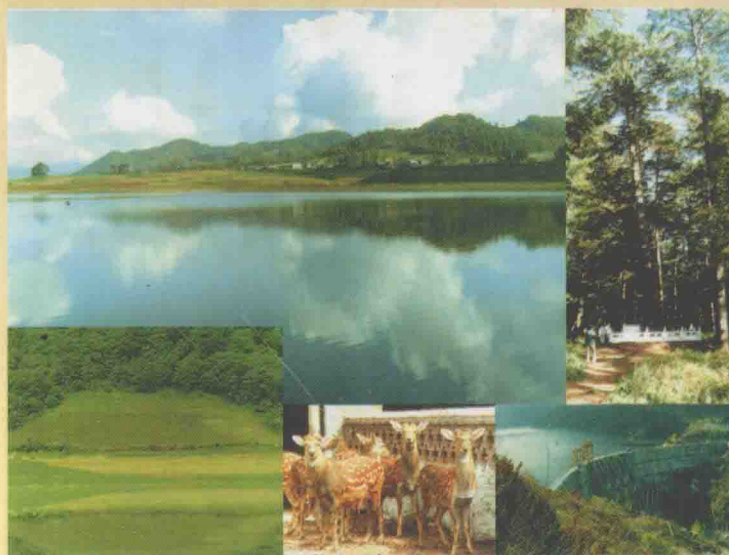


Protect the Water of Life

保护生命之水

——松花江三湖环境整治与综合开发研究

The Research
on
Environment Control
and
Comprehensive Exploration
in the
Three Lakes Reserve
of
Songhua River



● 孙继武 主编

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序

楊慶才

水是人类赖以生存的最重要的自然资源之一，是对国民经济发展和社会稳定起重要作用的物质财富。新中国成立不久，毛泽东同志就提出“水利是农业的命脉”的英明论断。把水和农业联系起来，把水和中国人民解决吃饭穿衣这一现实问题联系起来。几十年过去了，这个论断仍不失其重大意义。当今，水不仅仅是农业的命脉，而且是国民经济发展和社会稳定的重要基础保障。

水对人类生存、国民经济和社会稳定发展的重要意义，已越来越引起世人的高度重视。1992年，100多个国家元首和政府首脑，在巴西里约热内卢召开的联合国环境与发展大会上通过的《21世纪议程》里，共同写下了“水不仅为维护地球的一切生命所必须，而且对一切社会经济部门都具有生死攸关的重要意义”的警句。联合国在伊斯坦布尔召开的第二次人类住区大会举办的“为干渴的城市供水”讨论会上，大会秘书长恩道指出，到2010年，世界城市将面临非常严重的缺水危机，水危机将成为“21世纪城市里最容易引起争端的问题”。1991年制定的《中华人民共和国国民经济和社会发展十年规划和第八个五年计划纲要》中指出：“要把水利作为国民经济的基础产业，放在重要战略地位。”1995年，党的十四届五中全会通过的关于“九五”计划和跨世纪宏伟蓝图《建议》中，把水利放在了基础产业的首位。1996年，国务委员、国务院环委会主任宋健，在第四次全国环境保护会议闭幕式的讲话中指出：“人可五日不进食，但不可一日无水”，“防治水源污染是‘九五’期间全国性重点任务，是当务之急。”

我国是个贫水国，人均占有量仅为世界人均水量的四分之一，已被列入12个最贫水国家之一。农业方面，每年缺水量达300亿 m^3 ，年均受旱面积达3.6亿亩，年损失粮食产量约250亿kg；全国农村尚有8000万人、6000多万头大牲畜的饮水困难没有解决；在牧区草原，有约占可利用草场三分之一的草地供水不足或根本无水，严重影响畜牧

业的发展。城市人口的迅速增加和工业化，使城市缺水问题也日趋严重。目前，全国已有300多座城市缺水，100多座城市严重缺水。年缺水量达54亿 m^3 。每年因缺水损失的工业产值约1200亿元。吉林省水资源总量为404.25亿 m^3 ，人均占有量为1526 m^3 ，为全国人均占有量2700 m^3 的57%，是我国北方缺水省份之一。不少大中城市缺水。长春市、四平市、公主岭市严重缺水。随着国民经济的发展，供需矛盾日益尖锐，缺水问题已严重制约了国民经济的发展。如果我们没有清醒地认识并认真地解决这一问题，后果不堪设想。有一则广告说的好：“我国是水资源短缺的国家，如果肆无忌惮的破坏淡水资源，最后看到的一滴水，将是自己的眼泪。”这将不再是警告，而将是我们的真实处境。

