

WORLD MOST IN  
ECOLOGICAL CONSTRUCTION-SANBEI  
SHELTER-FOREST SYSTEM  
IN THE NORTHEAST, THE NORTH  
AND THE NORTHWEST OF CHINA  
SANBEI SHELTER-FOREST SYSTEM CONSTRUCTION BUREAU  
UNDER STATE FORESTRY ADMINISTRATION



# 世界生态工程之最

## ——中国三北防护林体系工程

● 国家林业局三北防护林建设局

● 江苏科学技术出版社





# 世界生态工程之最

## ——中国三北防护林体系工程

国家林业局三北防护林建设局

**W**ORLD MOST IN  
ECOLOGICAL  
CONSTRUCTION—SANBEI  
SHELTER-FOREST  
SYSTEM IN THE  
NORTHEAST,  
THE NORTH AND THE  
NORTHWEST  
OF  
CHINA

Sanbei Shelter-forest  
System Construction Bureau under  
State Forestry Administration

江苏科学技术出版社

**图书在版编目(CIP)数据**

世界生态工程之最：中国三北防护林体系工程/国家林业局三北防护林建设局编著. —南京：江苏科学技术出版社, 1999

ISBN 7-5345-2971-9

I. 世... II. 国... III. ①防护林-造林-中国-东北地区 ②防护林-造林-中国-华北地区 ③防护林-造林-中国-西北地区 IV. S727.2

中国版本图书馆 CIP 数据核字(1999)第 53409 号

世界生态工程之最——  
**中国三北防护林体系工程**  
国家林业局三北防护林建设局

---

**责任编辑** 王达政 周兴安  
**美术编辑** 温克信

---

**出版发行** 江苏科学技术出版社  
(南京市中央路 165 号, 邮编: 210009)  
**经 销** 江苏省新华书店  
**制 版** 深圳华新彩色制版公司  
**印 刷** 淮阴新华印刷厂

---

**开 本** 889mm×1194mm 1/16  
**印 张** 15  
**插 页** 4  
**字 数** 500 000  
**版 次** 1999 年 12 月第 1 版  
**印 次** 1999 年 12 月第 1 次印刷  
**印 数** 1—2 000 册

---

**标准书号** ISBN 7-5345-2971-9/X·7  
**定 价** 150.00 元(精)

---

图书如有印装质量问题,可随时向我社出版科调换

顾 问 刘于鹤 (原国家林业部副部长、研究员,现为国务院特派稽查员)  
卢良恕 (中国工程院院士、副院长,原中国农业科学研究院院长)

主 任 郭 涛

副 主 任 刘裕春 潘迎珍

委 员 孙 枫 武爱民 许俊安  
李 静 刘 勇

文字撰写 孙 枫 武爱民 许俊安  
李 静 刘 勇

释 文 陈渐宁

摄 影 于 雷 尹福建 王卫东 王树清  
牛永志 生一戈 许俊安 刘 勇  
刘凤岐 刘玉生 刘 滨 刘钢铁  
吕 文 李开仁 李晓明 李善文  
李 鹏 李生程 李吉人 孙 枫  
孙海贵 纪殿荣 牟景君 沈 乔  
肖新华 宋士敬 杨 丹 杨克杰  
杨云锦 杨振君 杨正君 邵永权  
张志龄 张海鹏 张和平 罗永祥  
阿不力克木 陈 煊 范明祥  
郑 华 宝音朝克图 武爱民  
骆正坤 赵君安 徐毅仁 徐少勋  
高 利 高 鹏 敖 东 韩广奇  
曹川健

世界生态工程之最——中国三北防护林体系工程  
编 辑 委 员 会

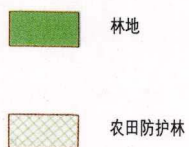
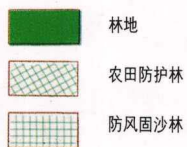
# 三北防护林体系建设总体规划图



