# Combating Desertification in China Strategies and Policy

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# Outline

Desertification causes and solution

Countermeasures:

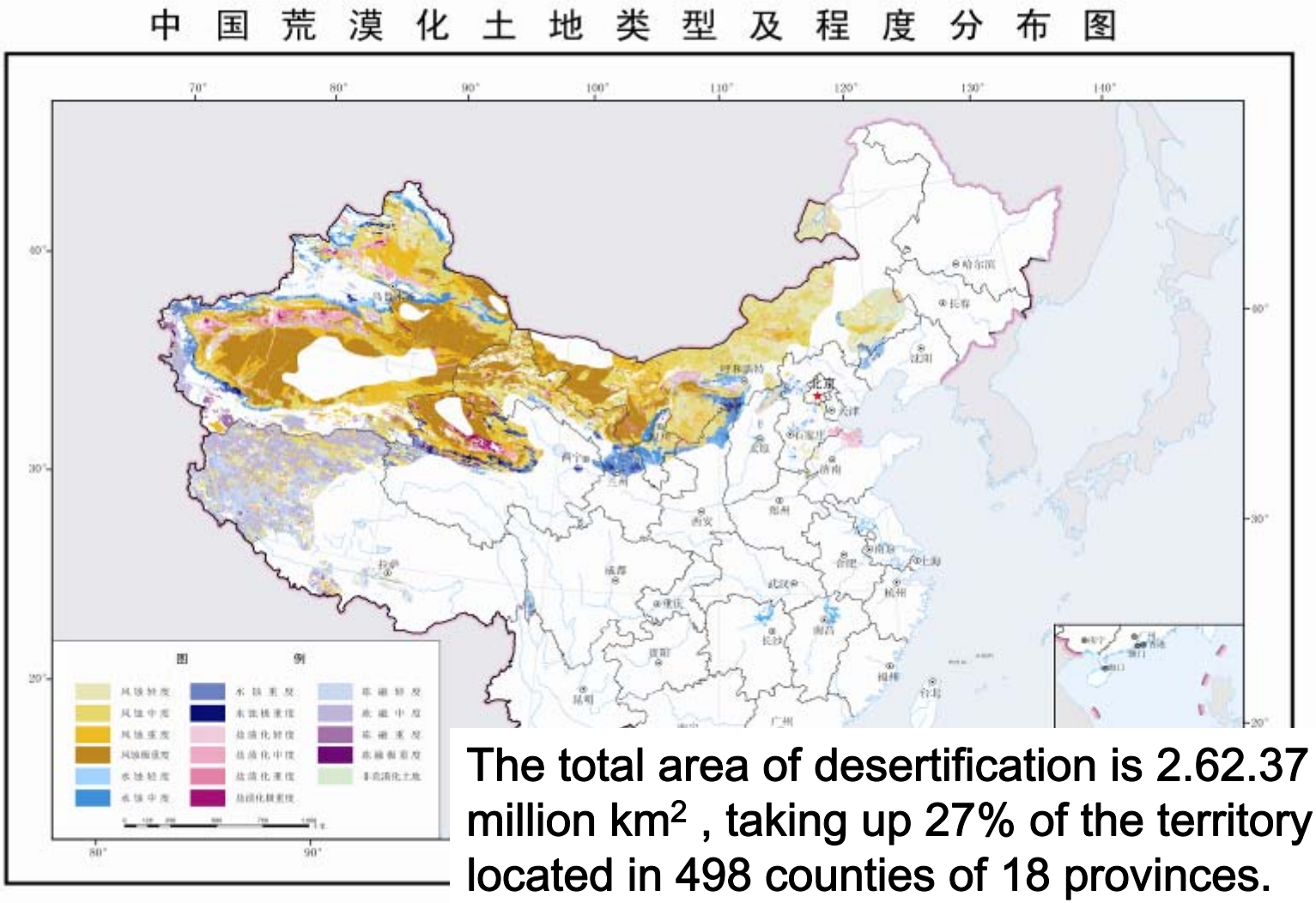
- Institutional arrangements
- Law and policy
- National strategies and Programmes

Progresses made

Main challenges ahead

# Present Desertification State

# Desertification Distribution in China

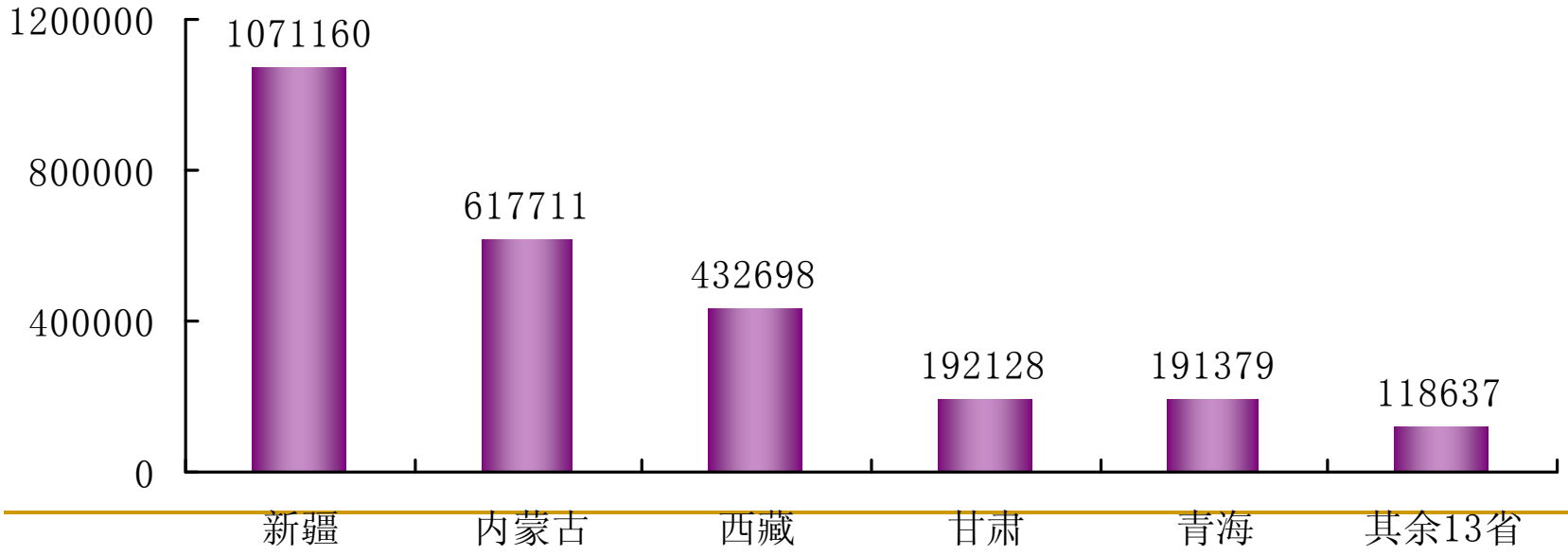



The total area of desertification is 2.62.37 million km$^2$ , taking up 27% of the territory, located in 498 counties of 18 provinces. (SFA 2010)

# Desertification status by provinces

**Xinjiang take 40.83% of national total, followed by Inner Mongolia, Tibet, Gansu and Qinghai by taking respectively 23.54%, 16.49%, 7.32% and 7.29% of the national total.**

**5 provinces (autonomous regions) account for 95.48% of the national total while other 13 provinces (municipalities and autonomous region) takes 4.52% only.**