松花江三湖（松花湖、红石湖、白山湖）总库容为178.8亿 m^3 ，地表水资源量占吉林省地表水总量的38.2%。它不仅是吉林省乃至东北地区的重要水能基地，而且是我国黄河以北地区淡水资源贮量最大、区位条件最好、可工程控制能力最强、可利用价值最高的水资源基地。松花江三湖区域水资源的数量和质量状况、整体环境的好坏，对吉林省乃至东北地区经济的发展具有重要意义。吉林省人民政府从保护水资源、优化松花江三湖区域的生态环境、确保三座发电厂长久运行、保障国民经济持续健康发展的战略高度出发，于1990年批准成立了松花江三湖保护区；1993年批准建立了松花江三湖保护区保护治理基金；1995年责成吉林省人民政府发展研究中心组织有关单位和专家开展“松花江三湖保护区环境整治与流域综合开发”的研究，为各级领导决策提供科学依据。为加强对课题研究的组织领导和协调工作，吉林省人民政府决定成立课题领导小组。为搞好课题的总体研究，拿出有深度、可操作的研究成果，课题组组织协调了省直10余个单位100多位高中级科技人员和行政领导参加，分别对松花江三湖保护区的森林资源保护和开发利用、水资源的保护和开发利用、水土流失综合治理、水污染防治、野生动植物保护和利用、种植业和多种经营、农村能源建设、村镇建设、风景资源保护与开发、旅游资源保护与旅游业发展等10个子课题进行了前期的专题研究。东北师范大学城市与环境科学学院对松花江三湖保护区的生态环境进行了评价。吉林林学院完成了松花江三湖保护区环境整治与流域综合开发理论模型及计算机模拟系统

的研究。给总体研究提供了可贵的资料和成果。

《保护生命之水》一书，是松花江三湖保护区环境整治与流域综合开发研究成果的汇集。该项研究以可持续发展理论为指导，应用系统工程方法，对松花江三湖保护区的生态经济环境的现状进行了科学诊断，应用国际上先进的水土流失模型、污染扩散模型对松花江三湖区域的污染物进行了科学预测，指导思想正确，技术路线先进。特别是水土流失模型的设计考虑的因素比较全面，操作界面良好，可以进行不同决策方案的决策效果模拟，可信度较高。研究提出了通过开发整治综合利用三湖地区水资源的思想。不仅把三湖水资源做为发电资源加以保护，而且做为东北地区最重要的可工程控制的水资源基地加以保护。这是对三湖资源利用传统观念的突破和创新。在此基础上提出的各项政策建议，符合实际，有可操作性，对决策有重要的参考价值。《保护生命之水》一书的出版希望能引起社会各界对保护水资源重要性的认识，共同保护人类生存之水，保护并合理利用三湖的水资源，为吉林人民乃至东北地区人民造福。并相信，该研究成果也可供水电站库区及相关流域的生态环境保护和资源合理开发利用借鉴。

我们热诚欢迎国内外有识之士前来合作治理、开发松花江三湖保护区，并为合作者提供优惠条件和优质服务。

一九九七年九月

Preface

Water is one of the most important nature resources which the human's life depends on. This material treasure plays important role in the national economic development and the social stability. Soon after the establishment of the New China, Mao zedong presented the wise viewpoint: "Water conservancy is the lifeline of the agriculture." He connected the water with the agriculture, and the practical problems of people's food and cloth. Several decades have been past. This viewpoint still has great significance. Today, water is not only the lifeline of agriculture, but also the important base and assurance of national economic development and society.

It has been paid more and more attention that water plays an important role in national economic development and social stability. "Water is not only the necessary to keep all lives on the earth, but also has great significance to all social economic departments." More than 100 summits of nations and governments wrote the words together in the "Agenda 21", which had been passed in the UN Environment and Development Congress held in Rio de Janeiro, Brazil, in 1992. UN held the second congress of human settlement titled "To supply water to the thirsty cities" in Istanbul. Endol, the secretary of the congress pointed out: by the year of 2010, the cities in the world would face the crises of water scarcity, and the water crises would be the most possible problem that caused conflict in cities in the 21st century. It was pointed out in "The ten-year project and the eighth five-year plan outline of the national economic and social development of the People's Republic of China", which enacted in 1991, that "the water conservancy should be as the basic industry of national economics, and should be placed in an important strategy position". In the "proposal" about the ninth five-year plan and the

blueprint stepping over the century, which were passed in the fifth meeting of the Party's 14th Congress in 1995, the water conservancy was placed in the first position of basic industry. Song Jian, the State Council Commissar and the director of Environment Committee of the State Council, spoke in the close of the fourth national environment protection meeting that "people can live without food for five days, but can not live without water a day." and "the national key task is to protect and control the water pollution in the ninth five-year plan."

