2010 Biodiversity Target: Indicators and Progress

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2010 Biodiversity Target

To achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth.

Indicators for Measuring Progress Towards 2010 Target

Status and trends of the components of biological diversity	
1. Change in status of threatened species	✓ **Change in status or population of threatened species, which can be expressed through Red List Index（RLI）indicating change in overall threat status of a set of species.**
2. Change in land coverage	✓ **Proportional and absolute change in land cover categories which means the status and trends of ecosystems**
3. Genetic diversity of domesticated animals, cultivated plants, fish species of major socioeconomic importance	✓ **The number of breeds of domesticated animals, cultivated plants, fish species which indicates change in number of breeds used in production and the loss of native breeds.**
4. Number and coverage of nature reserves	✓ **Area coverage refers to the ratio of terrestrial nature reserves area to national terrestrial territory which indicates the status of in situ conservation.**

Ecosystem integrity and ecosystem goods and services	
5. Integrity of forests, grasslands and river ecosystems	**✓Refers to the integrity of forests, grasslands and river ecosystems:** **■ Change in net primary productivity ;** **■ Change in area of desert lands;** **■ Change in density of railroad and highways.**
6 .Marine Trophic Index	**✓Refers to mean trophic levels of fisheries landings. Decline in mean trophic levels indicates marine ecosystems are increasingly vulnerable to natural and human induced stresses, and reduction in overall supply of fish for human consumption.**
7. Water quality in marine ecosystems	**✓Refers to the clean index of all marine areas in China. It can be reflected indirectly with the area affected by red tide.**
8. Water quality in freshwater ecosystems	**✓Refers to the overall water quality of major inland rivers, such as Yangtze River, Yellow River, Zhu River, Huai River, Hai River, Liao River**

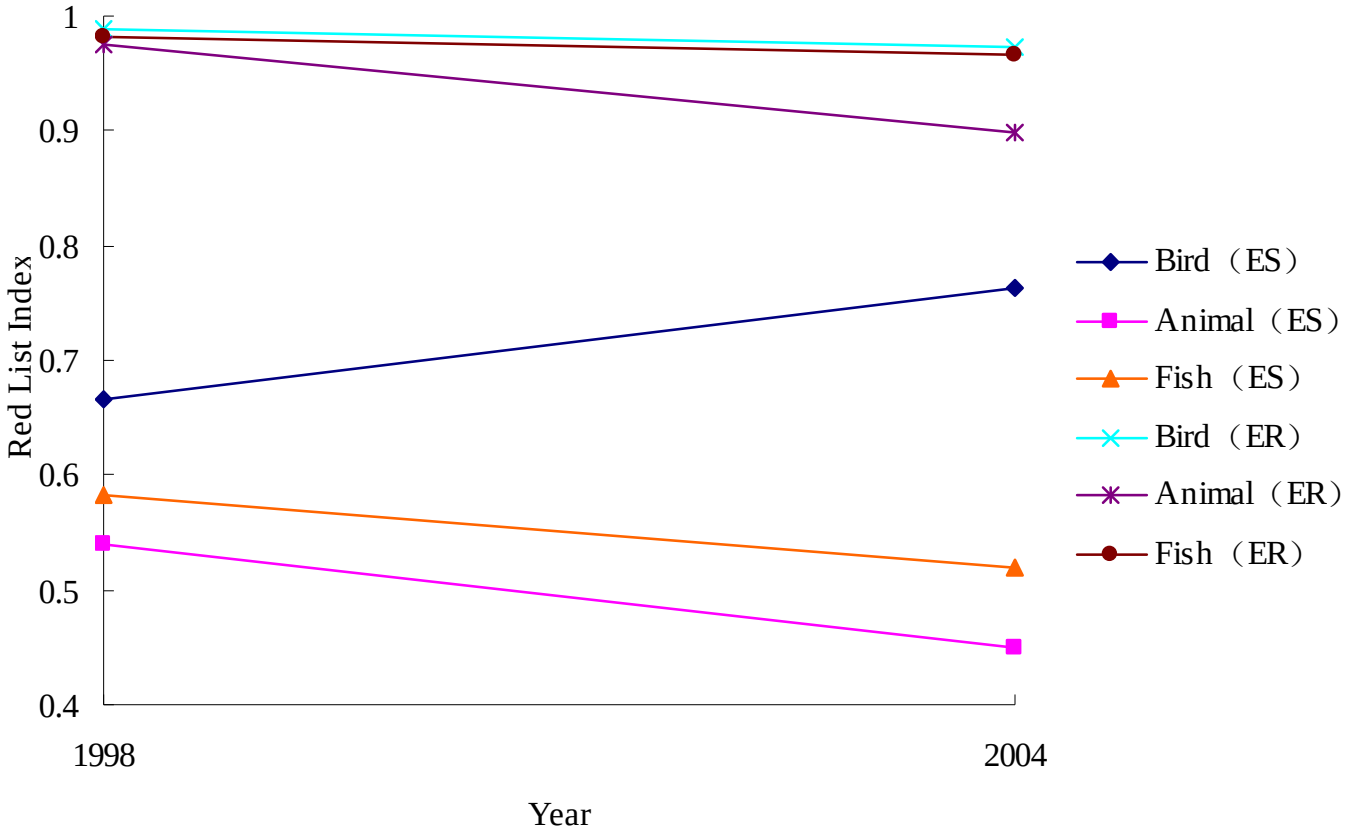
Threats to biodiversity	
9. Discharge of major pollutants	**✓Refers to the annual discharge of waste water, gas and solid waste, indicating threat to biodiversity.**
10. Impact of climate change on biodiversity	**✓Refers to the impacts of climate change on the structure and functions of ecosystems and the distribution and growth of species.**
11. Trends in invasive alien species	**✓Number of newly discovered invasive alien species or detected quarantine organisms in a given period , which indicates the damage of invasive alien species to ecosystems, native species and genetic resources**

Sustainable use	
12. The total growing forest stock and annual net increase of growing forest stock	**✓The total growing forest stock refers to the sum of growing stock of all trees in a given area, and annual net increase of growing forest stock refers to the growing stock increased in a year minus the actual consumed stock in that year.**
13. Difference between nitrogen input and output	**✓The application of agricultural chemicals which means the degree of impacts of agriculture on biodiversity. High nitrogen inputs and imbalances normally lead to high pressure on biodiversity.**
14. Ecological footprint	**✓The ecological footprint is a measure of how much biologically productive land and water area are required to produce all the biological resources human beings consume and to absorb the waste generated, using prevailing technology and management, which indicates the impacts of all human resources demands on biodiversity.**

Status of access and benefit-sharing of genetic resources	
15. Status of access and benefit-sharing of genetic resources and traditional knowledge	**Reflecting the use and benefit sharing of genetic resources and traditional knowledge**
Financial resources	
16. Financial resources for biodiversity conservation	**Refers to the financial resources for environmental pollution control and ecological conservation.**
Public awareness	
17. Public awareness	**Refers to the awareness of the public to knowledge and importance of environmental protection.**

Progress Towards 2010 Target

- ✓ Species: Fish 81, birds 138, mammal 107
- ✓ RLI of mammals and freshwater fish decreases from 1998 to 2004, while RLI of birds increases, but the loss rate of highly endangered birds increases.
- ✓ Wetland conservation contributes to the effective protection of birds.