# Analysis of Desertification Divers and pressure

- Drivers
- Population growth, basic survival needs for food and water Increase
- Economic development, improving living condition ,per capita consumption increase
- ✓ Clearing forest for agriculture
- ✓ Timber demand increase (outside market, local construction)
- ✓ Increase animals population
- Climatic variation

dry weather, low productivity of land

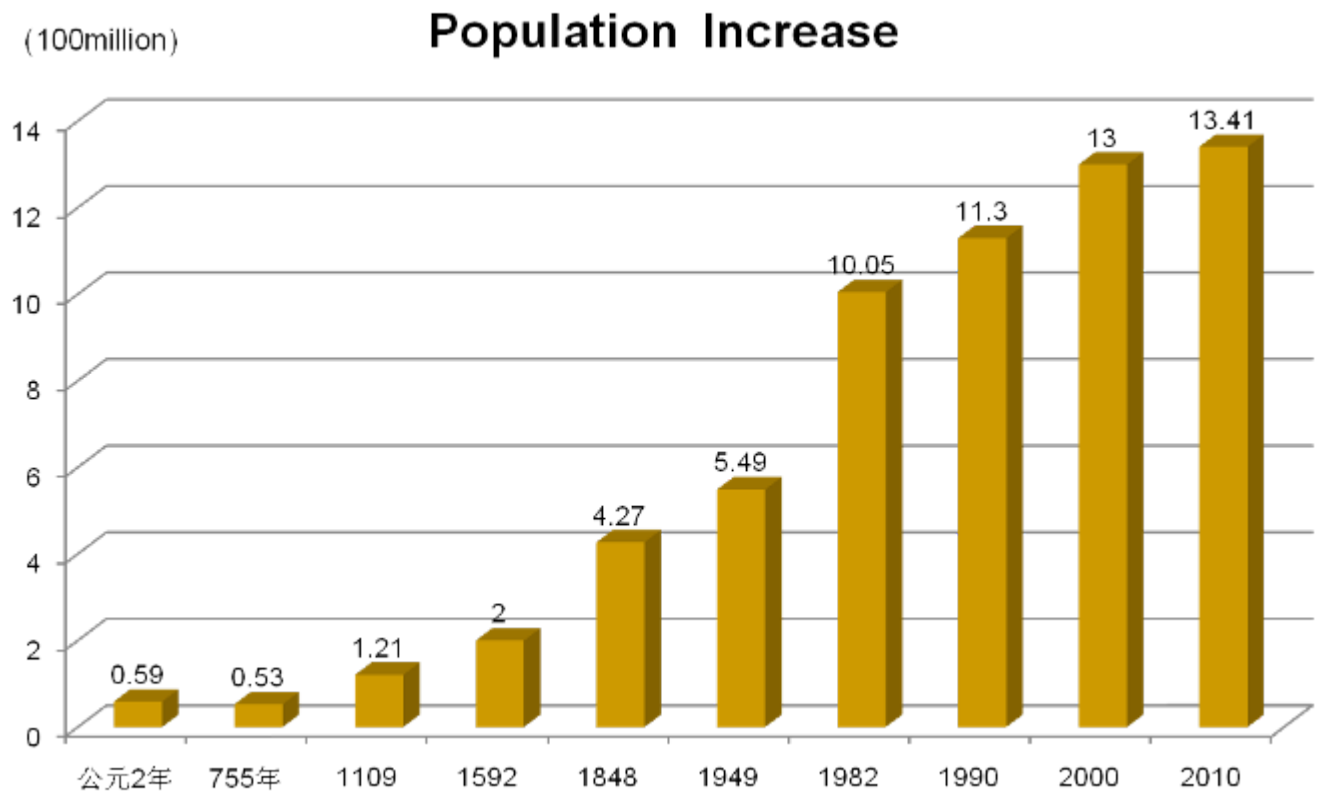
Undervalue of FES (Liu et al 2007),

Less incentive to manage forest for long term

Unfair distribution of cost and benefits of FES

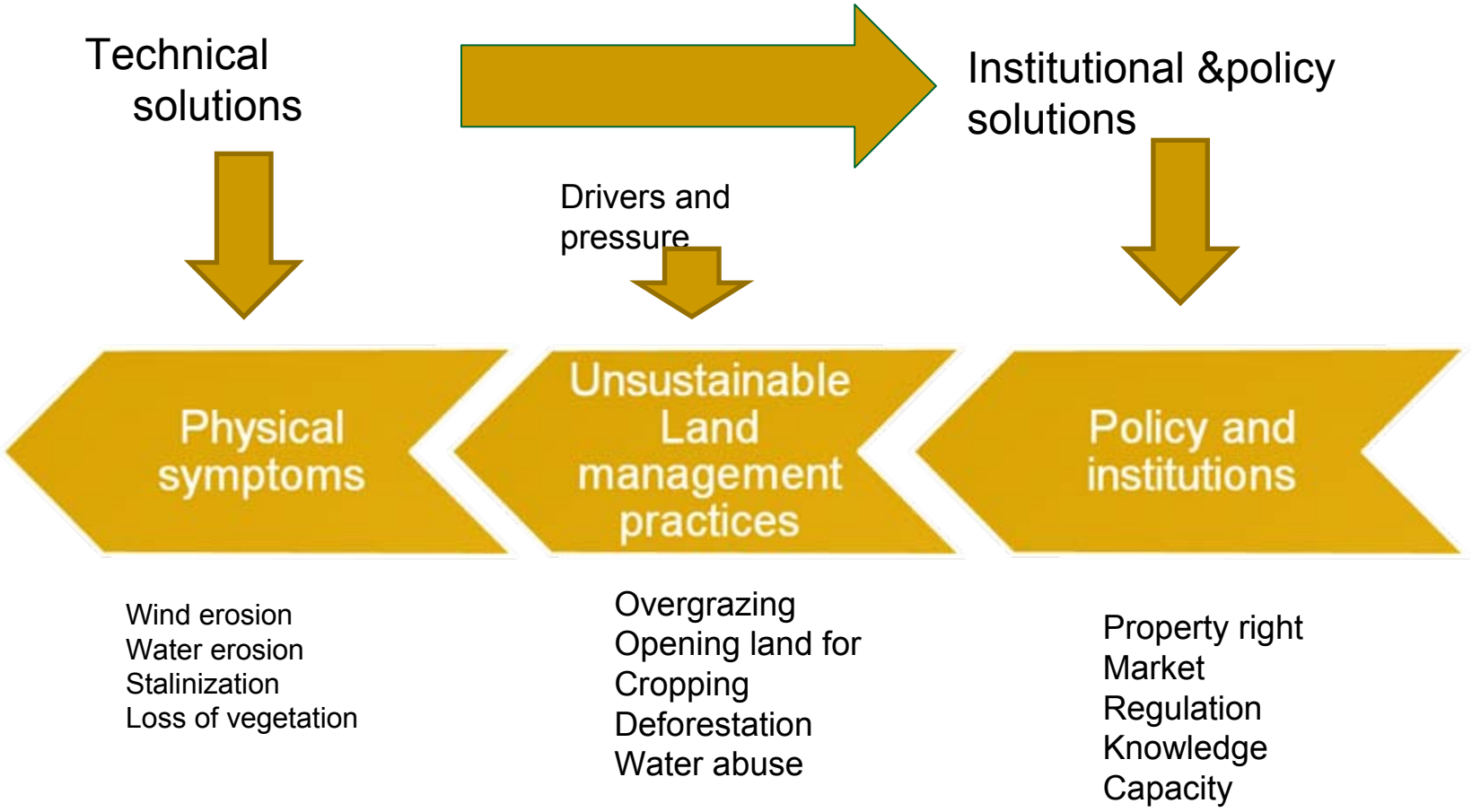
Unclear Property right of forest, non incentive for long term management, logging restriction and low income