Our country is a country of water scarcity, and is one of the 12 water scarcest countries in the world. The amount of water per person has is only one fourth of the average amount of the world. In agriculture, the lack of water amount is 30 billion cubic meters per year. The draught area is 0.36 billion mu per year. The loss of grain products is about 25 billion kilograms. There are 800 million people and over 600 million big livestock have difficulties in drinking. In the pastoral area, about one third of the utilizable grassland lack or have no water, which seriously affect the development of stock-raising. The rapid increase of population and the industrialization in cities make the problem of water scarcity much more serious in cities. Now, over 300 cities in the country lack water, and more than 100 cities seriously lack water. The lack of water amount is 5.4 billion cubic meters, and the industry loss is about 120 billion Yuan because of the lack of water every year. The total amount of water resources in Jilin Province is 40.425 billion cubic meters. Per person share is 1,526 cubic meter, which is 52% the national average. The national per person share is 2,700 cubic meter.

Jilin Province is one of lacking water province in the North of China. Many big and small cities lack water. Among them, Changchun city, Siping city and Gongzhuling city are the most serious. With the development of national economy, the conflicts between supply and demand are more sharp. The problems of lack wa-

ter have seriously restricted the development of the national economy. If we don't clearly recognize and seriously settle down the problems, the results will be just as an advisement saying: "China is a country poor in water resources. If the fresh water resources are damaged without control, the last drop of water we could see will be the tear of ourselves." This is not a warning, it is our real condition.

The total capacity of the three lakes of Songhua River is 17.88 billion cubic meters. The amount of surface water resources is 38.2% of the total amount of Jilin Province. It is not only an important water energy base for Jilin Province even for the north-east China, but also an important water resources base of the north region from the Yellow River in China. It has the biggest fresh water resources storage, the best regional condition, the most capable of engineering control, the highest utilizable value of water resources. The integrate environment, the quality and quantity condition of the water resources in the three-lake region of Songhua River play an important role in the economic development of Jilin Province and the north-east of China. In order to protect the water resources, to optimize the ecological environment in the three-lake region, to ensure the three water power stations running for a long time, and to guarantee the national economy developing continuously and healthily, the government of Jilin Province approved the establishment of the three-lake reserve in Songhua River in 1990, and set up the protection and control funding for the three-lake region in 1993. In order to provide materials for leaders' decision, the Research and Development Center of the Jilin Province government was appointed in 1995 to organize the related units and experts to proceed the research on "The environment control and comprehensive exploration in the three-lake reserve of Songhua River". To enforce the organization and the coordination, the Jilin Province government decided to set up a leading group. The group organized and coordinated over 10 units which were directly led by the province and more than 100 senior sci-

entific and technological workers and administrative leaders taking part in the research. The prestage studies were conducted on 10 sub-titles. The 10 sub-titles are: the protection and exploration of the forest resource and water resources in the three-lake reserve; comprehensive control of water loss and soil erosion; water pollution prevention and control; the protection and utilization of wild animals and plants; the planting and multiple production; rural energy construction; village and town construction; the protection and exploration of scenery resources; the protection of travel resources and the development of travel industry.

The ecological environment assessment in the three-lake reserve of Songhua River was conducted by the City and Environment Science College of North-east Normal University. The research of the theory model and computer simulation system were conducted by Jilin Forest College.

“Protect the water of life” is a collection of the achievements of the research on environment control and comprehensive exploration in the three-lake reserve of Songhua River. The research was guided by the theory of capability of continue development, used the method of system project. The current status of ecological economy environment was studied. The pollutants in the three-lake region were scientifically predicted, using the world advanced water loss and soil erosion model and pollution diffusion model. The guidelines are correct and the technological routes are advanced, especially in the designing of the water loss and soil erosion model. Many factors are considered in the model and it can give high believable simulating results using different decision plan. The research prompted the thought that comprehensive exploration the water resources must be through the exploration control. The water resources of the three-lake region must be protected not only as water power resource, but also as the most important water resources base which can be controlled by engineering. This is a new and breakthrough of the traditional concepts in uti-

lization of the three-lake region resources. The policy proposals based on the research are conformed with the actual situation, and capable of operating. It has important reference value for policy decision.

We hope that the publication of the book “Protect the water of life” will make people in all fields concern the importance of the protection of water resources. We will protect the water resources which human’s life depended on, and reasonably utilize the three-lake water resources. That will brings benefit to the people of Jilin Province and the people of northeast of China.

We believe that the research achievements will be used as references for the ecological environment protection and the reasonably exploration and utilization of the water power station and other related basins.

We warmly welcome people in home and abroad to come to control and explore the three-lake region of Songhua River together. We will provide the cooperators with preferential conditions and good services.

Yang Qingcai

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