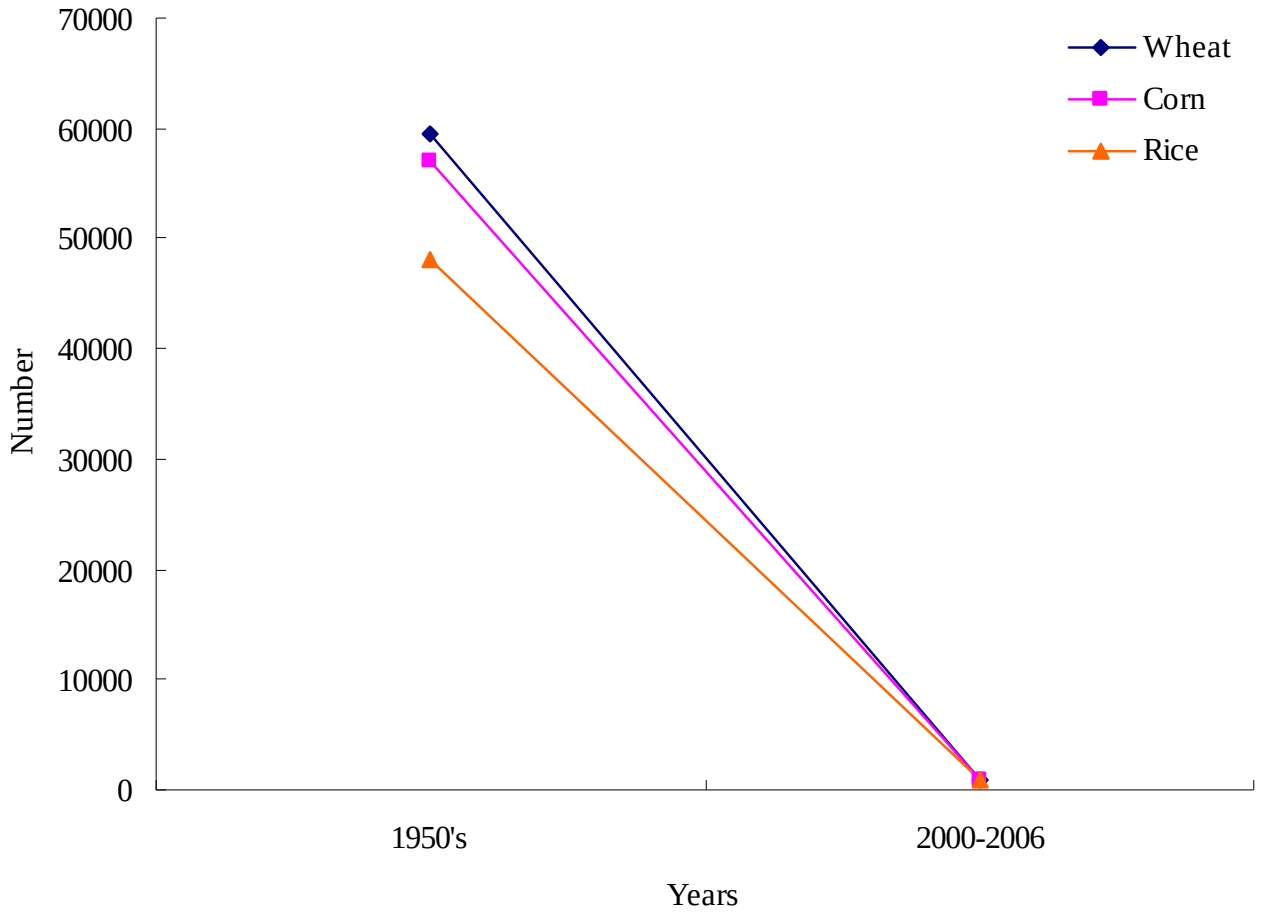
Red List Index of vertebrates in China

(ES: Equal-steps based RLI; ER: Extinction-risk based RLI)

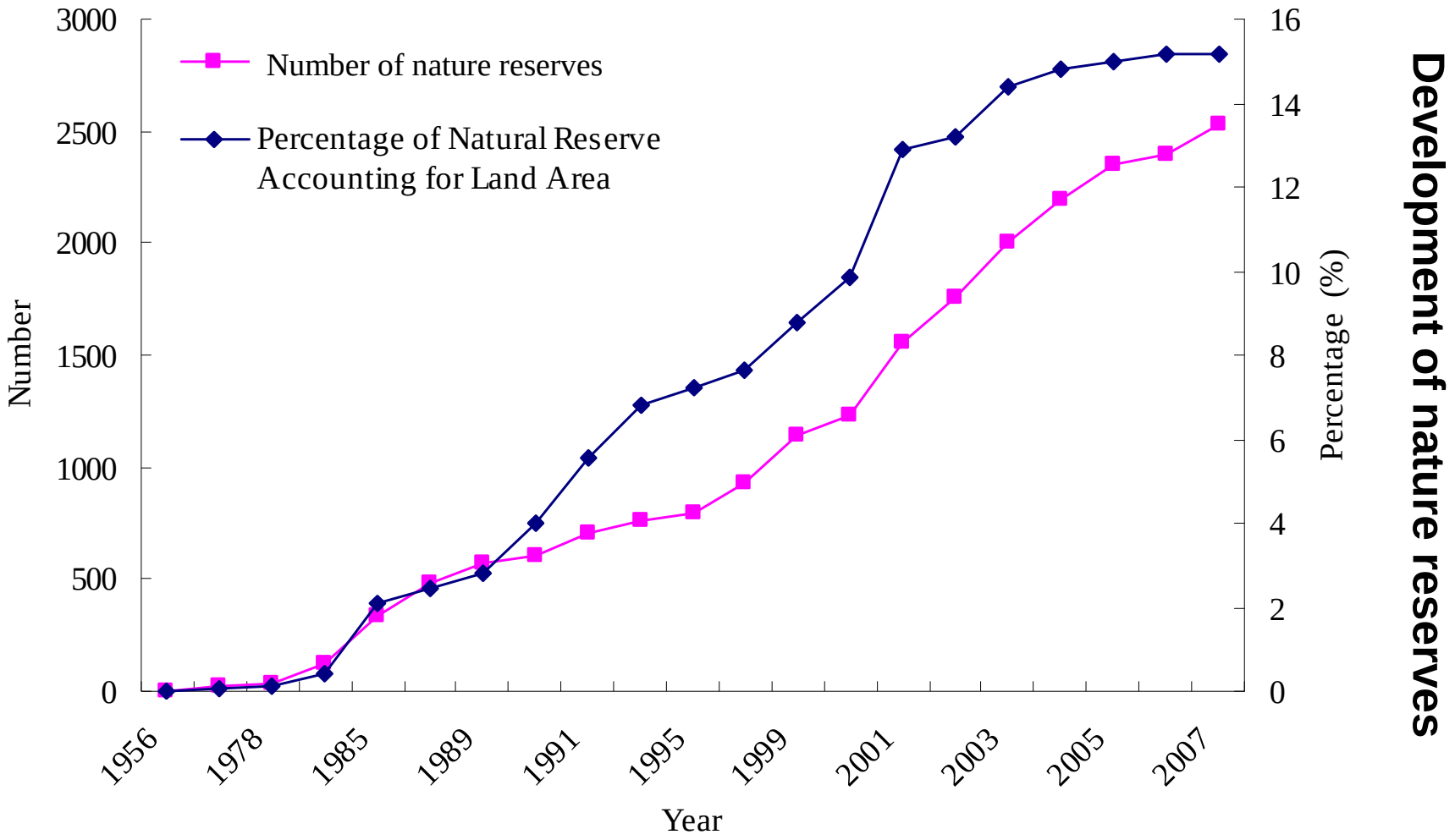
- ✓ Area of cultivated lands, waters, resident lands increases, while area of forests and grasslands decreases from late 1980s to 2000. Forests decreased 10898.22 km^2, and grasslands decreased 34363.01km^2
- ✓ Area of cultivated lands, grasslands and unused lands decreases, while area of forests, waters and resident lands increases. Grasslands decreased 12185.98 km^2 and forests increased 2078.38 km^2 during 2000-2005

Net change in land coverage in China（Km^2）

- ✓ Crops cultivated in China are mainly food crops, and food crops are mainly rice, wheat and corn
- ✓ The germplasm resources of rice, wheat and corn are suffering severe losses due to many reasons