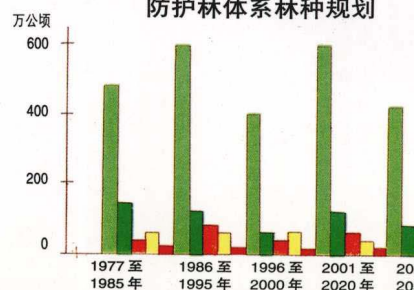
1985年前

1986—2000年

2001—2050年

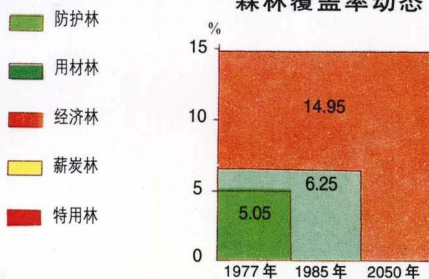


防护林体系林种规划





森林覆盖率动态



重点工程名称

- |                 |                     |
|-----------------|---------------------|
| ① 平原与灌溉绿洲农田防护林  | ⑦ 渭北黄土高原—吕梁山南端水土保持林 |
| ② 毛乌素沙地防风固沙林    | ⑧ 陇东黄土高原水土保持和农田防护林  |
| ③ 科尔沁沙地防风固沙林    | ⑨ 新疆和田河沿岸胡杨防护、用材林   |
| ④ 京包—包兰铁路沿线两侧绿化 | ⑩ 河西走廊防护林体系         |
| ⑤ 黄河干流护岸林       | ⑪ 锡林郭勒高原东南部牧场防护林    |
| ⑥ 京津周围地区绿化      | ⑫ 晋陕峡谷水土保持林         |

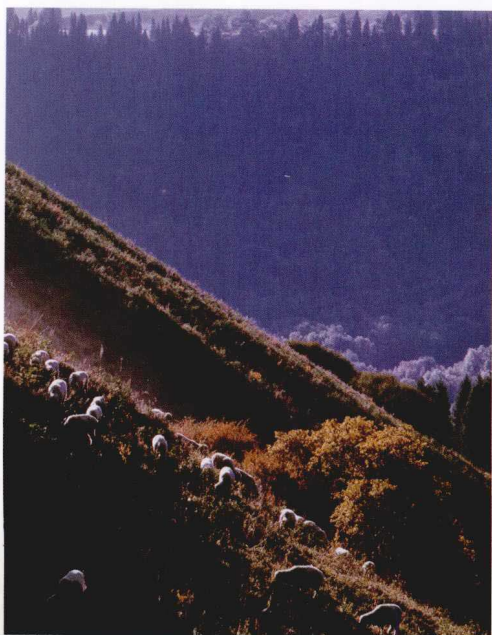


# 序

被誉为“世界生态工程之最”的三北防护林体系工程已经建设了20年。世纪之交,能把《世界生态工程之最——中国三北防护林体系工程》奉献给读者,可喜可贺。这部具有纪实性、文献性、知识性、学术性的画册,共编辑了400多幅摄影作品,并辅以文字说明,力求从不同侧面翔实、生动、形象地反映20年来三北防护林体系工程艰苦创业的历程,气势恢宏的成就和丰富独特的经验,反映三北地区广大人民群众和科技工作者勤劳智慧、艰苦奋斗和无私奉献的精神风貌,希望广大读者对建设这一举世瞩目的生态工程的必要性、迫切性、艰巨性有一个全面系统的了解,并能给予更多的理解、关心和支持。

当今世界,森林遭受破坏,土地沙化加剧,生态失去平衡,环境污染严重,造成威胁人类生存和社会发展的深重危机,这种危机,在我国三北地区尤为突出,干旱、水土流失和风沙危害严重制约着地区经济和社会可持续发展。为

乔灌木结合



从根本上解决问题,党中央、国务院于1978年决定上马三北防护林体系工程,并把这项工程列为国民经济和社会发展的重点建设项目。工程建设20年来,其速度之快,成就之大,影响之广泛,效益之明显,创造了20世纪林业建设史上的奇迹。在建设期间共完成造林3亿多亩,使三北地区森林覆盖率由1978年的5.05%提高至9%,初步建成了一批区域性防护林体系,重点治理地区生态环境得到明显改善,“四料”俱缺的局面明显缓解,还建成了一批干鲜果品基地,促进了当地经济的发展。

