



IMMCP



雷州半岛

红树林湿地资源综合管理

Integrated Mangrove Wetland Resource
Management on Leizhou Peninsula

雷州半岛红树林综合管理和沿海保护项目管理办公室 编著
雷州半岛红树林综合管理和沿海保护项目实施办公室

 广东科技出版社



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SINO - DUTCH

**INTEGRATED MANGROVE MANAGEMENT AND COASTAL
PROTECTION**

ON LEIZHOU PENINSULA, GUANGDONG PROVINCE

February 2001 – October 2006

中荷合作雷州半岛红树林综合管理和沿海保护项目

2001年2月 – 2006年10月

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红树林是热带和亚热带海岸带上特有的森林群落,是海岸生态系统的重要组成部分和生产力最高的海洋生态系统之一。它在净化海水,消浪护岸,保护生物多样性和维护沿海地区生态安全等方面具有重要意义。然而世界各国的红树林湿地资源在过去的几十年中受到严重破坏,面积不断减少,红树林湿地保护问题已成为世界关注的热点问题之一。

2004年12月26日发生在印度尼西亚西北部的巨大海啸袭击了南亚和东南亚地区,吞噬了250 000条生命,无数人丧失了家园,遭受了严重的创伤。在缺乏红树林保护的地区,海浪的巨大冲击力所造成的破坏尤为严重。许多受灾地区原本生长着茂盛的红树林和珊瑚礁,可以缓和巨浪的冲击,但为了当地经济或城镇的发展,这些红树林带已被旅馆、虾塘、沿海高速公路和房屋取而代之。

位于中国大陆最南部的雷州半岛拥有潮间带滩涂面积约93 400公顷和中国最大面积的红树林,面积7 000多公顷,占中国红树林面积32%。该半岛的红树林主要沿着海岸河口分布,保护着沿海堤岸安全、为当地人提供丰富的自然资源和丰厚的经济收入,同时还为许多生物提供各种食物及栖息地(如为鱼贝类提供繁殖地)。沿海红树林湿地还是多种候鸟迁徙的必经之地。但是在过去的几十年中,由于围海造田、围垦养殖以及城镇发展等原因,红树林面积正在日益减少。

据报道,20世纪50年代初广东省有红树林面积超过40 000公顷,但目前仅剩约10 000公顷。其中雷州半岛的红树林面积则从14 000公顷下降至7 700公顷。

广东沿海经常发生的台风对当地的经济发展造成严重威胁,雷州半岛遭受台风破坏尤为严重,仅1996年9月发生的台风共造成经济损失约1.74亿美元。因红树林湿地遭受破坏或被改变用途,雷州半岛沿海地区生态环境变得十分脆弱。

自2001年以来,中荷合作雷州半岛红树林综合管理和沿海保护项目(IMMCP)通过加强该地区红树林湿地资源的综合管理以及人工造林等措施拓展红树林资源,以改善雷州半岛沿海地区的生态环境,减轻或免受台风灾害。

在广东省林业局和湛江市项目领导小组的直接领导下,项目实施办公室履行项目的日常管理和组织实施工作。作为项目主要参与者,湛江市林业局、湛江红树林国家级自然保护区管理局以及有关县(市、区)林业局为项目提供了有力支持。国内以及当地不少研究机构或教育机构如广东海洋大学(原湛江海洋大学)参与了项目的一系列活动。在项目推动下,湛江市林业局和湛江红树林国家级自然保护区从以下几方面加强红树林资源的管理:

- ◆通过红树林周边区共管计划的实施和社区参与,强化红树林湿地的保护和管理。
- ◆通过人工造林1 000公顷,恢复退化的红树林,扩大红树林面积,为沿海地区农业和水产养殖业提供有效保护。
- ◆通过红树林宣教中心的建设和各种环境教育活动的开展,提高当地公众的环境保护意识。
- ◆通过保护区总体规划和管理计划的制订和实施,保护区办公楼和管理站的建设,以及保护区划界等活动,提高湛江红树林保护区的管理能力和管理水平。
- ◆通过生物资源调查,以加强对生物栖息地的管理。