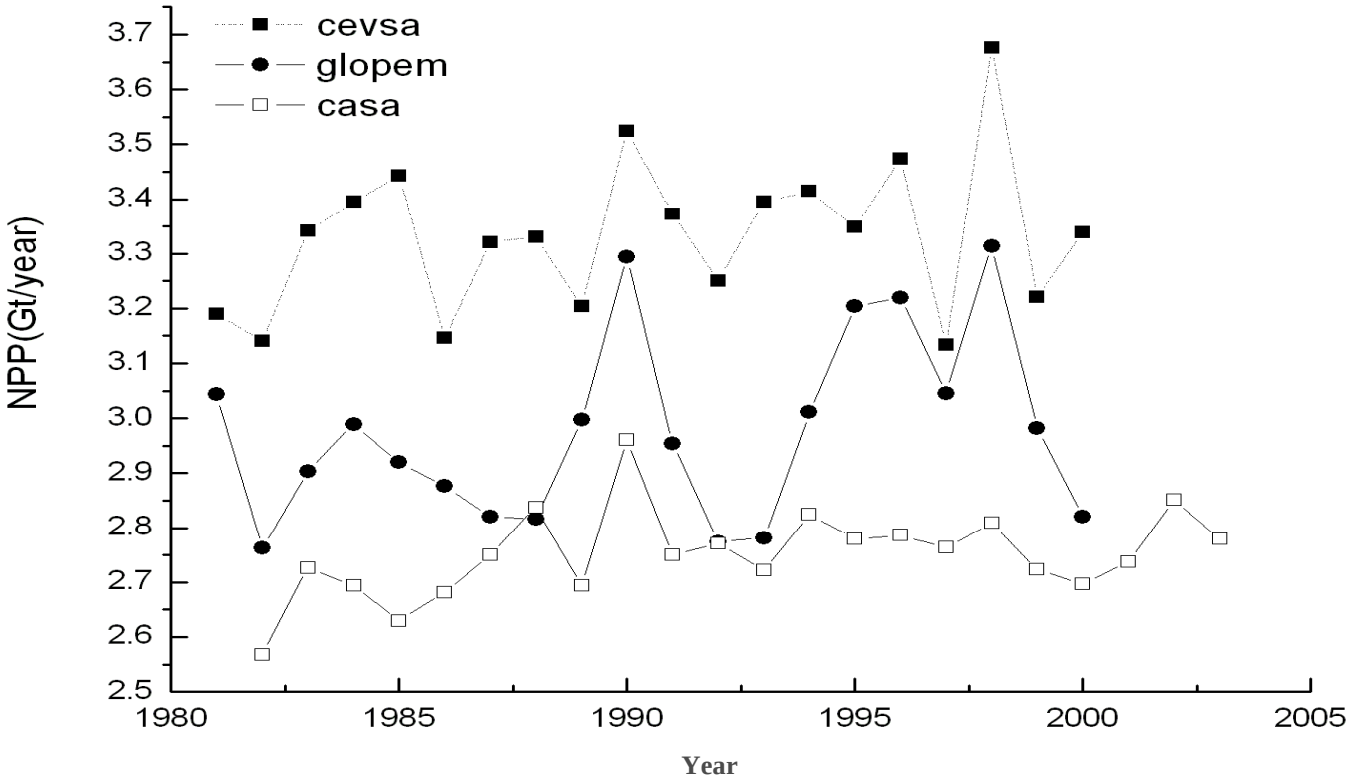


Change in the number of breeds of rice, wheat and corn used in production

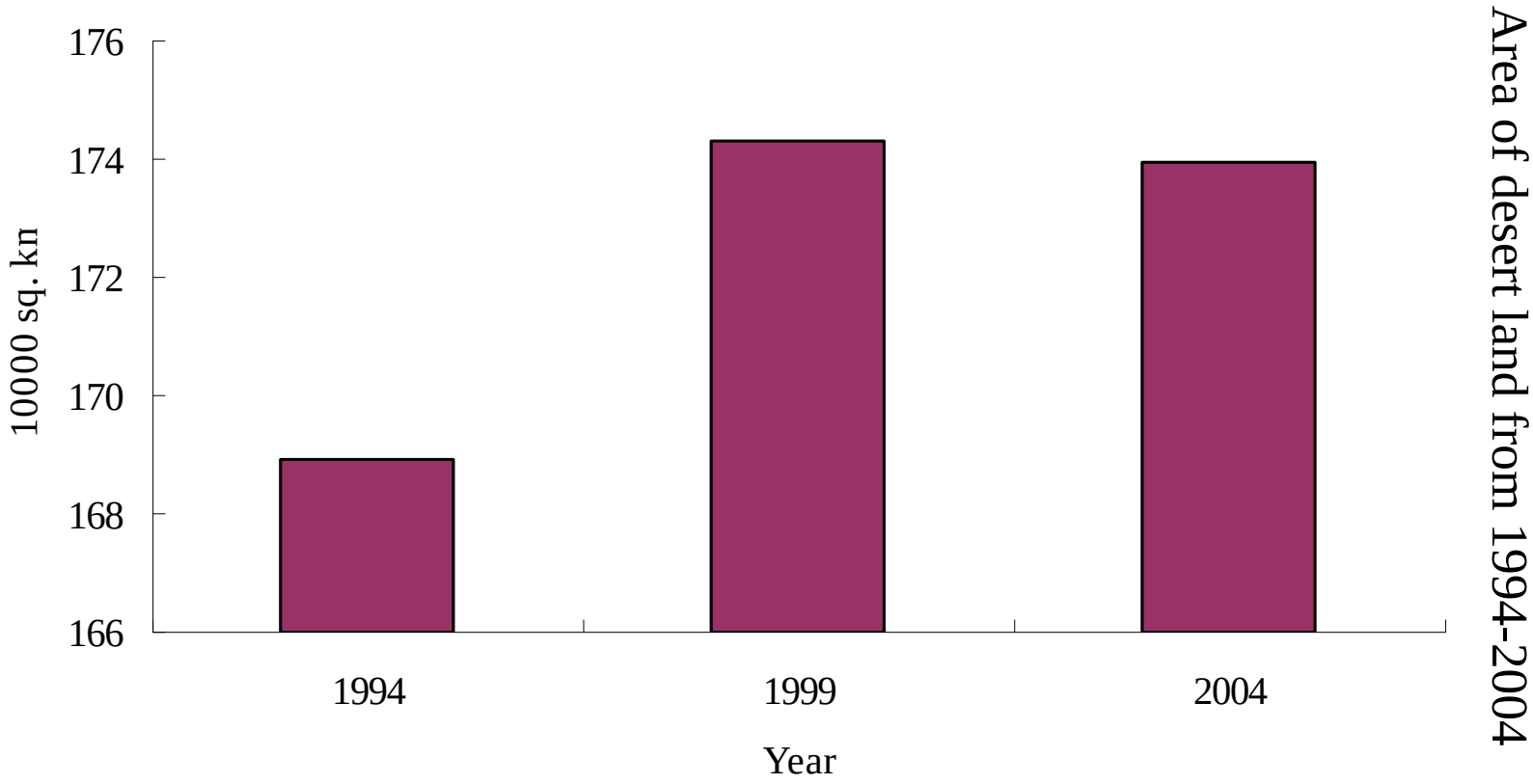


The number and coverage of nature reserves in China increased significantly during 1999-2007, reaching 15.2% in 2007, and a preliminary national nature reserve system established.

- ✓ Data of annual mean net primary productivity was generated on the basis of monthly data simulated using CEVSA, GLOPEM and CASA model
- ✓ NPP increases overall in 20 years, with growth rate 0.67%, 0.96%,0.51%