工程建设成就在国内外产生了广泛的影响。邓小平同志为工程亲笔题名“绿色长城”。李鹏同志在联合国环境与发展大会上宣布:“我国三北防护林体系工程建设长达4 480千米,已成为阻止风沙南侵的绿色长城。”联合国环境规划署为表彰三北防护林体系工程建设取得的突出成绩和对世界生态环境建设的重要贡献,先后授予国家林业

水源涵养林 水土保持林

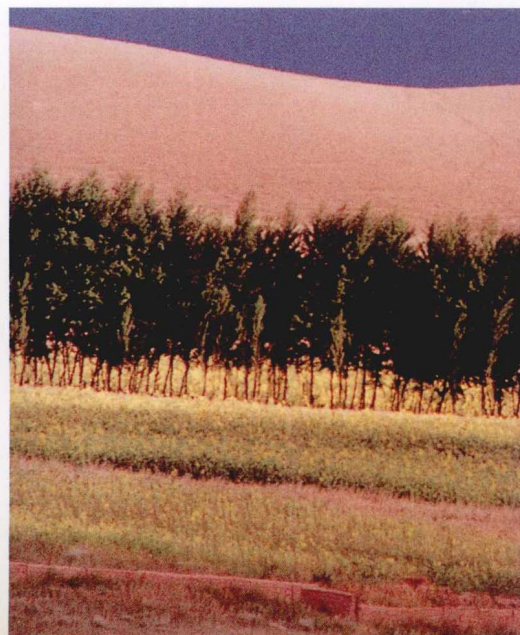


局三北防护林建设局等十多个单位和个人“全球500佳”奖章。

工程经过20年的建设,积累了丰富的经验,从指导思想到组织实施,从工程管理到模式创建,初步探索出一条具有中国特色的防护林体系工程建设道路。宋平同志在三北防护林体系工程建设二十周年座谈会上,高度评价了三北防护林体系工程建设取得的巨大成就和丰富经验。他说:“这既是一笔十分宝贵的物质财富,也是一笔十分宝贵的精神财富。三北防护林体系工程建设中体现出的自力更生、艰苦奋斗、不畏艰难、顽强拼搏、团结协作、锲而不舍的精神,同伟大的抗洪精神一样,是中华民族的优良传统与时代精神的凝聚和升华。”

三北防护林这项跨世纪的宏伟体系工程,面积覆盖半壁河山,还需经过半个世纪的努力才能完成。作为国家经济建设重点向中西部地区转移的基础工程,三北防护林体系工程建设任重道远。特别是江泽民同志作出“建设山川

农田防护林



秀美的西北地区”的批示和国务院颁发《全国生态环境建设规划》之后,三北防护林体系工程面临着更大的机遇和挑战。我们大家,包括各级领导和基层群众,科技人员和管理人员,都要从三北地区的人口、资源、环境和可持续发展这个基点出发,朝向21世纪更高更新的生态环境建设目标,以更强的责任感和使命感,以更科学的方法和技术积极参与此项工程建设。前20年积累的工程建设经验为今后建设提供了良好的基础,但今后的路程更长,目标更伟大,我们必须以更强的科学创新精神把三北防护林体系工程建成更优质、更高效、更有显示度的工程,为国保安,为民造福,为三北地区经济发展、社会进步和生态环境的建设作出更大的贡献。