湛江红树林保护区的生物资源呈下降趋势，究其原因主要有三点：一是保护区的经费和人员不足，难以配套相关设施和开展相应的管理活动。二是在划为保护区以前，当地老百姓祖祖辈辈已在这些区域采集和利用自然资源，没有规章制度来规范采海活动。要改变传统采海作业方式，即便是经费充足、员工素质好和历史悠久的保护区来说，也同样是一个不小的挑战。三是当地不少管理机构包括林业、环保、海洋渔业等部门都对沿海红树林湿地资源同时实施管理，但相互缺少合作。这种部门间独立的管理运作方式制约着海岸带和保护区自然资源的有效管理和资源共享。

IMMCP 项目清楚地认识到上述问题，并意识到资源共享、协调管理的重要性。在过去五年多的项目实施期内，项目加强了与不同部门和相关机构的合作，不断完善合作机制。

本书对项目 5 年的实施情况进行总结。由于篇幅有限，编者未能对项目各个方面进行详细论述，仅就项目背景情况、项目组织机构与管理以及项目活动和成果等三个方面作简要介绍。书中收集了大量有关项目活动的照片，以便让读者更直观地了解项目有关情况。

IMMCP 项目在实施过程中得到广东省林业局、湛江市林业局、有关县（市、区）林业局、湛江红树林国家级自然保护区、湛江市有关部门以及试点学校的大力支持和帮助。同时有关机构和人员为本书提供了许多高质量照片，在此编者一并致以衷心感谢。

由于编写时间匆促，书中如有错漏，敬请读者指正。

编 者
2006 年 8 月 30 日



Foreword

Mangrove forests are distributed along coastlines in tropical and sub-tropical latitudes. Mangrove habitat is an important component of the coastal zone ecosystem and one characterized by high biological productivity. It provides important functions including water purification, coastal protection from wind and waves, biodiversity conservation, and flood protection. However, mangrove and other coastal resources have been damaged severely in past centuries and the area has declined such that mangrove conservation has become a point of focus of regional governments.

On 26 December 2004, Southeast and South Asia were hit by a tsunami that originated at the northwest tip of Indonesia, devastating coastal regions. At least 250,000 persons were killed, while many more were rendered homeless and traumatized. The full fury and wrath of the tidal waves were felt in areas where nature's green belts of coral reefs and mangroves no longer exist or were never present in the first place. In many parts of the affected areas where dense mangroves and coral reefs once acted as natural buffers between the sea and coast, other developments have taken place such as construction of hotels, shrimp farms, coastal highways, housing and other commercial developments. These left the coastal zone unprotected, which led to greater damage from the tsunami.

With a surface area of some 93,400 ha, the intertidal flats of Leizhou Peninsula (Zhanjiang Prefecture, Guangdong Province) include the largest area of remaining mangrove areas in China. Leizhou Peninsula is the southern-most extent of mainland China. The mangroves at Leizhou Peninsula cover around 7,000 ha and are mainly found in sheltered estuarine areas along the coast. Leizhou mangroves account for around 32% of all mangrove area in China. They are an important economic resource for local communities, providing coastal protection, a variety of food products and habitat for flora and fauna (e.g. nursery grounds for fish and shellfish). The coastal wetlands also provide vital staging areas for migratory birds, including species which have been accorded national legal status. Over recent decades, however, these mangrove forests have suffered from large-scale exploitation and conversion, one of the main causes being clearing for aquaculture pond construction and reclamation for farmland and urbanization.

Reportedly, the mangrove area in Guangdong province in the 1950s was over 40,000 ha and has since declined to 10,000 ha. The same is true on Leizhou Peninsula where mangrove area declined to 7,700 ha from 14,000 ha.

Typhoons are a recurrent phenomenon along the Guangdong coast, causing major economic damage to coastal villages. Leizhou Peninsula is particularly seriously affected. The September 1996 typhoon caused over US\$ 174 million damage. Maintaining a protective mangrove belt is essential for coastal protection and coastal fisheries

including shrimp farming. As mangroves have been damaged and converted, the coastal zone of Leizhou and its ecology have become more vulnerable to typhoon damage.

Since 2001, the Sino–Dutch Integrated Mangrove Management and Coastal Protection in Leizhou Peninsula (IMMCP) Project provided assistance to the Government of the People's Republic of China to improve the environment and protect the coastline of Leizhou Peninsula from typhoon damage. This is being achieved by expanding the area under mangrove forest through enhanced management and restoration of degraded areas and afforestation.

Under direct leadership of Guangdong Forestry Bureau and the Local Lead Group, the Project Implementation Office (PIO) was responsible for management, organization and implementation of the project. The main participants included Zhanjiang Forestry Bureau, county Forestry Bureaus of Zhanjiang City, and ZMNNR, each of whom provided strong support to the project.