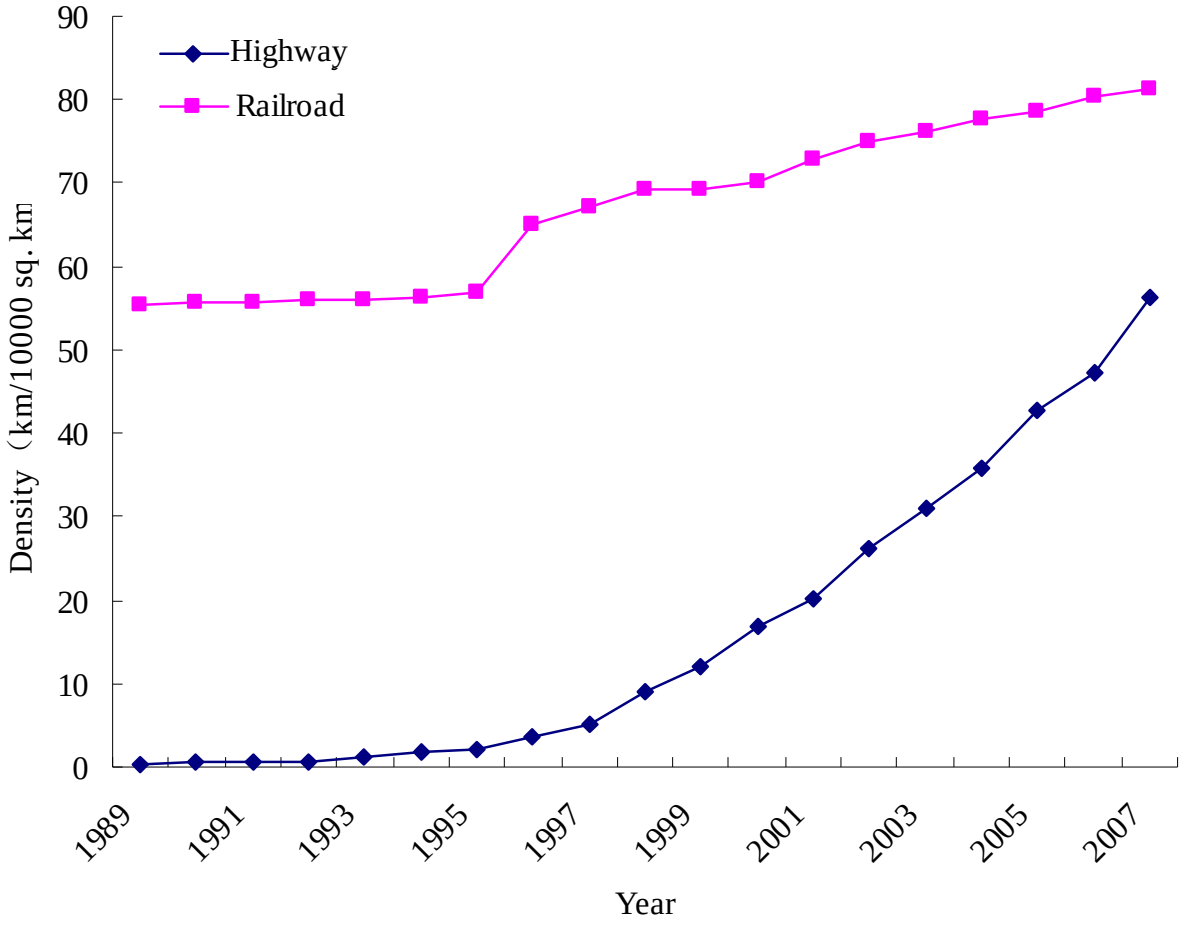


Change in net primary productivity simulated using multiple models



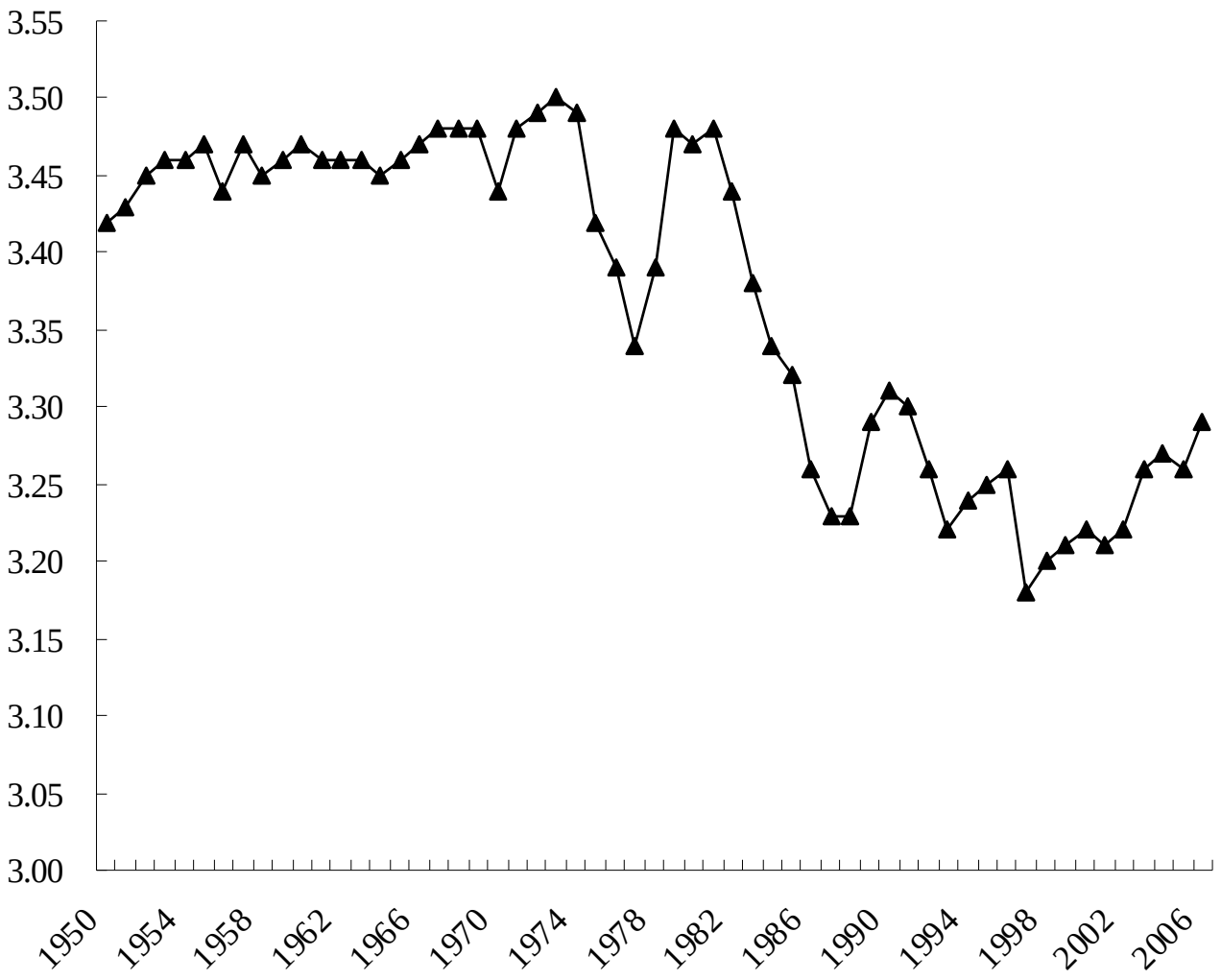
- ✓ Area of desertified lands decreased by 6416 km^2 during 2000-2004, according to the Third National Desertification Monitoring, an annual decrease from 3436 km^2 in late 1990s to 1283 km^2 currently

- ✓ Density of railroad and highways has been increasing since 1989, especially a rather rapid increase in recent years, increasing the fragmentation of habitats of wild animals and plants
- ✓ China takes every effort to avoid railroad and highways in nature reserves and take measures to reduce the adverse impacts

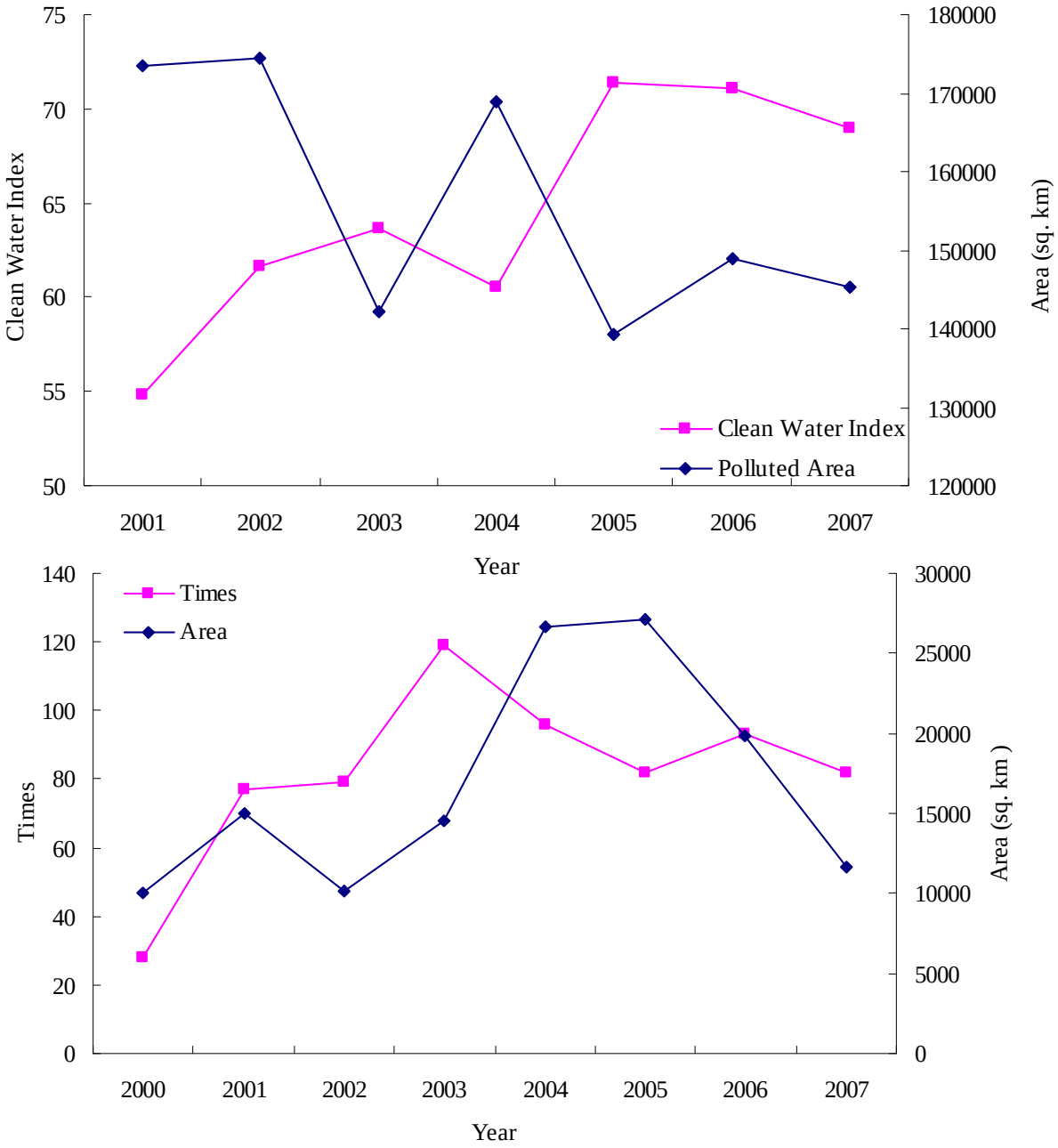


Change in density of railroad and highways

- ✓ MTI was between 3.45-3.50 during 1950-80
- ✓ MTI reduced significantly from late 1980s to middle 1990s, with decrease in predatory fish and increase in the smaller, short−lived fish；
- ✓ MTI increased steadily during 1997-2006, due to the summer season fishing ban policies in all the marine areas in China