中国工程院院士、副院长  
北京林业大学教授

沈国舫 1999.8.1

防风固沙林





# 目录

绿色呼唤 1

CALLING FOR GREENS

共筑长城 13

CONCERTED EFFORTS

沙漠迎春 37

SPRING IN DESERTS

高原新生 71

NEW LIFE OF THE LOESS PLATEAU

大地经络 97

FOREST NETWORKS

科技兴林 123

SCIENCE AND TECHNOLOGY FOR FORESTRY

产业之光 159

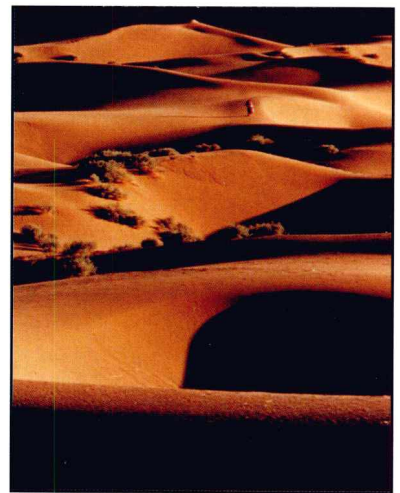
LIGHT OF ENTERPRISES

任重道远 205

CHALLENGES IN THE FUTURE

# 绿色呼唤

CALLING FOR GREENS





三北防护林体系工程是党中央、国务院于1978年决定兴建的一项跨世纪、跨地区、跨部门、跨行业的巨大生态建设工程,是我国国民经济和社会发展的重点建设项目之一,开创了我国林业生态建设的先河。其建设规模之大、涉及范围之广、条件之复杂、时间之长均超过美国的“罗斯福工程”,前苏联的“斯大林改造自然计划”和北非五国“绿色坝工程”,被誉为“世界生态工程之最”。

三北防护林体系工程建设范围东起黑龙江省宾县,西至新疆维吾尔自治区的乌孜别里山口,北抵国界线,南沿天津、汾河、渭河、洮河下游、布尔汗达山、喀喇昆仑山,东西长4 480千米,南北宽560~1 460千米。地理位置在东经 $73^{\circ}26'$ ~ $127^{\circ}50'$ 、北纬 $33^{\circ}30'$ ~ $50^{\circ}12'$ 之间。包括陕、甘、宁、青、新、晋、冀、京、津、内蒙古、辽、吉、黑13个省(市、区)的551个县、市、旗、区。土地总面积406.9万平方千米,占全国陆地总面积的42.4%,接近祖国的半壁河山。区内聚居着汉、满、朝鲜、蒙古、回、维吾尔等22个民族,总人口1.47亿,占全国总人口的14%。

三北防护林体系建设地区(以下简称为三北地区)是中华民族的发祥地之一,是历代政治、经济、文化的重要活动地区。万里长城、丝绸古道、敦煌石窟、黄帝陵寝和成吉思汗墓以及众多古老的文化遗址遍布三北大地。但是,曾经的辉煌,如今已被沙漠包围,已深处水土流失之中了。

据史料记载,除地质时期形成的沙漠、戈壁外,三北地区的大部分地方过去曾分布着肥美的草原,茂密的森林以及肥沃的农田,但由于人口剧增,掠夺式垦殖,过度放牧、樵采、滥伐,战争以及气候变迁等因素的影响,致使这里的生态环境日趋恶化,经济逐渐衰败,人民生活走向贫困。

三北地区年均降水总量不足全国的 $1/6$ ,其中干旱地区面积约占全区的40.7%,大部分属于待补水地区,400毫米等雨线以上的地区面积只占全区的26.6%,人均地表水占有量仅为全国的 $1/2$ ,而且分布极不均衡,这里年降水量大部分为300~400毫米,60%以上集中在6~9月,多以暴雨形式出现,形成了“十年九旱,不旱则涝”的气候特点。

三北地区集中分布着八大沙漠、四大沙地,从新疆、甘肃、青海、宁夏、陕西、内蒙古,直到东北西部,一望无垠的沙漠、戈壁形成了一个长达万里的风沙线,年风沙日数为30~100天,经常出现沙尘暴,流沙淹没城镇、道路,侵吞农田、牧场,威胁着水利设施的安全,全国有60%以上的贫困县集中在风沙弥漫的生态脆弱带。

三北地区水土流失总面积达55.4万平方千米,其中黄土高原水土流失面积占这一区域水土流失总面积的90%,是目前世界上水土流失最严重、最集中的区域之一,每年每平方千米流失土壤1 000~10 000吨,相当于刮去1厘米厚表土。注入黄河的泥沙每年使黄河河床增高5~10厘米,在下游的一些地段,河床已高出地面10多米,成为“地上悬河”。

干旱、风沙危害和水土流失导致的生态灾难,严重制约着三北地区经济和社会的发展,使各族人民长期处于贫穷落后的境地,人们的生存尚且困难,怎谈得上发展?

