动对森林资源的干扰与副作用等。认真对待和分析这些问题产生的根源，探讨解决问题的措施与途径，是考验保护区应急分析和处理能力的关键。事实上，保护区在应急分析能力方面有着自己的理论和实践。针对可能出现的破坏森林资源的各种行为，保护区成立了公安、林政、森林武装警察、护林队伍等几支护林力量，以常规巡逻、宣传教育和专项打击等手段来获得资源的安全；对社区经济发展和居民生产生活问题，通过争取发展项目与资金扶持和引导社区发展经济来加以解决；对科研宣教和休闲休憩活动中的不利因素，通过主动联系、加强合作、规范管理得到合理解决。近年来，因社区居民对保护和发展的政策理解不到位，曾出现过聚众到保护区管理机关上访等群体性事件，经过说服教育与社区扶持，这些事件均得到圆满解决，增强了保护区处理应急事件的能力。



## 生物圈保护区组织的制度化

目前，保护区已在保护、科研和内部管理上形成了制度化。一是依法保护，打防结合。保护区始终把自然资源和自然环境的保护管理工作置于全区工作的首位，建立健全保护区管理组织机构，完善管理措施。采取分五个片区管理，在11个如去主要路口建立哨卡，聘用护林员和半专业扑火队员，建立了资源管理、林政执法、森林防火等各项管理制度，长期向区内和周边进行宣传教育，提高群众的保护意识。同时发挥森林公安的职能作用，严厉打击破坏自然资源的违法犯罪行为。二是联合保护。武夷山生物圈保护区从保护与发展的实际需求出发，构建了“联合保护委员会—联合保护分会—村场”和“管理局—管理所—哨卡”两线三级管理体制组成的管理网络。为适应国家对自然保护区建设要求和社区发展的需求，解决好社区村民生产生活问题，保护区管理局不断完善内部组织结构，成

立了社区管理科、红茶研究所、项目科等，积极争取有关惠民政策，引导和扶持合理利用自然资源，发展毛竹和红茶产业，探索总结出“用10%面积特色产业发展，推进90%面积生物多样性保护”的创新性经验，群众生活水平显著提高，成为中国自然保护区较好的解决保护与发展矛盾问题的一个成功典范。

内部管理制度化。一是通过完善各项管理制度，加强职工教育管理、财务管理。二是加强岗位培训。对干部职工和聘用人员采取自行继续教育培训、组织业务培训和专项培训，更新知识，提高干部队伍的综合素质。三是做好职工队伍稳定，加强思想教育，领会国家政策和法律法规，营造良好的党风政风，形成政治文明、物质文明、精神文明和生态文明协调发展的良好局面。

科研管理制度化。武夷山生物圈保护区从实践中深刻体会到科技在保护区建设发展中的重要意义和巨大作用。保护区在开展基础学科研究上，紧密结合保护区建设发展的实际开展对毛竹、红茶等的研究，一边继续有关保护区的基础学科研究，发表百余篇论文和有关专著。武夷山中亚热带常绿阔叶林生态系统定位研究站的建立，为武夷山生物圈保护区设立了一座新的科技平台，为提高保护区的保护管理水平设置了很好的登攀台阶。保护区现有健全的管理机构和较强的科研管理队伍，积极与有关科研单位和院校开展一系列的科学研究和交流活动，取得了重要成果，同时也培养了一批管理人才。

在建区初期（1980年），福建武夷山自然保护区管理处成立了研究室，1996年，经福建省编委批准成立了“福建省武夷山生物多样性研究中心”，2000年，经国家计委、国家林业局批准建立中国福建武夷山中亚热带常绿阔叶林森林生态系统定位研究站。

保护区是进行可持续发展研究的重要基地，通过科学研究，揭示自然变化规律、指导自然资源的保护和自然环境的恢复、维护生态平衡，最终达到人与自然的和谐发展。

保护区的可持续发展研究立足“武夷山中亚热带常绿阔叶林森林生态定位研究”平台，重点进行森林生态系统服务功能研究，并结合保护区保护管理的中心工作，开展生物多样性保护研究与监测、珍稀濒危野生动植物的保护、社区可持续发展模式研究，努力把保护区建设成为中亚热带森林生态系统研究、生物多样性、自然保护区可持续发展研究监测的示范基地。