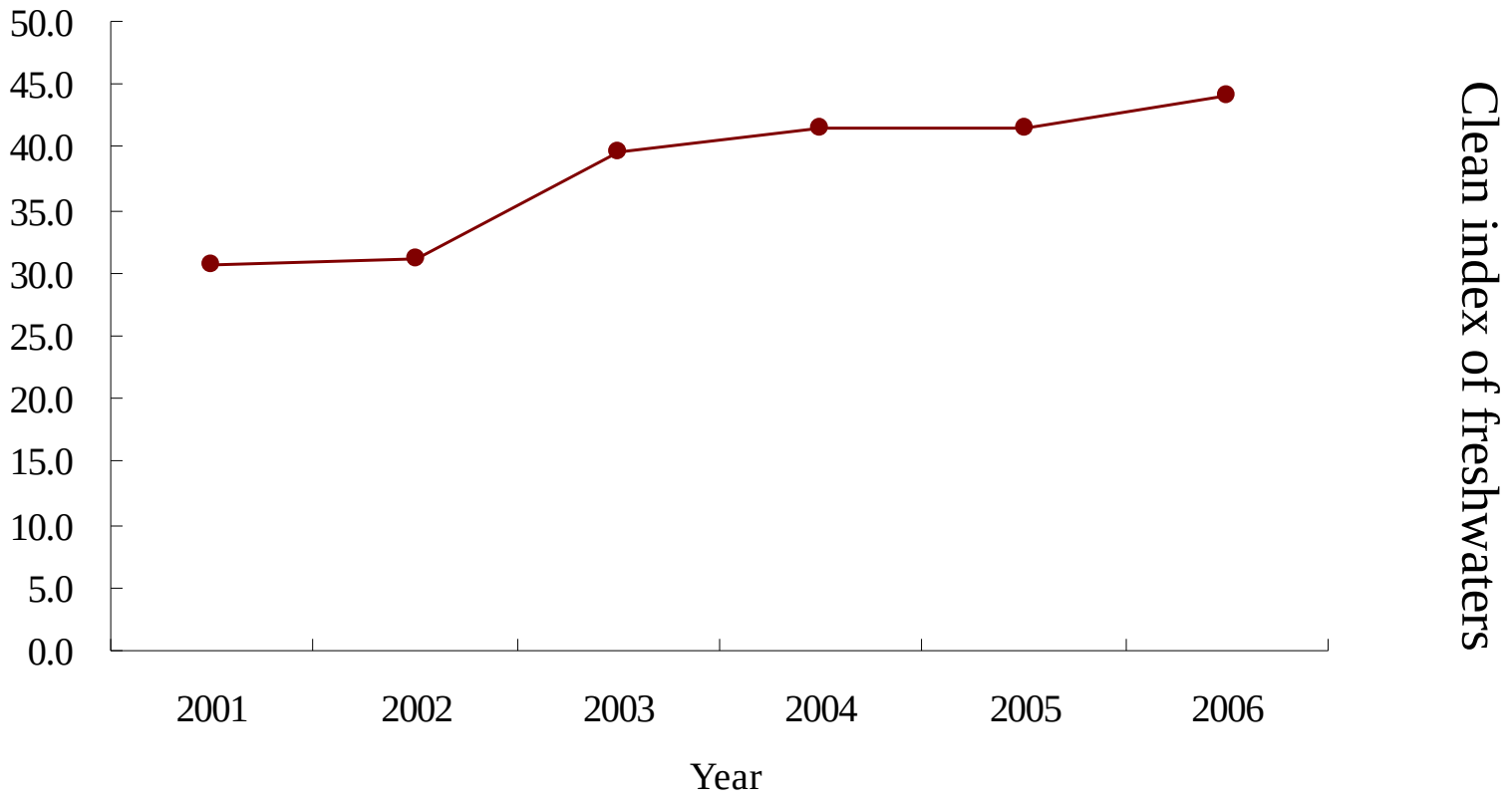


Change in Marine Trophic Index (MTI)

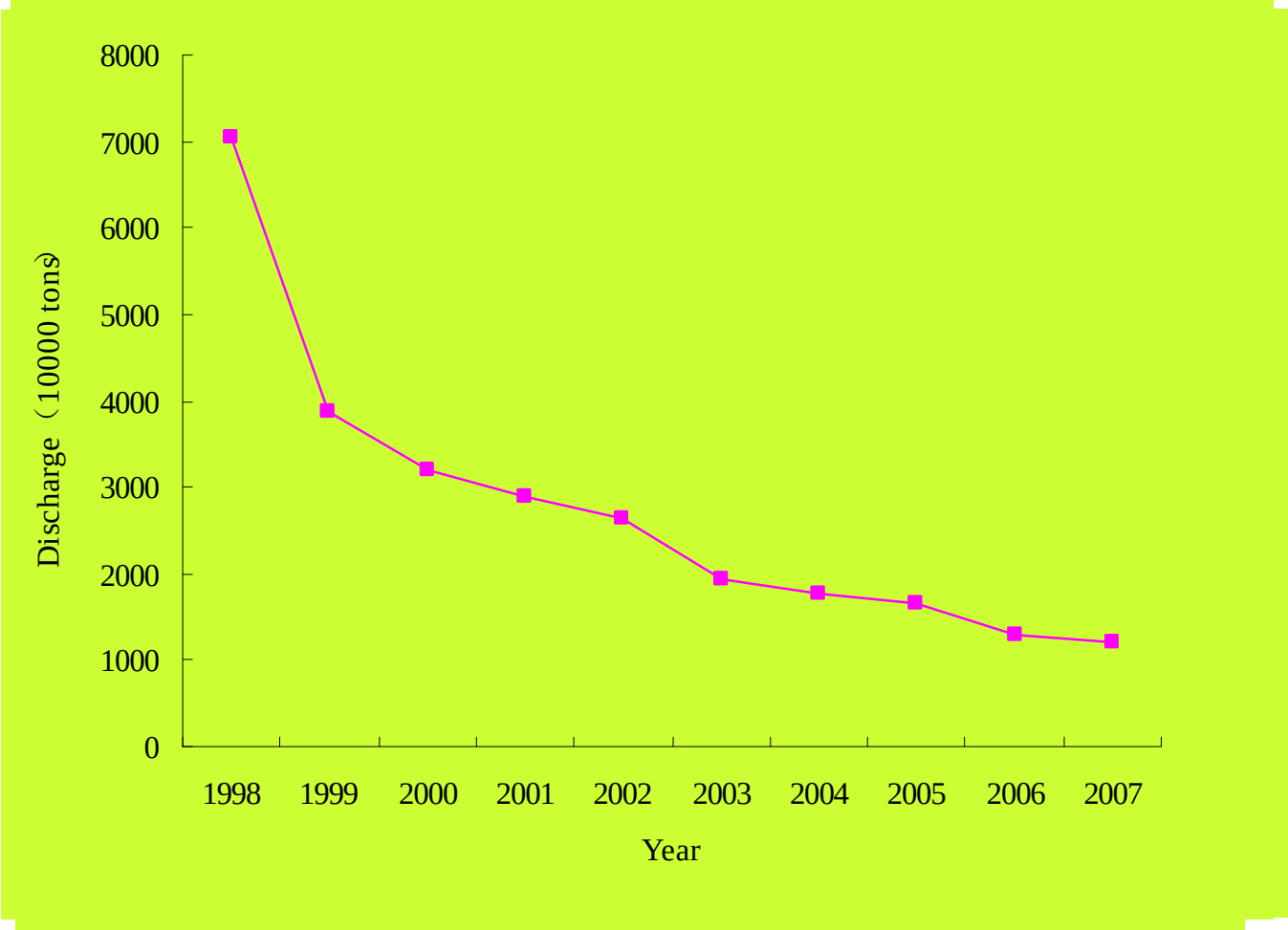


Change in area and times of red tide in marine ecosystems

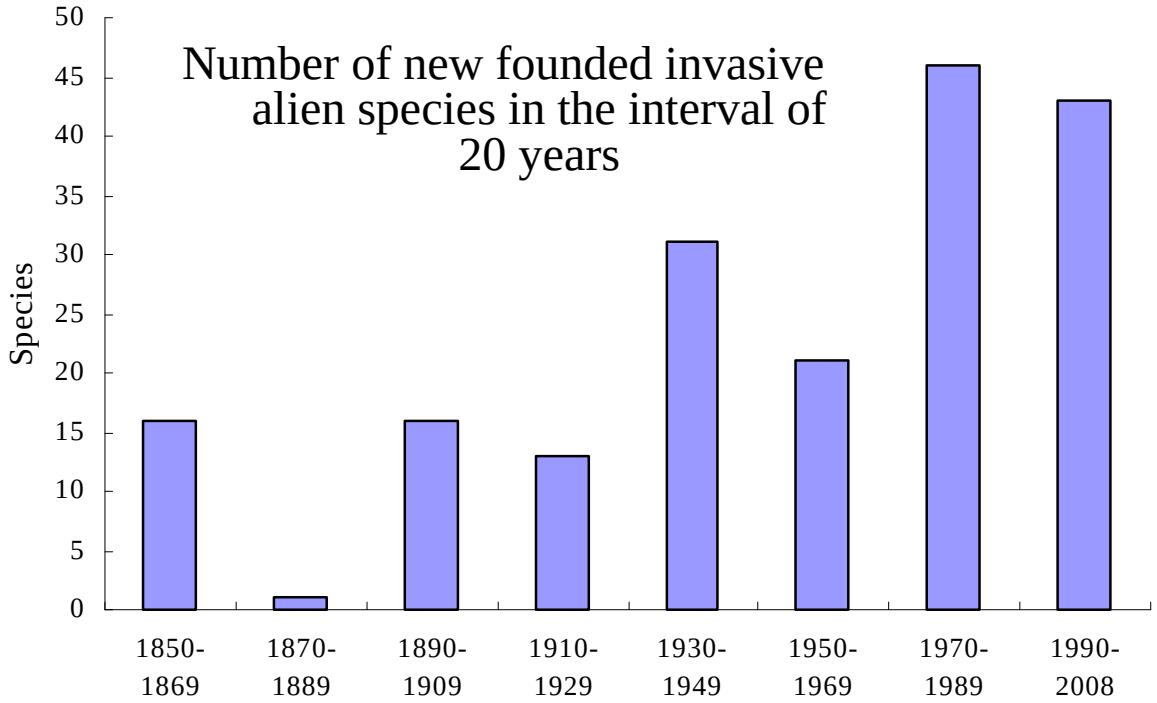
- ✓ Clean index of all marine areas in China increased and areas that do not meet clean marine water standards decreased in recent years;
- ✓ Area and frequency of red tide occurrence decreased;
- ✓ Water quality of coastal marine areas is improving, but pollution is still serious