1977年,三北地区林地总面积仅有2 314万公顷,占全国的10.7%,活立木总蓄积量为7.2亿立方米,占全国的7.2%,森林覆盖率为5.05%,还不足全国平均水平的 $1/2$ 。另外,森林分布极为不均,大部分原始森林已被天然次生林取代。



随着森林植被的锐减,接踵而至的是沙漠进逼,水土流失加剧,生态失衡,灾害日增,百姓贫困……三北地区生态环境恶化已经到了十分严峻的地步!一封封告急电报打进了中南海,一份份呼吁书呈给了中央政府:三北地区生态严重恶化,沙漠化危害将在十年内夺去几十万公顷良田,水土流失将每年给国家造成数十亿元的损失,中国将面临空前的西部人口大迁移;新闻机构大声疾呼:沙漠化正在危及1亿人的生存,我国首都北京也在沙漠紧逼之下。国人震惊了!他们没有想到自己的生存环境已经变得如此糟糕,大梦初醒般地感到生态恶化所带来的威胁。

几位50年代聆听过周恩来总理有关林业工作指示的专家和领导干部,拟写了一份关于在三北地区建设防护林体系的“绿色建议书”呈给了国务院,引起了党和国家领导人的极大关注。许多专家被邀请到中南海,开始酝酿这项亘古未有的巨大生态工程的实施方案。

全国多所大专院校、科研机构 and 有关部门数千名专家被召集起来,要求对三北地区的各方面情况进行深入考察,上千名林业、农业、地质等方面的优秀专家沿着万里风沙线和重点水土流失地区逐片逐段考察,先后得出了100多万个数据,拿出了多套不同方案。

1978年11月3日,国家计委以计字[1978]808号文件正式批准三北防护林体系建设工程上马,随即,11月25日国务院以国发[1978]244号文件向三北各省(区、市)批转了三北工程规划。并强调指出:“我国西北、华北及东北西部,风沙危害和水土流失十分严重,木料、燃料、肥料、饲料俱缺,农业生产低而不稳。大力种树种草,特别是有计划地营造带、片、网相结合的防护林体系,是改变这一地区农牧业生产条件的一项战略措施。各有关省(区、市)要把这项建设工程列入农田基本建设工程规划,统筹安排,采取有力措施,按期完成防护林建设规划规定的各项任务,为实现新时期的总任务做出贡献。”

消息传来,三北地区广大干部群众欢欣鼓舞,热烈拥护。许多有识之士积极行动起来,准备将自己毕生的精力献给这项伟大的事业。消息也引起了全世界许多国家的高度重视,英国《泰晤士报》称赞这一规划构想宏伟,“将成为人类历史上征服自然的壮举”!

按照总体规划,三北防护林体系工程建设从1978年开始到2050年结束,计划用73年时间,分三个阶段、八期工程,在保护好现有森林草原植被的基础上,采取人工造林、飞机播种造林、封山封沙育林育草等多种方法,尽快建设和恢复森林植被;按照统一规划、先易后难、由近及远、突出重点、分期分批的步骤实施,采取民办国助、群众投劳、多方集资、协同共建的筹资措施,国家、集体、个人造林一起上,应用系统工程的理论,以恢复和扩大山系、流域森林植被作为基本骨架,以水土流失和风沙危害等重点治理区为主要对象的治理模式,兼顾生态效益、经济效益和社会效益,逐步建设一个农林牧、土水林、多林种、多树种、带片网、乔灌木、造封管、多效益相结合的生态经济型防护林体系。

到2050年,工程规划全部实现后,三北地区林地面积将由1977年的2 314万公顷增加到6 084万公顷,森林覆盖率将由5.05%增加到15%,林木总蓄积由7.2亿立方米增加到42.7亿立方米,林业年产值由9亿元增加到210亿元,平原、绿洲农田全部实现林网化,水土流失得到基本控制,沙地得到治理,沙化面积不再扩大,防护林体系多种功能和综合效益充分发挥,三北地区恶劣的生态环境将得到基本扭转,人民群众的生产、生活条件得到根本改善。



In 1978, the Chinese Central Government decided to implement a tremendous project of ecological construction in the Northeast, the North and the Northwest—the Sanbei Shelter-forest System (In Chinese, Sanbei means the 3 Norths). The Project was planned to complete within 2 centuries and to cover huge areas with varieties of institutions and professions involved. It has been ranked as one of the key projects for the development of national economy and social progress. It has opened a new chapter in the construction of Chinese forestry and ecology. In aspects of the scale of works, the involvement of participants and areas, the sophistication of natural conditions and the duration of construction, the Sanbei Shelter-forest System is bigger than “the Roosevelt Project in USA”, “the Stalin Program of Natural Improvement in the Soviet Union” and “the Project of Green Embankment in North Africa”. Therefore, the Sanbei Shelter-forest System has been recognized as the “World Most in Ecological Construction”.