Population increase




Population Change up to 2010

# Analysis of desertification and its countermeasures in China



# Countermeasures

# Countermeasures- technical solutions and institutional solutions

Three goals of desertification combating

- Enhancing Ecological rehabilitation and environmental protection
- Promoting rural well-being and poverty reduction
- Social benefits for local development

# Basic principles

- Scientific–based prevention and rehabilitation
- Law Based, government lead, all stakeholders participation
- Integrated sustainable management

## Policies to enable technical approaches in place

- Government budget for establishment of National Desertification Monitoring system established in 1994

- Science and technology supporting

  5% of investment of national key project should be use as technical supporting

- Governmental budget for scientific research and technical application and dissemination

# Institutional arrangements

- National coordination body
- Management and Implementation agency at central governmental level
- Implementation and management agency at local governmental level

# National coordination body

***China Coordinating Group to Combat Desertification & China National committee for implementation of UNCCD(CCICCD)***

**Group Leader**

**State Forestry Administration**

**19 Group Members**

**Ministry of Foreign Affairs**

**National D & R Commission**

**Ministry of Commerce**

**Ministry of Science and Technology**

**Ministry of Finance**

**Ministry of Land and Resources**

**Ministry of Water Resources**

**Ministry of Agriculture**

**Ministry of Railways**

**Ministry of Communications**

**State Administration of Taxation**

**State Environmental Protection Administration**

**China Meteorological Administration**

**People' Bank of China**

**State Rural Development Office**

**Leading Group Office of Poverty Alleviation and Development**

**Chinese Academy of Sciences**

# Management and Implementation agency

## At central governmental level

**Administrative body:**

**National Bureau to Combat Desertification(** NBCD)

**Set up within the State Forestry Administration.**

**Role and function: administrating and organizing implementation of all the actions across the country.**

**At provincial level: coordinating groups or leading groups have also been set up to be in charge of management, organization and execution of desertification combating in this area.**

# Government responsibility

- **Programming** at various levels
- **Implementing**
- **Monitoring**
- Tools: Law on combating desertification, Governmental official responsibility system,

  Central government conclude agreement with provincial government on target of combating desertification. The governors who did not take action for desertification control in their official term will be punished since 2009.

## Function

- The forestry administrative department of the State Council shall be responsible for organizing, coordinating and guiding desertification prevention and control throughout the country.
- Forestry departments is responsible for establishing and operating Monitoring system, and reporting on the desertification process.

# Official responsibility system for desertification combat

- Agreement between provincial and central governmental on annual target of the land degradation control.
- Reporting and Evaluation and assessment of the performance and effectiveness of provincial governments.
- Linking desertification control with leading governors official term evaluation
- Punishment and reward


Agreements conclude between central and provincial governments, to whom liable would be placed if they fail to accomplish the task of combating desertification.

# National laws and policies

**Laws and relevant regulations -hard policy**

**National policies aiming at combating desertification -soft policy**

# Laws and relevant regulations especially assigned for this issue


*Law on Combating Desertification & its Judicial Explanation*


*The Law of Forests*



*The Grassland Law*

# Natural Resources and Environmental Protection Laws relevant to desertification

- ***Soil and Water Conservation Law,***
- ***Environmental Protection Law***

  **Environment impact assessment prior to project review and processing**
- ***Law of Land Administration*** Passed the amended version In 1998
- **The Farming Land Contracting Law** passed in 2002, came into effect in 2003.
- **Law on Renewable Energy in 2005**

# The Law on Combating Desertification

- Passed in 2001, and entered into effect on Jan. 1, 2002;

- Formulated on the basis of systematic analysis and review on the relevant laws, regulations and policies.

- Indicates that desertification combating gets its legal guarantee.

# Main Contents

- **Sets out the basic guidelines, requests establishment of management system, monitoring system, guarantee system.**
- **Places prevention and conservation at priority of desertification combating.**
- **Encourage participation of all stakeholders, and defines defines responsibilities,obligations and rights of of all the relevant stakeholders, including governmental agencies.**
- **Any entities and individuals who explore land resources, who have the duty to prevent and control desertification.**

# Policy Framework

- Supportive policies

  Governmental input and direct interventions
- Regulatory policies

  Regulating unwise human activities

  ( individual and entities)
- Incentive policies

  Encourage participation in desertification combating

# Government direct Financial support policy

## Grants for public welfare projects while loan for profitable projects

- **Governmental direct input system**

**Through implementing key national projects for ecological improvement including Natural forest resources protection,**

- **Revenue transferring**

**Forest ecological benefits compensation system by revenue transferring**

**Subsidies for conversion degraded farm land to forest and grassland**

**Subsidies for conversion degraded rangeland to grassland**
**Preferential Taxation support policy**

- **Preferential Taxation and Loan support policies**

**Desertification rehabilitation and follow-up industry development Interest exempt loan for combating desertification**

# Co-Financial Mechanism

**Desertification combating has been streamlined into economy and social development plan at government of all levels.**

- **Central government provide primary financial support for national programs;**

- **Local government provide co-finance for national programs implementation at local level;**

- **The regions with better financial status should provide more funds than poorer regions.**

- **Assistance from international partners by means of finance support or technical support**

# Ecological benefit compensation policy

## -trial for ecosystem service payment

- **Compensatory fund for forest ecological benefits initiated jointly by** MOF& SFA in 2004,full implemented in 2007
- MOF$M of Agri in 2010, full implemented in 2012,

Target group: Managers of forests of public welfare

Expenditures to be covered: Afforestation, tendering protection, management

Scope: Forestry lands designated by SFA

Key forestry lands of public welfare

Thin-stocked woodland, shrub-land and shrubbery land at the areas suffering from land desertification and soil erosion

# Government payment

## Compensation and subsidies to farmers

- **Grain for Green**

  Duration 8years+ afforestation,25provinces

Soil erosion &flood

- ✓ Cropping easement slope land and sandy land at the Yellow river basin and Yangtz River basin
- ✓ Reforestation: Plantation structure: 7:3 (ecological: economical)

Compensate loss of farmers

- ✓ Grain compensation:

  2150kg/ha/year Yangtz River

  1500kg/ha/year Yellow River
- ✓ Cash subsidies :750yuan/ha/year
- ✓ Cash for seedlings: 750yuan/ha/year

Second phase: the second 8-year, all cash payment

- **FES Compensation Fund**

  Duration 10years+ management

Improving FES

Water heads, natural reserves and post afforestation projects

- ✓ Forest protection and management

  Refforestation, tending, fire, pest disease

Compensation input of organization, collectives, individual farmers

- ✓ Cash payment: 75yuan/ha/year

Xu,et al 2006. Liu, et al 2006.