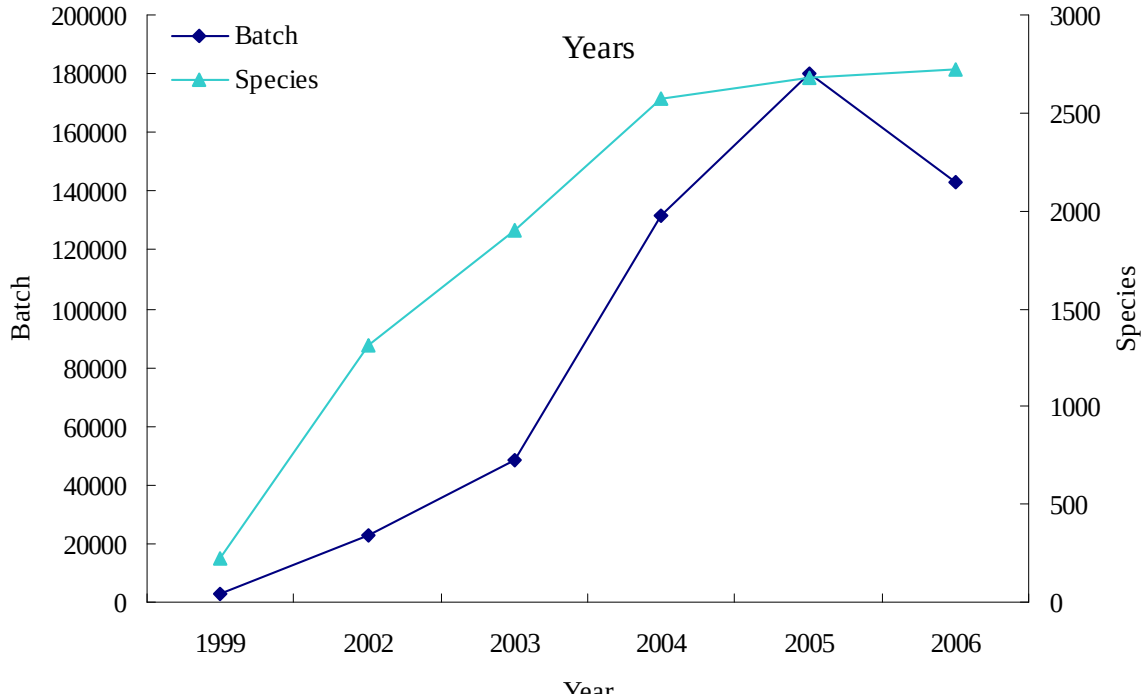


- ✓ The pollution of surface waters decreased from 2001 to 2006, but pollution in some branches of Hai River, Liao River, Huai River, Yellow River, and Songhua River, especially those segments running through cities are heavily polluted, and some lakes and reservoirs are eutrophicated. In general, surface water of major rivers is moderately polluted.



- ✓ **The amount of COD discharge in 2007 decrease by 3.14% compared with that of 2006; the amount of SO2 discharge decreased by 4.66% compared with that of 2006**
- ✓ **The discharge of toxic pollutants in waste water, COD discharge in key industries, gas and dust discharge, solid waste discharge decreased, but waste water discharge is still increasing, which means that waster water discharge volume is still very large**

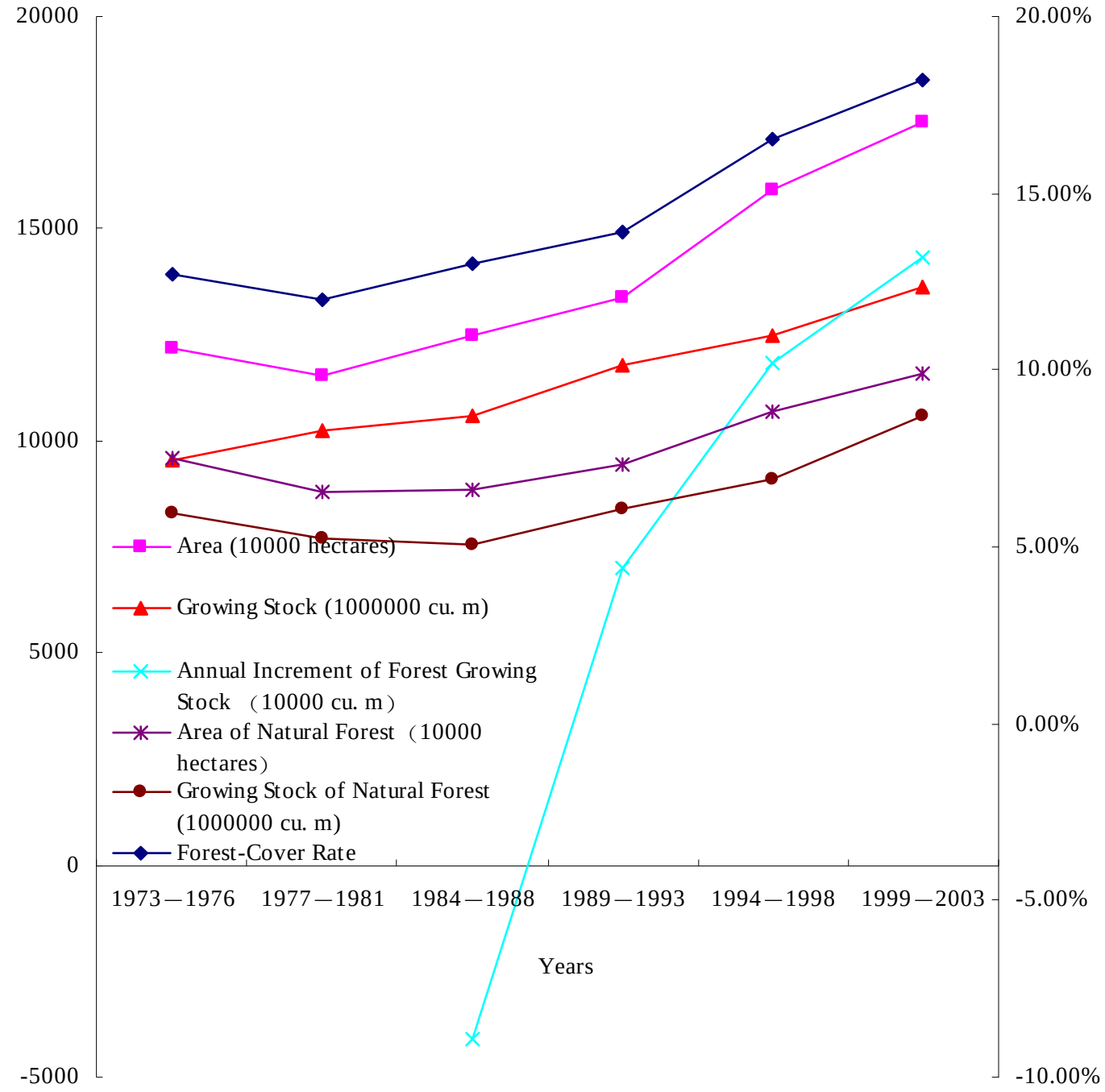




Detected quarantine organisms

- ✓ **The number of invasive alien species has been increasing in past 40 years**
- ✓ **The number of species of and the chances to detect quarantine organisms increased by more than ten times from late 1990s to the beginning of 21st century**

- ✓ **Forest coverage is increasing, 18.21%**
- ✓ **Total growing forest stock is increasing, 1325.94 million m^3**
- ✓ **Annual net increase of growing forest stock is increasing since 1989**
- ✓ **The area and stock of primary forests is increasing since 1989(not human planted)**
- ✓ **China is the country with most rapid increase in forest resources in the world**