The Sanbei Shelter-forest System extends from Binxian County of Heilongjiang Province in the east to the Uzbekistan border in the west, and from the national boundary line in the north to Tianjin, Fenhe River, Weihe River, lower reaches of Taohe River, Mt. Burhan Budai and Mt. Karakorum in the south. It is 4 480 km from east to west and 560–1,460 km from south to north at a longitude from  $73^{\circ}26'$  E to  $127^{\circ}50'$  E and a latitude from  $33^{\circ}30'$  N to  $52^{\circ}12'$  N. There are 551 counties in 13 provinces, municipalities and autonomous regions involved in the construction, such as Shaanxi, Gansu, Ningxia, Qinghai, Xinjiang, Shanxi, Hebei, Beijing, Tianjin, the Inner Mongolia, Liaoning, Jilin and Heilongjiang. The Project spreads out over 4,069,000 sq.km—42.4% of the total land territory of China. There are 147 million people (14% of the Chinese total) in the Project area. The population is composed of 22 nationalities such as Han, Man, Korean, Mongolian, Hui Muslim, Uygur Muslim.

The Sanbei District is one of the birthplaces of the Chinese civilization. Throughout history, it has been a place of political, economic and cultural importance. There are many sites of historic and cultural interest in the vast Sanbei District, such as the Great Wall, the Silk Road, Dunhuang Grotto, the Mausoleum of the Yellow Emperor and the Mausoleum of Qinggis Han.

Unfortunately, the historical magnificence has been surrounded with deserts and is threatened by water erosion and soil loss.

In accordance with historical records, most part of the Sanbei District was once covered with rich pastures, thick forests and fertile farmland in spite of the deserts and Gobi from the geologically originated. Later on, population growth, predatory reclamation, overgrazing, destructive forest-cutting, frequent wars as well as climatic changes have resulted in the worsening ecology, degrading economy and widespread poverty.

The average annual precipitation in the Sanbei District is less than one sixth of the national total. As a place of water shortage, about 40.7% of the District is arid. The areas with an annual rainfall of over 400 mm only occupy 26.6% of the District. In addition to the remarkably uneven distribution, the per capita resources of surface water are only up to half of the national average. Although most part of the District has an annual rainfall of around 300–400 mm, over 60% of the rainfall is concentrated from June to September mostly to create torrents. Therefore, the climate is characterized by “9 droughts in 10 years, either a drought or a flood”.

There are 8 vast deserts and 4 large sandlands concentrated in the Sanbei District. A dusty wind line of deserts and Gobi extends several thousand kilometers from Xinjiang in the Northwest to Heilongjiang in the Northeast. Dusty wind or even sandstorms happen in 30 to 100 days each year. The moving sand is burying houses and roads, swallowing farmland and pastures, threatening the irrigation and railway facilities. Over 60% of the poverty-stricken counties in China are distributed in this District of fragile ecology.

Around 554,000 sq.km in the Sanbei District is suffering from water erosion and soil loss. Ninety percent of the eroded areas are distributed on the Loess Plateau. The Plateau has become one of places suffering from the most serious soil erosion in the world. The annual soil loss averages 1,000 to 10,000 tons per sq.km—equivalent to a layer of 1 cm surface soil washed away. The silt is raising the Yellow River bed by 5–10 cm annually. At some sections of the lower reaches, the river bed is already more than 10 m over the ground.

Drought, dusty wind and soil erosion are destroying the ecological environment, restricting economic development and social progress, creating poverty in the Sanbei District. It is difficult even for people to survive, let alone prosperity. What to do?

In 1977, the forested land, the living stock volume and the forest coverage in the Sanbei District only amounted to 23.14 million ha. (10.7% of the national total), 720 million cubic meters (7.2% of the national total) and 5.05% (less than 50% of the national average) respectively. In addition, the distributions of the forests are remarkably uneven. Most of the primary forests have given place to natural secondary forests.