# Inland water resources integrated management

- Objective: Supply-demand management

  Restructure water use: reduce agricultural use, return water to ecosystem services

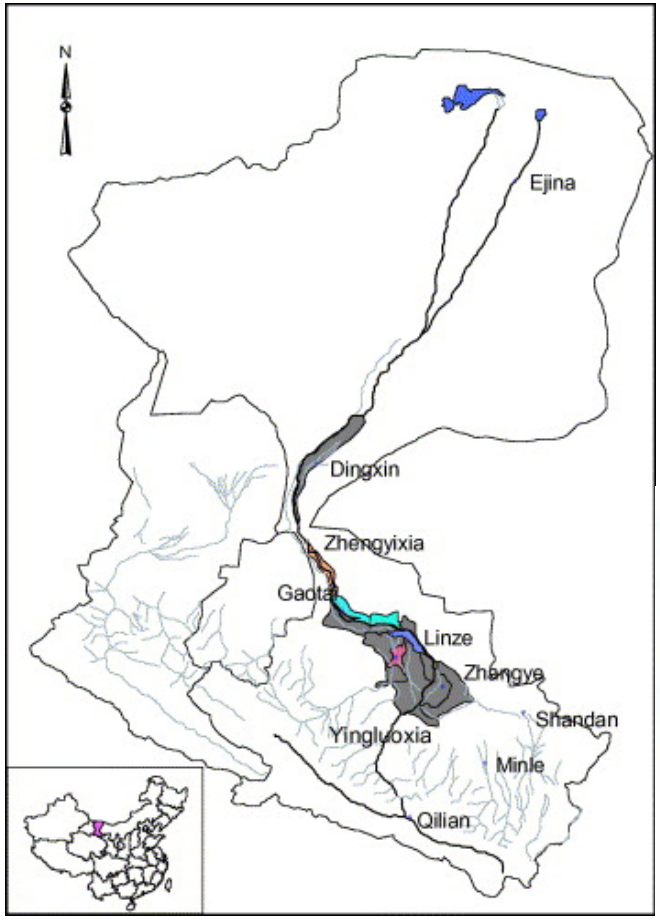
Institutional innovation

- Entitlement of water right
- Set cap of water use for cities along the river
- Allocate water quota for each industries, households
- Water quota exchange (marketing)

*Popululs euphratica crown size response to water discharge*

*Sources:* Si, et al 2005

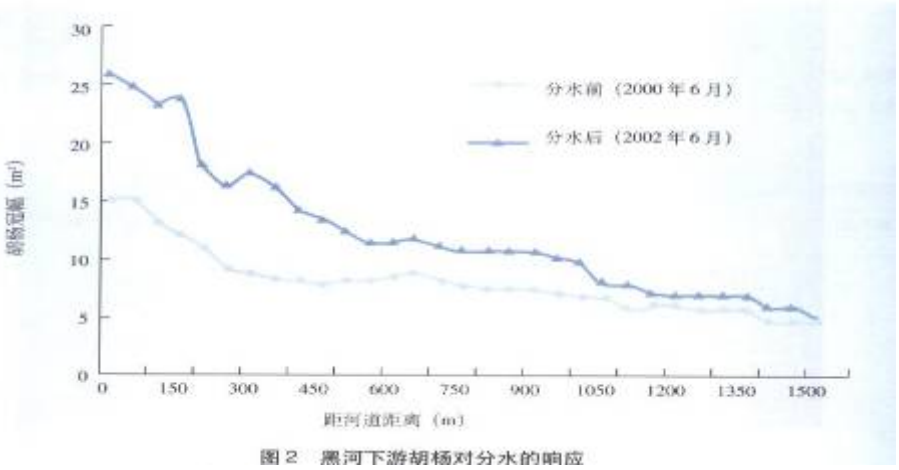
# Heihe case in Gansu province




Map of Heihe basin

Water transfer from Zhangye Region to the lower reaches since 2000 (unit: $10^8$ $m^3$)

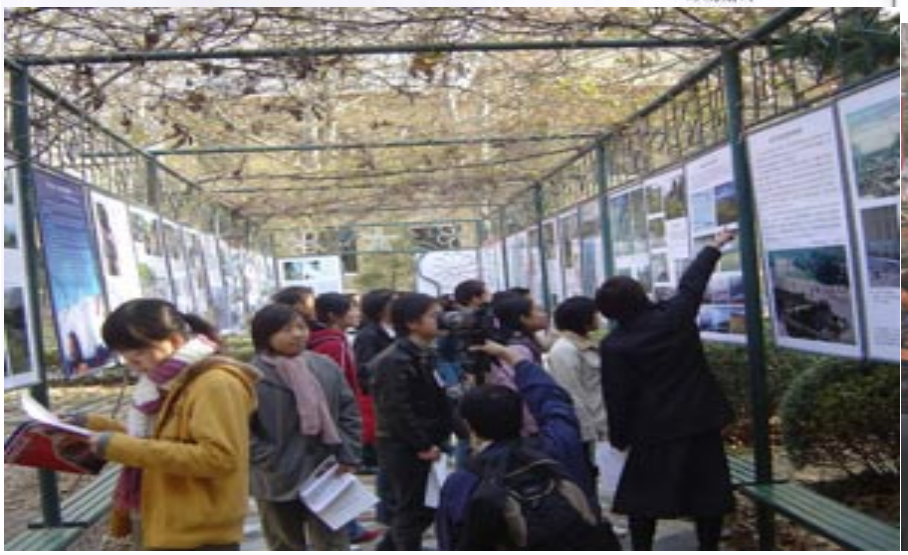
| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|
| Water distribution plan | 15.8, 8.0 | 15.8, 8.3 | 15.8, 9.0 | 15.8, 9.5 | 15.8, 9.5 | 15.8,9.5 |
| Water discharge from upstream | 14.62 | 13.13 | 16.11 | 19.03 | 14.98 | 18.10 |
| Water transfer to downstream | 6.5 | 6.38 | 9.23 | 11.61 | 8.55 | 10.50 |




*Popululs euphratica crown size response to water amount discharged*

# Awareness raising, education and advocacy


Taking advantages of the yearly commemorating days varieties of activities of information publicity, workshops and popular science extension on ecological environment are carried out in all the social fields.



# Science and technology support policies

•**The Senior Expert Group of China National Committee for the Implementation of the UNCCD composed of 20 senior scholars from different departments to provide advice for policy making.**

•**"Desertification Control Technologies and Demonstration Project" was in cooperated into the national science and technology programme.**

•**5% of the total budget of the key national program should be allocated for techniques and scientific support.**

# Promoting Technology extension and training

- **For promote techniques dissemination, experts are invited to provide guidance to farmers through the activities of 'Science and Technology Go to the Rural Areas' annually.**

Education,on-working-post training and professional education are intensified to bring up more personnel of technology.

# Regulatory policies

- **Regulations to regulate unsustainable land use practices,** (fix behaviors)

  including logging ban and quota system, degraded land closure from open grazing and cropping, agricultural irrigation quota and water use right trading, prohibition of wild medicine herbs harvesting in degraded land .

The compulsory tree-planting of the whole people has become an action of self-knowledge.

**By President Hu Jintao(middle) &**

**Minister Jia Zhibang(right)-head of SFA**

**Compulsory tree planting policy:** According to the law, that each male citizen between the age of 11-60 and female citizen between the age of 11-55 should plant 3-5 trees per year.

# Regulatory policies

- Projects to be launched in desertification prone area are requested to make environment impact assessment prior to project review and processing, and make registration in the relevant authorities in charge of desertification control.

- Any entities and individuals who explore land resources, who have the duty to prevent and control desertification.