The operations and management of Zhanjiang Forestry Bureau and Zhanjiang Mangrove National Nature Reserve Management Bureau were strengthened with the assistance of international and national experts and encouragement from the IMMCP project in many areas including.

- Innovative approaches to improving protection and management of mangrove resources through community participation guided by the Adjacent Area Co–Management Plan.
- Rehabilitation of degraded mangrove forests by replanting on 1,000 ha for protection against coastal erosion and for protection of important agriculture, aquaculture and fisheries.
- Increasing community awareness through the construction of a well equipped education centre and development of environmental education programmes.
- Improved management of Zhanjiang National Mangrove Nature Reserve through drafting and implementation of a Master Plan and Management and Monitoring Plan, construction of reserve headquarters and management stations and boundary demarcation.
- Improved habitat and species management through bio–physical inventories.

Zhanjiang National Nature Reserve has seen declining trends in natural resources for many reasons. Foremost, protected areas have suffered from insufficient budgets and personnel. Many nature reserves do not have capital budgets to construct facilities or purchase equipment, nor do they have recurring budgets to fund operations. Secondly, communities occupied the coastal zone and exploited its resources for generations prior to the designation of protected areas. Fish and seafood have been collected for many years without regulation. Changing these traditional patterns of resource exploitation is a formidable challenge even for well–funded and long–established agencies with trained personnel. Thirdly, several agencies including Environment Protection Bureau, Oceanic and Fisheries Bureau and Forestry Bureau administer the coastal zone nature reserves in south China. These agencies often operate independently, leaving little opportunity for integration of the many related resource management issues affecting the coastal zone and its protected areas.

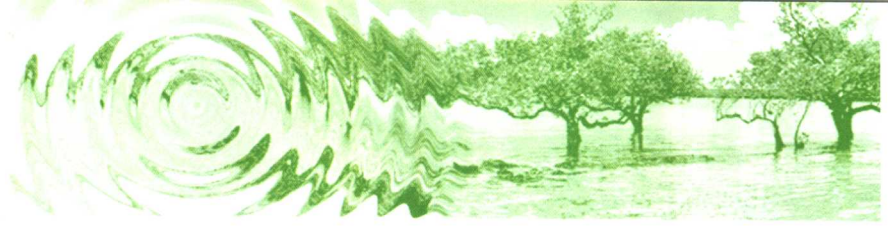
The IMMCP Project has addressed these challenges and achieved over the last five years inter–sectoral cooperation to enhance the integrity of the nature reserve through acknowledgement that shared use of resources and cooperative management with the communities is the best way forward.

This book summarizes implementation of the IMMCP project over the last 5 years. Limitations on length of the text mean that we can provide only introductions to many project activities. Photographs are provided to enable the reader to clearly understand the various project components.

During implementation the IMMCP project received valuable support from all levels of Forest Bureaus and government departments including ZMNNR and the Zhanjiang City school system.

The editors take this opportunity to express their sincere thanks to all those who participated in the project. The editors also thank the many contributors to this book and ask readers to contact either IMMCP or ZMNNR personnel to comment on its content.

Editors, Zhanjiang, 30 August 2006



同义词与缩略语对比表

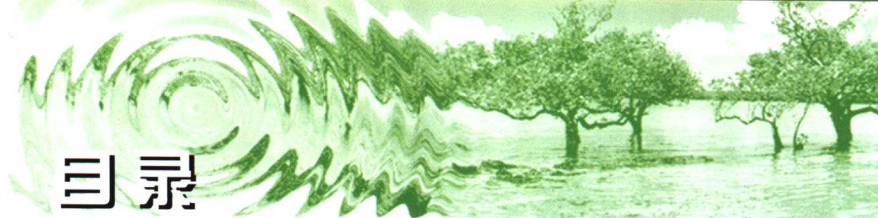
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| IMMCP | 雷州半岛红树林综合管理和沿海保护项目 |
| COCD | 社区发展与环境教育职员 |
| COCS | 社区参与与资源调查职员 |
| COPP | 资源保护与造林职员 |
| NPD | 项目中方主任 |
| IPD | 项目荷方主任 |
| CZMP | 海岸带规划管理国际专家 |
| PCD/TL | 项目荷方副主任兼国际专家组组长 |
| APE | 专业助理国际专家 |
| EE&PA | 环境教育与公众意识 |
| MEK | 红树林环境教育资料包 |
| AACMP | 周边区共管计划 |
| PR | 进展报告 |
| PRA | 参与式乡村评估 |
| FMO | 荷兰投资银行（荷兰投资发展公司） |
| SFA | 国家林业局 |
| GFB | 广东省林业局 |
| LLG | 项目当地领导小组 |
| GNRMO | 广东省自然保护区管理办公室 |
| PMO | 项目管理办公室 |
| PIO | 项目实施办公室 |
| AEC | 荷兰爱凯地欧洲咨询公司 |
| WICO | 湿地国际中国办事处 |
| ZFB | 湛江市林业局 |
| CFB | 项目区县级林业局 |
| ZMNNR | 湛江红树林国家级自然保护区 |