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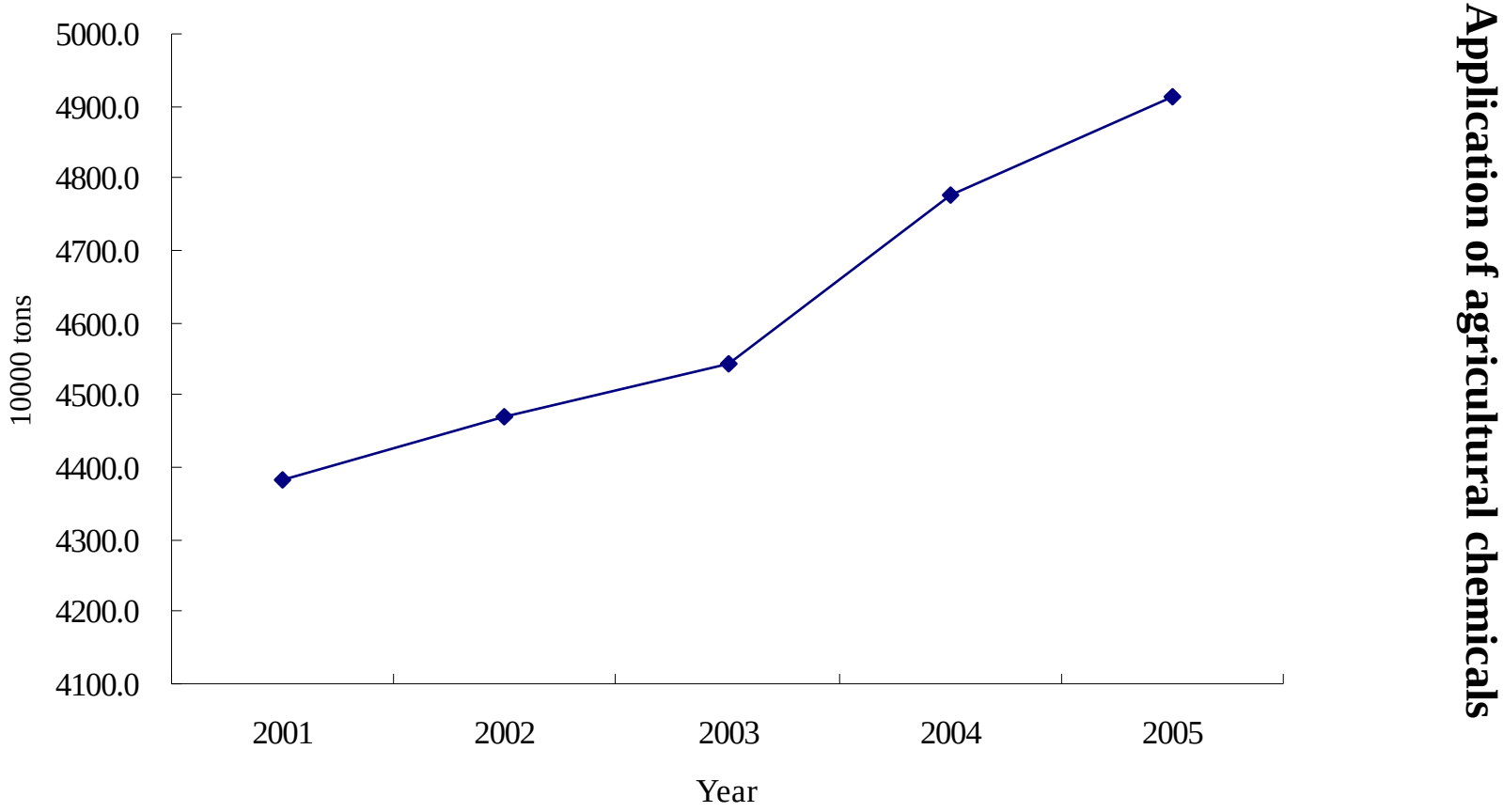
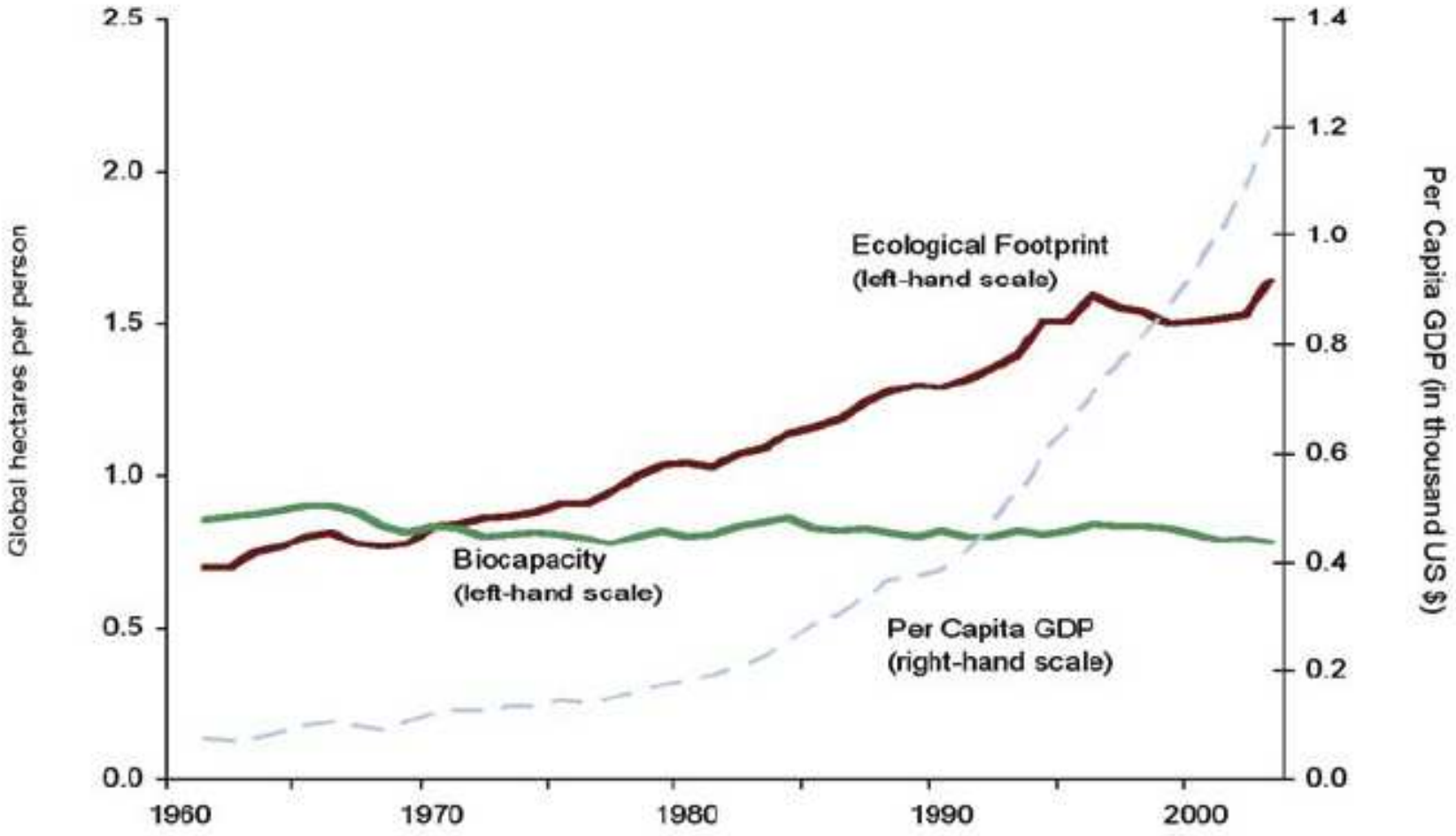
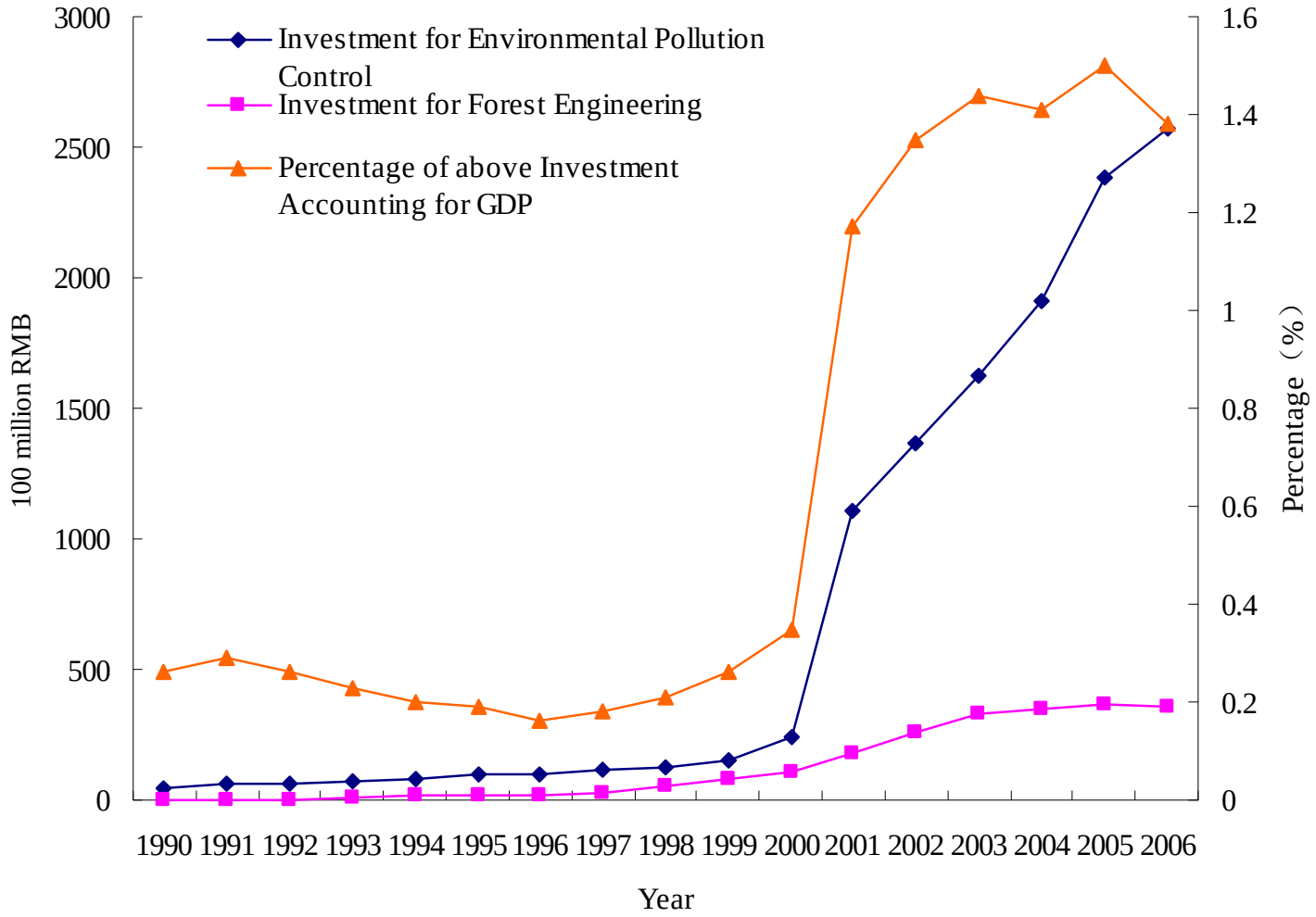