# Incentives policy

- **Land tenure:** **Any individuals and entities to combat desertification for the purpose of public welfare can contract the state-owned land for 70years.**

  **The auctions of the use right of barren hills, land, valley and sandy land are promoted actively.**

  **All stakeholders have the rights to obtain land tenure for investment in desertification controlling**

- **Property right and benefits:** **The policy of "One who plants trees is the one who will manage them and benefit from them" has been carried out.**

- **Loan and taxation:** **Banks are encouraged to increase loan allocation for sand control by arranging discount loan.**

  **For the profitable investment in degraded land rehabilitation, the government will give concessional loan and taxation exemption and reduce.**

# Incentives policy

- **Preferential taxation policies to foreign investors for the purpose of ecology and environment protection and improvement of West China**

**Article 19 of the Income Tax Law and Article 66 of the Implementation Regulations of the Law stipulate that the royalties of foreign enterprises received from the transferring of patents in China should be exempted from withholding income tax after approval.**

- **Subsidy for land use change from degraded farm land and rangeland to forest or grassland.**

**Lots of marginal farmland of serious degradation has been converted for tree planting and grass growing**

# National Strategy and its Implementation

# National action Programe Implementation
2005-2010

## Guarantee systems

- Training and Education
- Science and technology support dissemination
- Monitoring and Assessment
- Legislative an policy system

## National Key Programmes

Forestry ecological improvement

Grassland protection and improvement

Inland River Integrated management

Conservative and ecological Agriculture

Poverty Alleviation

Restructure of rural Energy

# National key Programmes and Projects

**Geographical Zoning**

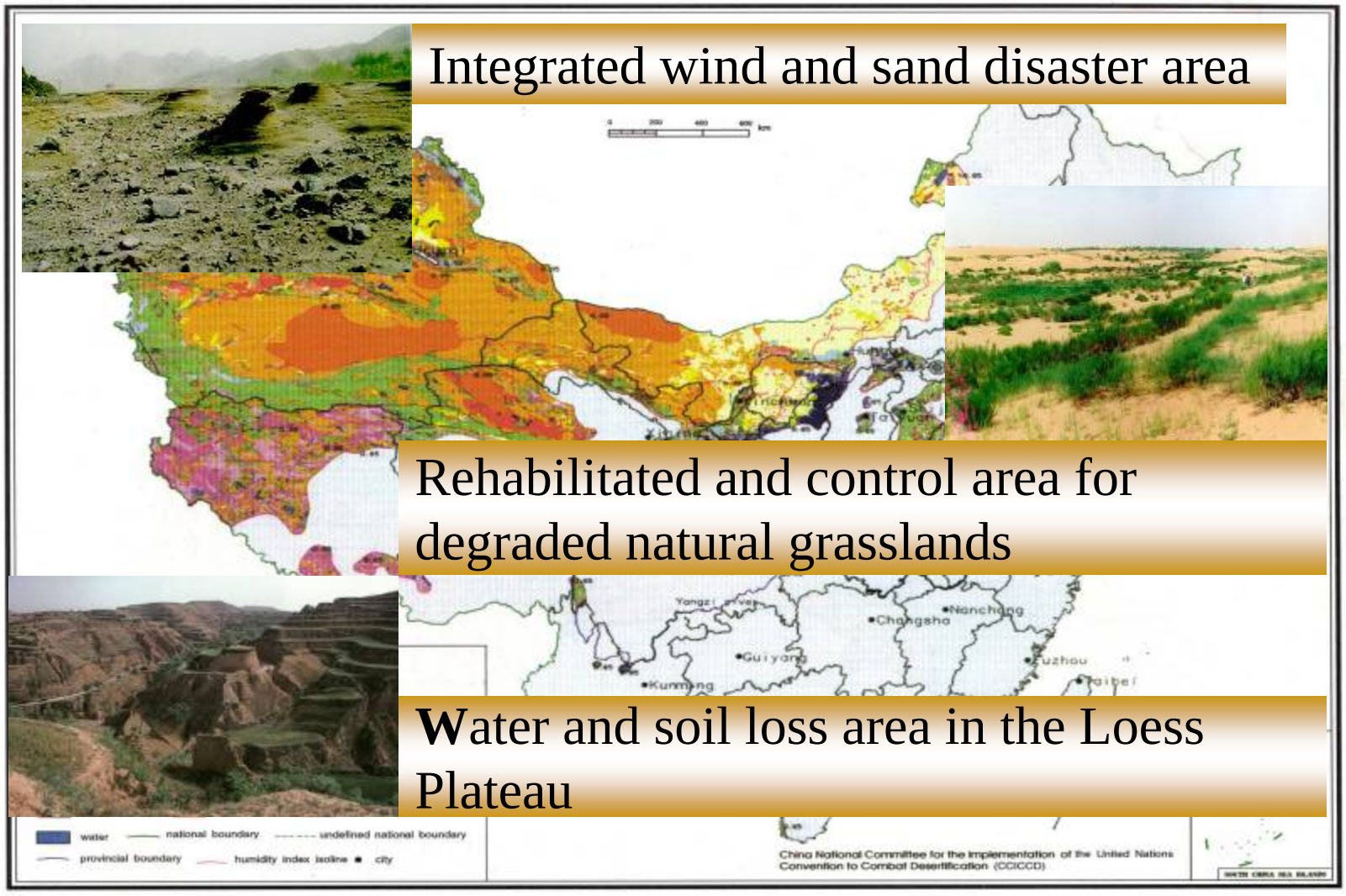
**Projects Layout**

**National desertification monitoring system**

**Sand storm disaster impacts assessment and contingency preparatory and response programme**

# National Action Programme (NAP)

## Geographical Zoning



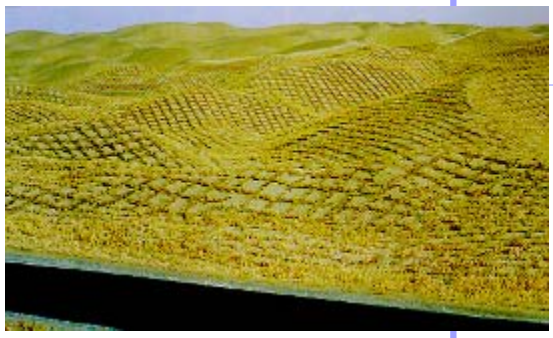

Note: 1.The national boundaries of China on this map are drawn after the 1:4M "Relief Map of the Peoples Republic of China",Published by China Cartographic Publishing House in 1989.
2.The administrative division data up to the end of 1996.