List of Abbreviations

| | |
|--------|---------------------------------------------------------------|
| IMMCP | Integrated Mangrove Management and Coastal Protection Project |
| COCD | Conservation Officer for Community Development |
| COCS | Conservation Officer for Community Participation and Survey |
| COPP | Conservation Officer for Planting and Protection |
| NPD | National Project Director |
| IPD | International Project Director |
| CZMP | Coastal Zone Management Planner |
| PCD/TL | International Programme Co-Director/Team Leader |
| APE | Associate Professional Expert |
| EE&PA | Environmental Education & Public Awareness |
| MEK | Mangrove Education Kit |
| AACMP | Adjacent Area Co-Management Plan |
| PR | Progress Report |
| PRA | Participatory Rural Appraisal |
| FMO | The Netherlands Investeringsbank |
| SFA | State Forest Administration |
| GFB | Guangdong Forestry Bureau |
| LLG | Local Leading Group |
| GNRMO | Guangdong Nature Reserve Management Office |
| PMO | Project Management Office |
| PIO | Project Implementation Office |
| AEC | ARCADIS Euroconsult Company |
| WICO | Wetlands International China Office |
| ZFB | Zhanjiang Forestry Bureau |
| CFB | County Forestry Bureau |
| ZMNNR | Zhanjiang Mangrove National Nature Reserve |



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1

第一章 项目简介

Chapter One Project Introduction





1.1 项目来历

1997年3月,应林业部(现为国家林业局)国际合作司邀请,湿地国际和荷兰爱凯地欧洲咨询公司专家组对广东省雷州半岛红树林海岸进行为期两周的考察,并与广东省林业厅就申报雷州半岛红树林综合管理和沿海保护项目(IMMCP)达成共识,签订了合作备忘录。随后双方着手项目文件的起草工作,1997年9月提交了项目建议书,1998年2月广东省计委批准立项,同年林业部及外经贸部分别批准了该项目,并向荷兰驻中国大使馆就MILIEV计划资金的使用正式提出申请。1998年8月至10月,南京林业大学专家受荷兰政府委托对项目的财务及经济可行性进行评估,1999年6月荷兰外交部主管对华政府贷款官员及荷兰驻广州总领事对雷州半岛进行实地考察。

MILIEV计划的全称是环境和经济自足计划,其资金主要用于环保计划的制订和实施,并推动当地对环保项目的投入。由于申报的IMMCP项目有助于直接改善环境、减轻贫困和制定当地环保规章制度,因此符合环境和经济自足计划资金的申请条件和要求,获得批准使用荷兰赠款(占项目总预算的60%)。

在项目申请过程中,作为资金和技术支持的前提条件,荷兰政府要求中国政府将原有的湛江红树林省级自然保护区(1991年成立)提升至国家级自然保护区,并申请将其列入拉姆萨公约组织的国际重要湿地名录。1997年12月中国国务院正式批准成立湛江红树林国家级自然保护区,并将保护区面积从原来2 000公顷扩大至约20 000公顷。2002年1月,湛江红树林保护区与中国其他13处湿地一起被命名为拉姆萨国际重要湿地,编号为1157。

1999年9月28日,广东省林业厅、中国仪器进出口总公司和爱凯地欧洲咨询公司就项目咨询服务达成了协议。2001年1月17日总部设在海牙的荷兰投资银行(代表荷兰政府)与中国财政部(代表中国政府)签订了“中国2000.10赠款协议”。按照该协议,荷兰投资银行向中国支付总额为5 468 475荷兰盾的赠款,占项目总预算9 114 124荷兰盾的60%,其余3 645 649荷兰盾由广东省政府和湛江市市政府配套投入。