The sharp decrease of forest coverage was followed by desert aggression, worsening soil erosion, ecological unequilibrium,



frequent natural calamities, poverty...The ecological environment in the Sanbei District had worsened to such an extent! Pads of documents and letters were submitted to the Central Government appealing for immediate actions. "The ecological environment in the Sanbei District has severely worsened. The deserts will swallow thousands hectares of farmland within 10 years. Soil erosion is damaging the national economy by millions of dollars annually. There will be an unprecedented immigration in the Northwest". "Desertification is threatening the survival of 100 million people. Deserts are threatening Beijing". All the Chinese were shocked! They did not realize that the environment their survival depends on had worsened to such an extent. They woke to the danger confronting them.

Some famous experts and administrators, who had worked in the brain trust when Mr. Zhou Enlai was the Premier, co-submitted to the Central Government "Proposal on the Construction of the Sanbei Shelter-Forest System". Among many others, they were invited to the Central Government to discuss and check the implementation programs of this unprecedented ecological project.

Several thousand professors and experts from universities, research institutions and related departments were organized for a detailed investigation of the Sanbei District. More than 1,000 experts and technicians of forestry, agriculture and geology conducted lots of field surveys along the vast dusty wind line and over the eroded areas. As a result, more than 1 million data were collected and many sets of programs were worked out and proposed.

On Nov. 3, 1978, the construction of the Sanbei Shelter-forest System was officially approved by the State Planning Commission Document(1978)808. On Nov.25 the same year, Program of the Sanbei Shelter-forest System was issued with State Council Document(1978)244, which was distributed to all the Project provinces, emphasizing, "Desertification and soil erosion are very serious in the Northwest, North and Northeast. There is also a remarkable shortage of timber, fuelwood, manure and forage. The agricultural production is low and unstable. Afforestation, grass planting and, in particular, the construction of a comprehensive shelter-forest system are the measures of strategic importance for the improvement of the production conditions for the agricultural and animal husbandry in the Sanbei District. The Project provinces should integrate the Sanbei Shelter-forest System into the overall program of agricultural construction. Energetic effort should be made for timely fulfillment of all the tasks as stipulated in the Program of the Sanbei Shelter-forest System".

The people throughout the Sanbei District were greatly encouraged. They were prepared for a ready action and to devote themselves to this great cause. This also mobilized much attention worldwide. The Thames praised this Program as a magnificent feat to conquer nature ever in history.

In accordance with the Overall Program, the construction of the Sanbei Shelter-forest System started in 1978 and is to be completed in 2050. The implementation is composed of 8 phases in 3 stages. On the basis of the protection of the existing vegetation coverage, measures of artificial afforestation, air-seeding, mountain closure and desert closure are integrated to construct and rehabilitate a much better forest coverage as soon as possible. By means of unified planning, the easier works and nearer places are given an earlier priority. The implementation is done step by step under the emphasis on the key areas. With the help of State subsidy, the local finance is playing a leading role, while the beneficiaries are encouraged to contribute labors. All the communities, whether in forms of State organizations, collectives or private households, are welcome in afforestation. The theory of systematic engineering is applied. The rehabilitation and extension of the forest coverage at mountains and watersheds are taken as the basic framework. The control of the soil erosion and desertification at the key areas is set as the main target. Ecological benefit, economic benefit and social benefit are comprehensively integrated. As a result, an ecological and economic shelter-forest system will be gradually established. The system will be characterized by harmonized combinations among agriculture/forestry/animal husbandry, soils/waters/forests, multiple types of conservation forests, biological diversity, nets of block plantations and tree belts, trees/shrubs/grasses, afforestation/mountain closure/management, multiple benefits.

After the completion of the Project in 2050, the forested land, forest coverage, total stock volume and the annual output value of forestry in the Sanbei District will increase from 23.14 million ha., 5.05%, 720 million cubic meters and 900 million Yuan in 1977 to 60.84 million ha., 15%, 4.27 billion cubic meters and 21 billion Yuan, respectively. The farmland at the plains and oases will be protected with the shelter networks. Soil erosion and desertification will be basically controlled. The multiple functions and comprehensive benefits of the shelter-forest system will be developed. The ecological environment in the Sanbei District will be basically improved. The production conditions and the living standard of the local people will be significantly upgraded.



6

大漠夕照



退化草场