# Key Projects managed by SFA

- The Combating Desertification Program for Mitigating Dust and Sand Storms Affecting Beijing and Tianjin Area
- The Forth Phase of the Forest Shelterbelt Network Construction Program in Northeast, North West and North China
- Conversion Degraded Farmland to Forest Program (Grain For Green)
- Integrated Sandification Control Demonstration

Natural Forest protection

# The Combating Desertification Program for Mitigating Dust and Sand Storms Affecting Beijing and Tianjin Area



# The Forth Phase of the Forest Shelterbelt Network Construction Program in Northeast, North West and North China


# Conversion Degraded Farmland to Forest Program (Grain For Green)

**Farmer gains governmental compensation from ‘Grain For Green’ Project.**


# Integrated Sandification Control Demonstration

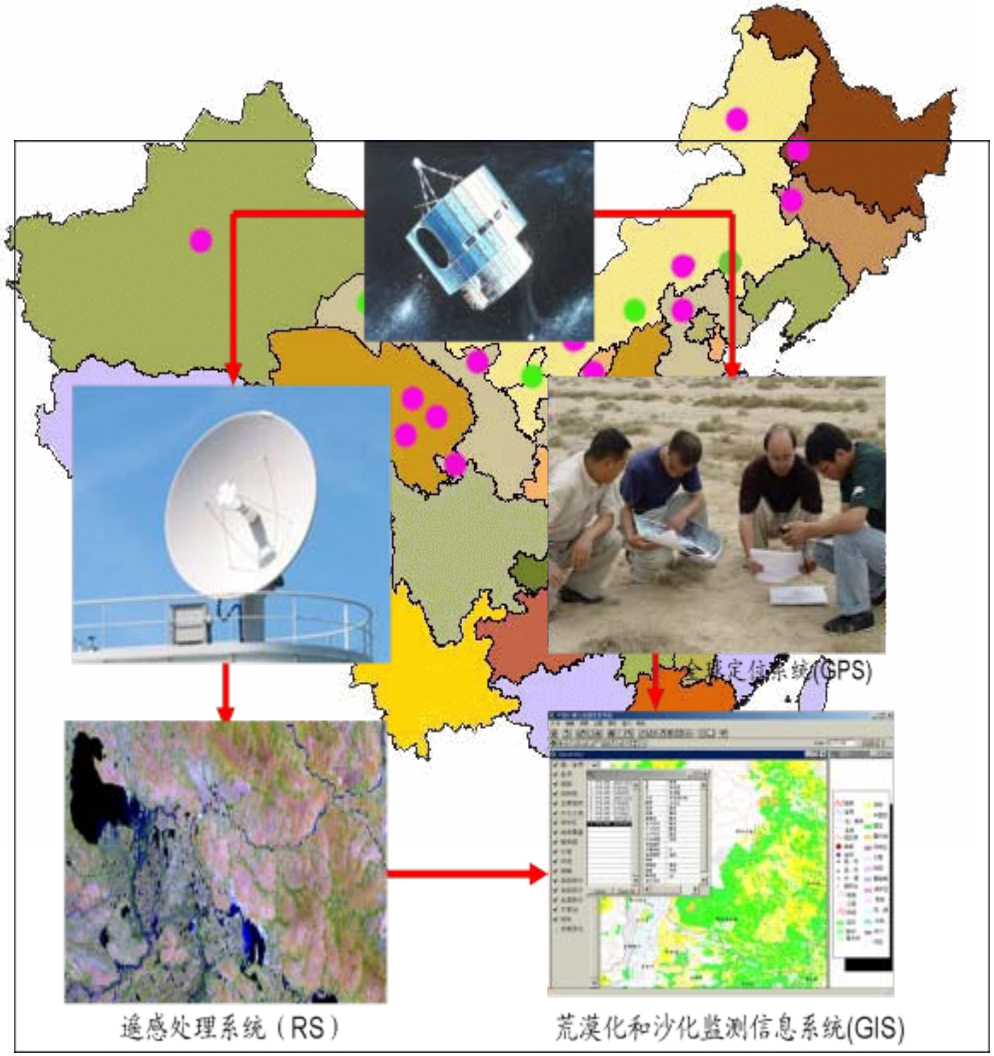

# Desertification monitoring and assessment system

## State monitoring

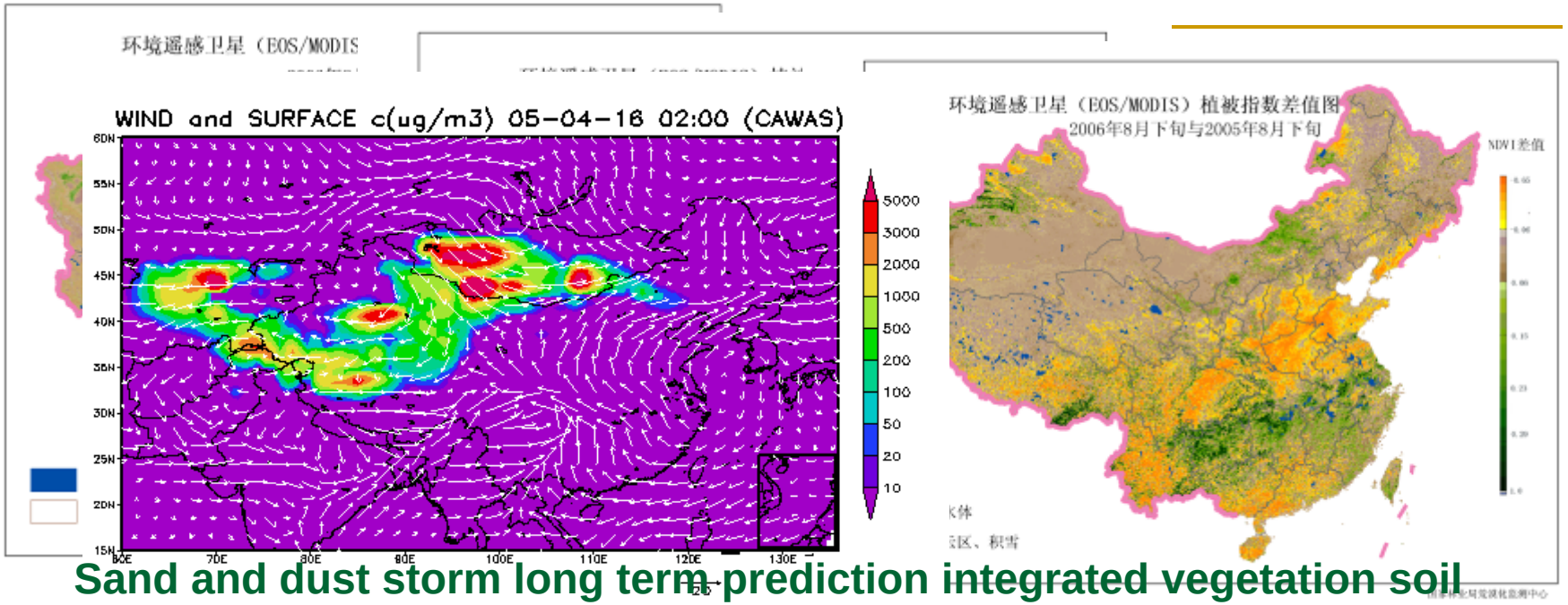
- Macro monitoring at national level
- Key and sensitive areas monitoring
- Positioning monitoring