2001年2月项目正式启动,同时荷方国际专家组组长进驻湛江项目区。2001年9月,项目在廉江市高桥镇举行盛大开工仪式,标志着项目全面实施。

原计划项目实施期为5年(2001年2月至2006年1月),后经双方协商同意将项目推延至2006年10月,延期9个月。

1.1 Project History

In March 1997 at the request of the Department of International Affairs of the Ministry of Forestry (now State Forest Administration), the Netherlands-based consulting company ARCADIS Euroconsult, with assistance from Wetlands International China office in Beijing, toured the mangrove areas of Leizhou Peninsula in Guangdong Province for two weeks. The team reached agreement with GFB regarding application for Integrated Mangrove Management and Coastal Protection (IMMCP) project funding. Then the two parties formulated a project docu-



ment and the project proposal was submitted in September 1997. The proposal was approved by the Planning Department of Guangdong Province in February 1998. Later that year the State Forest Administration (SFA) and the Ministry of Foreign Trade & Economic Co-operation (MOFTEC) approved the project, and formally applied to the Royal Netherlands Embassy for MILIEV funding. In August –October 1998, national experts from Nanjing Forestry University were authorized by the government of The Netherlands to undertake a financial and economic assessment of the project. In June 1999, an official from the Ministry of Foreign Affairs of the government of The Netherlands and The Netherlands Consul General also visited Leizhou Peninsula to discuss the proposed project.

The MILIEV programme (Programme for Environmental and Economic Self-Sufficiency) grants apply amongst others to projects that assist the formulation of environmental plans and investments on a regional scale, and then provide funds

for the subsequent implementation of the (regional) environmental plan/programme. The Netherlands funding (60% of the total budget) was granted under the MILIEV programme for which grant applications are eligible if they lead to: (i) direct improvement of the environment; (ii) reduction of pollution; (iii) drafting of environmental regional policy plans (including advice on legislation or public participation).

As a condition for providing financial and technical assistance, the Netherlands government requested the government of the People's Republic of China to gazette the provincial-level Zhanjiang Mangrove Forest Nature Reserve (established in 1991) as national reserve and to nominate the reserve for listing as a wetland of international importance recognized by the Ramsar Convention Bureau. In December 1997, the State Council designated the area as a National Nature Reserve and provisionally enlarged it to 20,000 ha from the original area of 2,000 ha. On 11 January 2002, ZMNRR was listed along with 13 other China wetlands as a Ramsar site. ZMNRR is Ramsar site number 1157.

On 28 September 1999 in Beijing, a Contract for Consultants' Services was agreed between Forestry Department of Guangdong Province, China National Instruments Import & Export Corporation and ARCADIS Euroconsult. On 17 January 2001, De Nederlandse Investeringsbank voor Ontwikkelingslanden N.V.^①, with its registered office in The Hague, acting on behalf of the Government of The Netherlands, and the Government of the People's Republic of China, represented by the Ministry of Finance, signed the project "Grant Agreement China 2000.10". Under this agreement the NIO Bank would make available a grant in the amount of NLG 5,468,475 to P.R.China. The total budget comprised NLG 9,114,124 (of which NLG 5,468,475 comprised the Grant and accounted for 60% of the total budget, and NLG 3,645,649 comprised an in-kind contribution from the Provincial Government of Guangdong and the Municipal Government of Zhanjiang).

In February 2001 the project was officially launched with the mobilization of the International Team Leader from The Netherlands. Whilst the project was initially designed to be executed over a five year period from 1 February 2001 through 31 January 2006, both sides agreed to a 9-month extension from 1 February 2006 through 31 October 2006.



① Now referred to as FMO. See www.fmo.nl.



▲ 广东省林业局邓惠珍局长（右一）会见爱凯地欧洲咨询公司项目负责人

Mdm. Deng Huizhen, Director of GFB met the project responsible officers of ARCADIS Euroconsult



▲ 1999年时任湛江市市长周镇宏（右二）在湛江海滨宾馆会见荷兰驻广州总领事馆官员，就IMMCP项目合作问题举行友好会谈

Mr. Zhou Zhenhong, Ex-Mayor of Zhanjiang Municipal Government, met officials from The consulate-General of the Netherlands in Guangzhou and had a friendly talk about IMMCP cooperation at Haibin Hotel in 1999