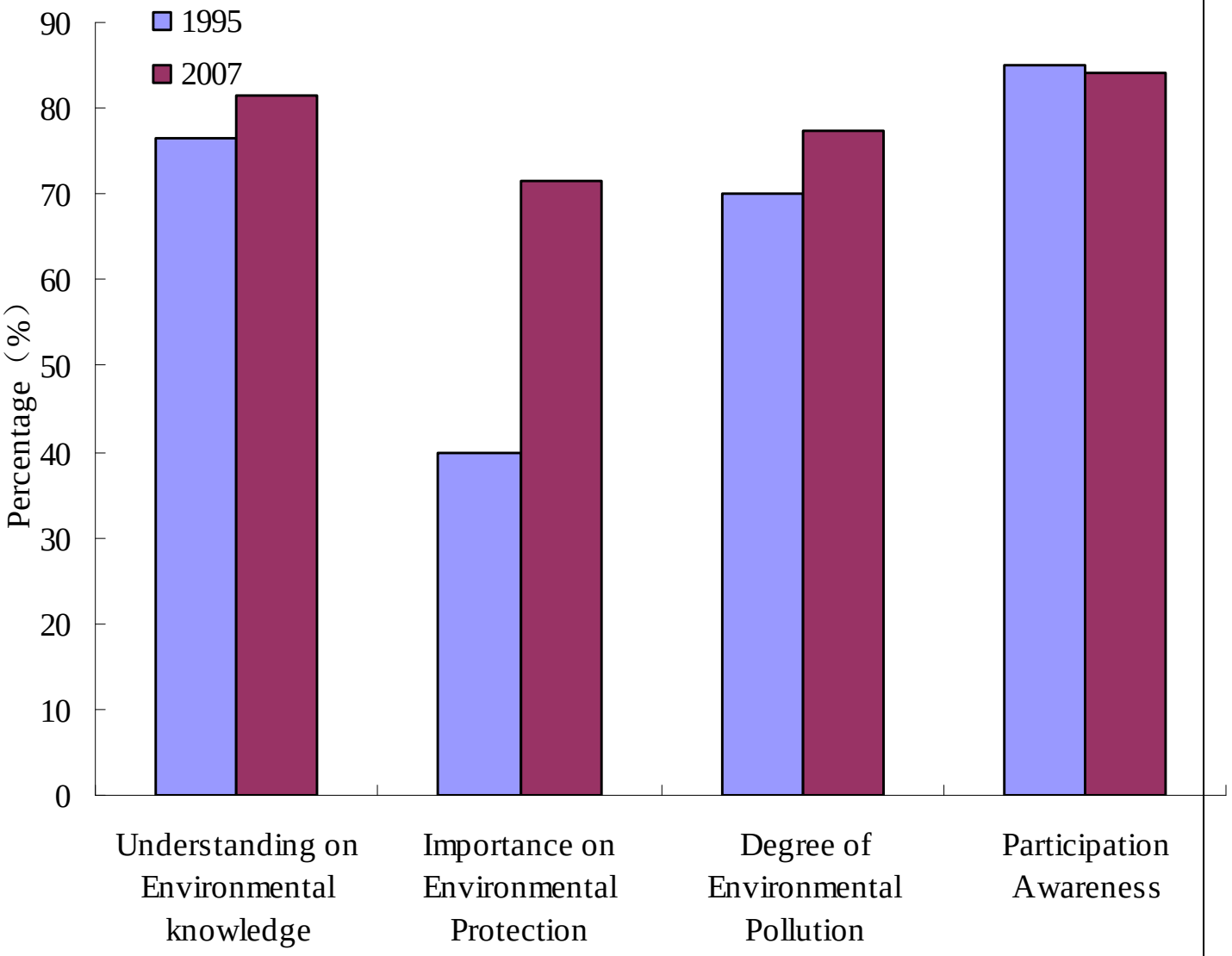
✓ **The application of agricultural chemicals is still increasing, with low utilization rate, which poses severe threats to the environment**



✓ **The ecological footprint of China in 2003 was 1.6 global hectare per capita, lower than the global average. However, ecological deficit occurred in China since 1970. China needs to reduce ecological footprint significantly.**



✓ **The Chinese government increased financial resources for environmental pollution control and ecological conservation in recent years, with annual investment more than 1% of GDP. Especially, the forestry protection programs have been implemented since 1998, which played a key role in biodiversity conservation in China.**



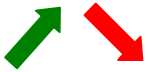
Comparison of environmental awareness between 1995 and 2007

- ✓ **The number of people with knowledge of environmental protection increased from 76.4% to 81.5%, and the percent of people that recognize the importance of environmental issues increased from 40% to 71.4%, based on the Environmental Awareness Survey in 1995 and China Awareness Project in 2007**

Suitability of indicators for 2010 target

Trend	Indicators	Rate
Status and trends of the components of biological diversity		
↗ ↘	**(1) Change in status of threatened species**	★★
↗ ↘	**(2) Change in land coverage**	★★★
↘	**(3) Genetic diversity of domesticated animals, cultivated plants, fish species of major socioeconomic importance**	★★
↗	**(4) Number and coverage of nature reserves**	★★★

★★★----Good indicator with time series data;★★----Relative good indicator without time series data; ★----indicator needs to be improved or with insufficient data

Ecosystem integrity and ecosystem goods and services		
	**(5) Integrity of forests, grasslands and river ecosystems**	★★★
	**(6) Marine Trophic Index**	★★★
	**(7) Water quality in marine ecosystems**	★★★
	**(8) Water quality in freshwater ecosystems**	★★★

★★★----Good indicator with time series data;★★----Relative good indicator without time series data; ★----indicator needs to be improved or with insufficient data

Threats to biodiversity		
	**(9) Discharge of major pollutants**	★★★
?	**(10) Impact of climate change on biodiversity**	★★
	**(11) Trends in invasive alien species**	★★★

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Sustainable use		
↗	**(12) The total growing forest stock and annual net increase of growing forest stock**	★★★
↗	**(13) Difference between nitrogen input and output**	★★★
↗	**(14) Ecological footprint**	★★★

★★★----Good indicator with time series data;★★----Relative good indicator without time series data; ★----indicator needs to be improved or with insufficient data

Status of access and benefit-sharing of genetic resources		
?	**(15) Status of access and benefit-sharing of genetic resources and traditional knowledge**	★
Financial resources		
↗	**(16) Financial resources for biodiversity conservation**	★★★
Public awareness		
↗	**(17) Public awareness**	★★★

★★★----Good indicator with time series data;★★----Relative good indicator without time series data; ★----indicator needs to be improved or with insufficient data

Progress toward 2010 Target

Goal	Progress
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes	★★★
Target 1.1: At least 10% of each of the world's ecological regions effectively conserved	★★★
Target 1.2: Areas of particular importance to biodiversity protected	★★★
Goal 2. Promote the conservation of species diversity	★★
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups	★★
Target 2.2: Status of threatened species improved.	★★
Goal 3. Promote the conservation of genetic diversity	★★
Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.	★★

★★★★--fully met; ★★★--met to large extent; ★★--partially met;
★- basically not met although some progress made

Goal 4. Promote sustainable use and consumption	★★
Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and Production areas managed consistent with the conservation of biodiversity	★★
Target 4.2 Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced	★★
Target 4.3:No species of wild flora or fauna endangered by international trade	★★
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced	★★
Target 5.1: Rate of loss and degradation of natural habitats decreased	★★

★★★★--fully met; ★★★--met to large extent; ★★--partially met;
★- basically not met although some progress made

Goal 6. Control threats from invasive alien specie	★
Target 6.1: Pathways for major potential alien invasive species controlled	★
Target 6. 2: Management plans in place for major alien species that threaten ecosystems, habitats or species	★★
Goal 7. Address challenges to biodiversity from climate change, and pollution	★
Target 7.1: Maintain and enhance resilience of the components of biodiversity to adapt to climate change	★
Target 7.2: Reduce pollution and its impacts on biodiversity	★★
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods	★★
Target 8.1: Capacity of ecosystems to deliver goods and services maintained	★★
Target 8.2: biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained	★★

★★★★--fully met; ★★★--met to large extent; ★★--partially met;
★- basically not met although some progress made

Goal 9 Maintain socio-cultural diversity of indigenous and local communities	★★
Target 9s.1 Protect traditional knowledge, innovations and practices	★★
Target 9.2: Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit sharing	★★
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources	★★
Target 10.1: All transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable agreements	★★
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Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention	★★
Target 11.1: New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20	Not applicable
Target 11.2: Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4	Not applicable

★★★★--fully met; ★★★--met to large extent; ★★--partially met;
★- basically not met although some progress made

Thank you !