## Implementation monitoring

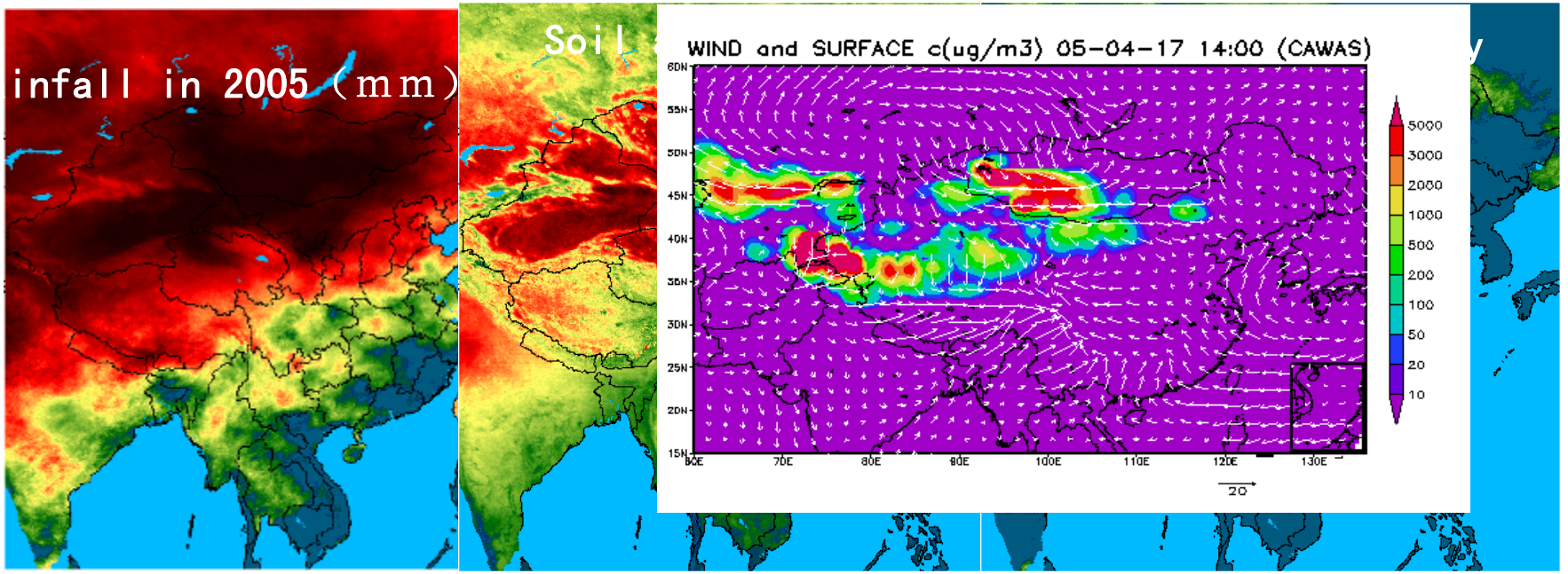
- Intervention effect and performance monitoring and assessment




Application of “3S” techniques




**Sand and dust storm long term prediction integrated vegetation soil aridity index and air flow move satellite image**



# Progresses made at present stage

- Initially contain desertification process
- Improvement of ecological condition and living condition
- Contribution for local economy development

# Reverse of desertification expansion

- Decrease of total desertification area: from annual expansion of more than 10th Km2 in 1994-1999, to reverse of 7585km$^2$ annually; In five years from 2004-2009，desertified land decreased by 12500 km$^2$ in extent，or 0.47% compared with that in last round of monitoring.
- Abatement of severity: vegetation coverage increased by 20-30% in key national projects areas and shifting and semi-shifting sand dune decrease
- Reduction of numbers of Hot spots and increase of bright spots:
- All 18 desertification affected provinces achieved net decrease of desertification areas.

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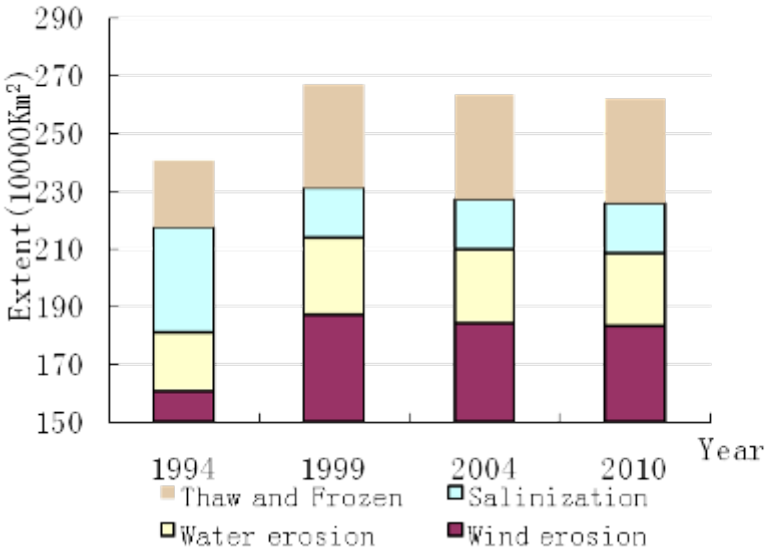
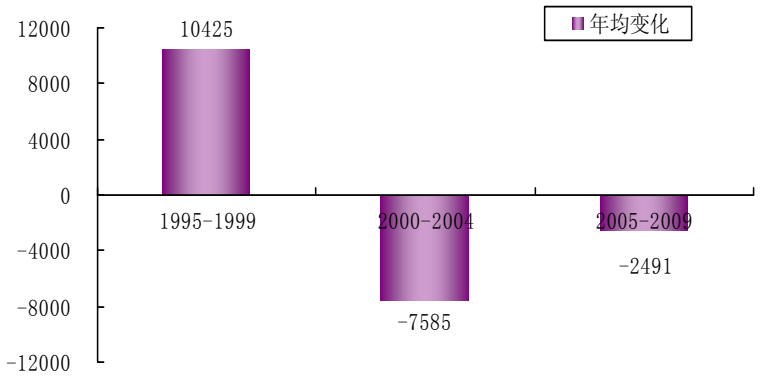
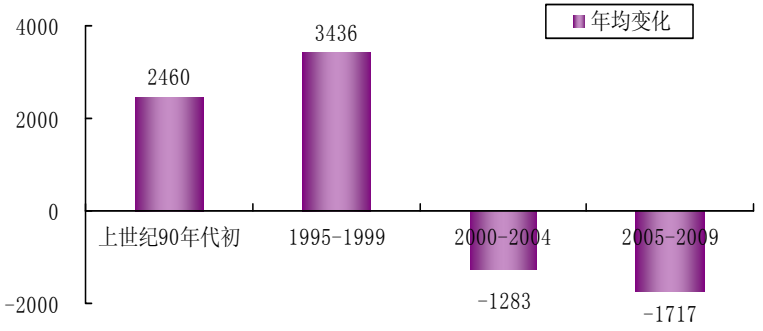



**The total area of desertified land decreased by 37900km² from 1999 to 2004 with an annual** shrinking of 7585 km², and .

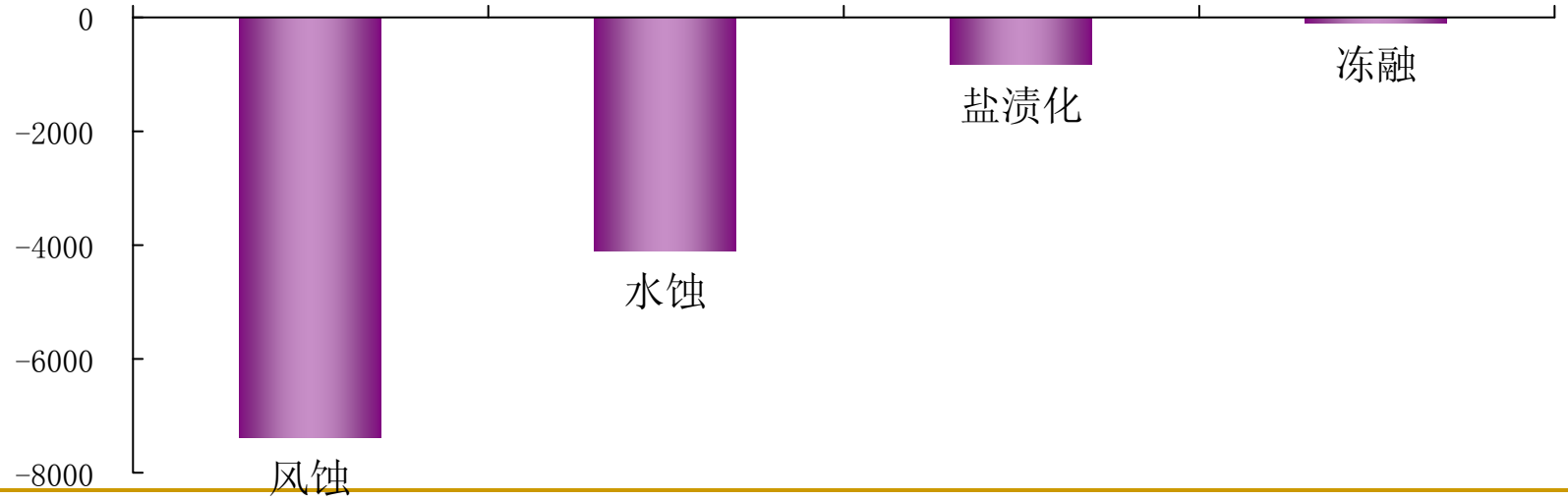
**2004 to 2009, reduced by 12,454 square kilometers or by 0.47%, or 2491 square kilometers reduced annually.**



**The 4th national desertification monitoring shows the changes of decertification types as follows:**

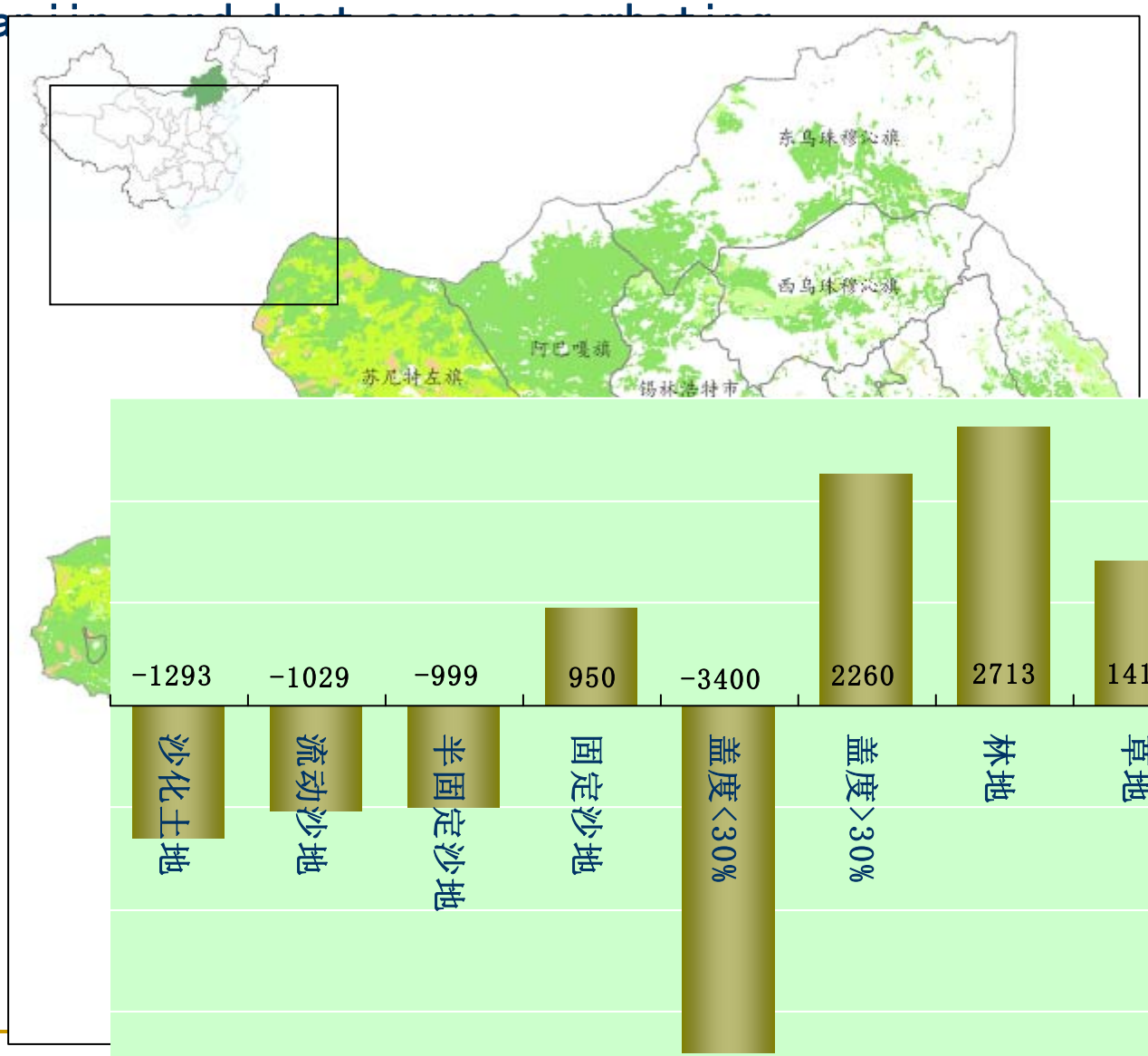
---Wind erosion desertification reduced by 7391 square kilometers
---Water erosion desertification reduced by 4115 square kilometers
---Salinity erosion desertification reduced by 830 square kilometers
--- Freeze-thaw erosion desertification reduced by 118 square kilometers



## Beijing-Tia

### project area

In project area desertification land continued to decrease, with the desertification level in alleviation, vegetation condition in obvious improvement, and ecological condition in development positive direction.




2001年


2009年

# Eco-social benefits

**Eco-system of projected area has been improved primarily.**

**Living and production conditions of farmers have been ameliorated thus to lead to thorough change the pattern of lives and yields.**

**Local industry structure has been optimized to enlarge the channels for employment and income increasing, step for poverty alleviation has accelerated.**

# Challenges

Big total area, wide distribution

500th km2 urgent need to be improved

Expansion in some areas, established vegetation is vulnerable and need further stabilizing

Human induced degradation still exists under pressures from population increase, natural resources demand and economic development

Climatic variation and unexpected intensity of extreme weather create hardship for desertification prevention and control

# Focus in the next 5years

- Guideline: respects the law of nature, economics and social development to keep combating desertification achievements sustainable.

- Improving Motivation of all round stakeholders participation
- Increase  contributions to local farmers income growth in complement with ecological benefits improvement based on national key programs.
- Strengthening integration of ecological improvement with engineering approaches, integration of artificial intervention  with natural restoration.
- Strengthening study on the climate variation and adaptive responses in vegetation establishment and management.

# Principles for next step

- Coordinating population increase, natural resources and Environment protection in the process of desertification combating
- Coordinating ecological benefits and poverty alleviation
- Insisting in Scientific outlook in desertification combating
- Insisting in integrated approaches
- In accordance with Laws and regulations

# Long term targets

- □力争到2020年，全国一半以上可治理的沙化土地得到治理，沙区生态状况明显改善；到本世纪中叶，全国可治理的沙化土地基本得到治理。
- By end of 2020, half of the total treatable degraded land been under control , obvious improvement of ecological condition in the affected area.
- By mid of the this century, all reversible degraded land been under control.


谢谢！
Thank you!