



Prospect of China's Future

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China's reform, opening-up and peaceful development

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Build a harmonious society and revitalize the Chinese civilization

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Strengthen innovation capacity and build an innovation-oriented country

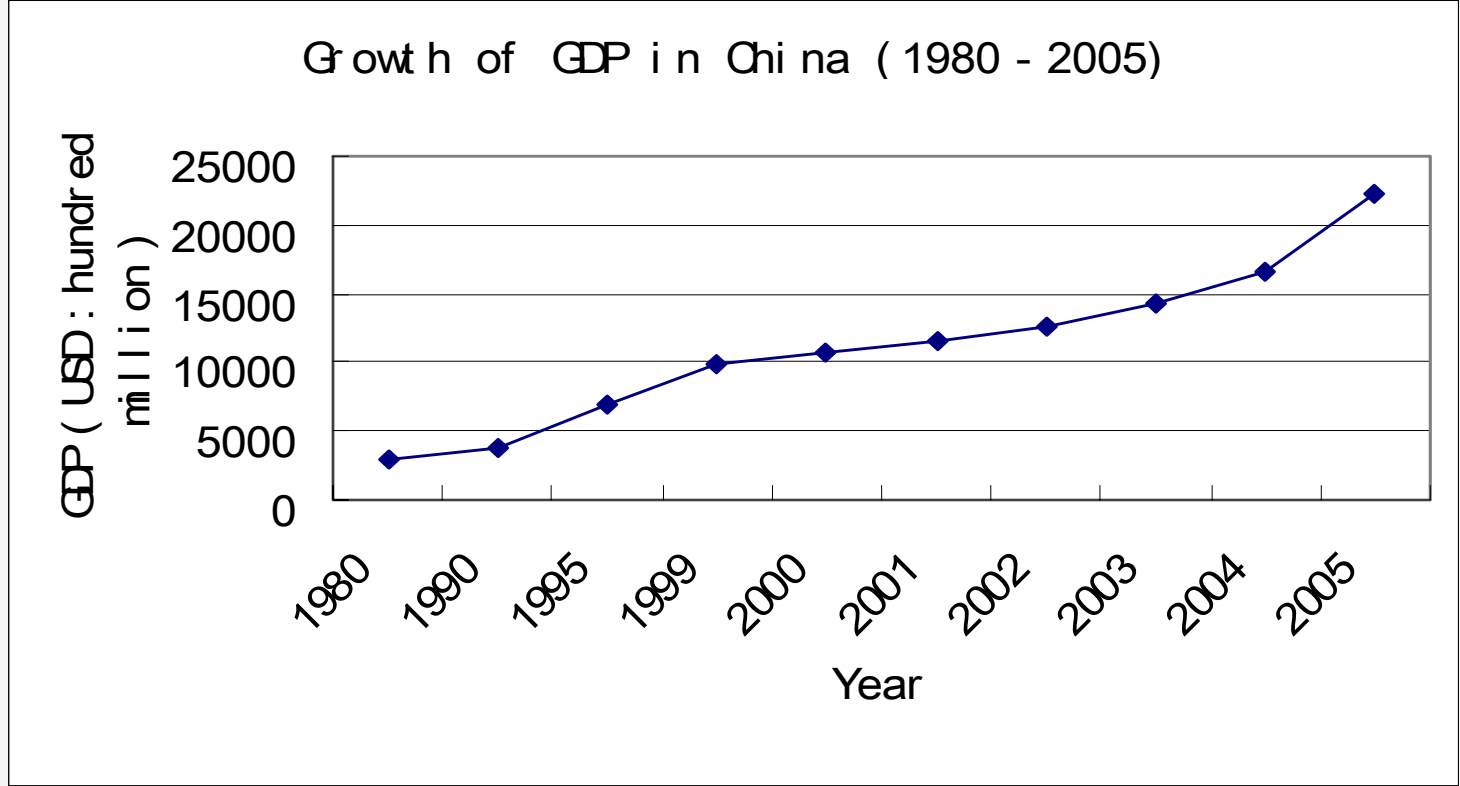




China's Reform, Opening-up and Peaceful Development

China's remarkable achievements in 28 years of reform, opening-up and modernization not only benefit 1.3 billion Chinese people but also bring new momentum and vitality for peaceful development of the world

- Annual GDP growth in the past 28 years is 9.6%, total GDP increased from USD 147.3 billion in 1978 to USD 2225.7 billion in 2005



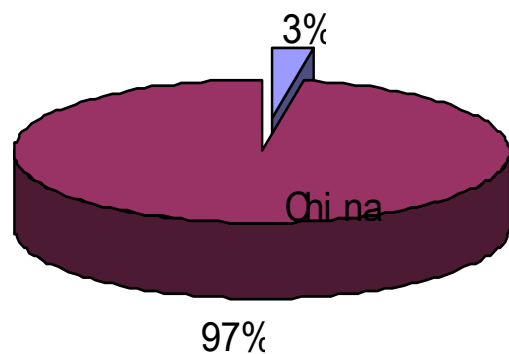
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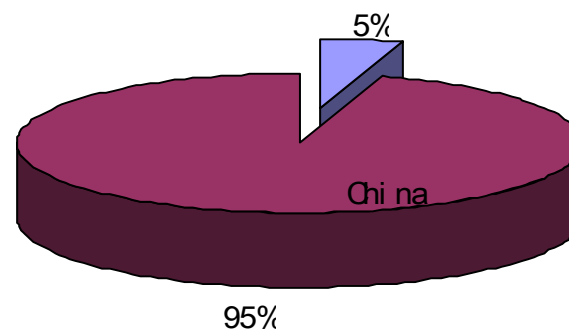
■ **China already 4th largest economy, its share in the World GDP rose from 2.8% in 1978 to 5% in 2005**

China's share in World GDP in 1980



■ 中国GDP ■ 其他国家GDP

China's share in World GDP in 2005

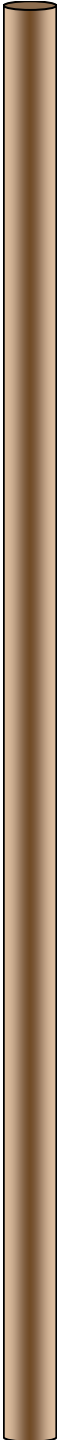
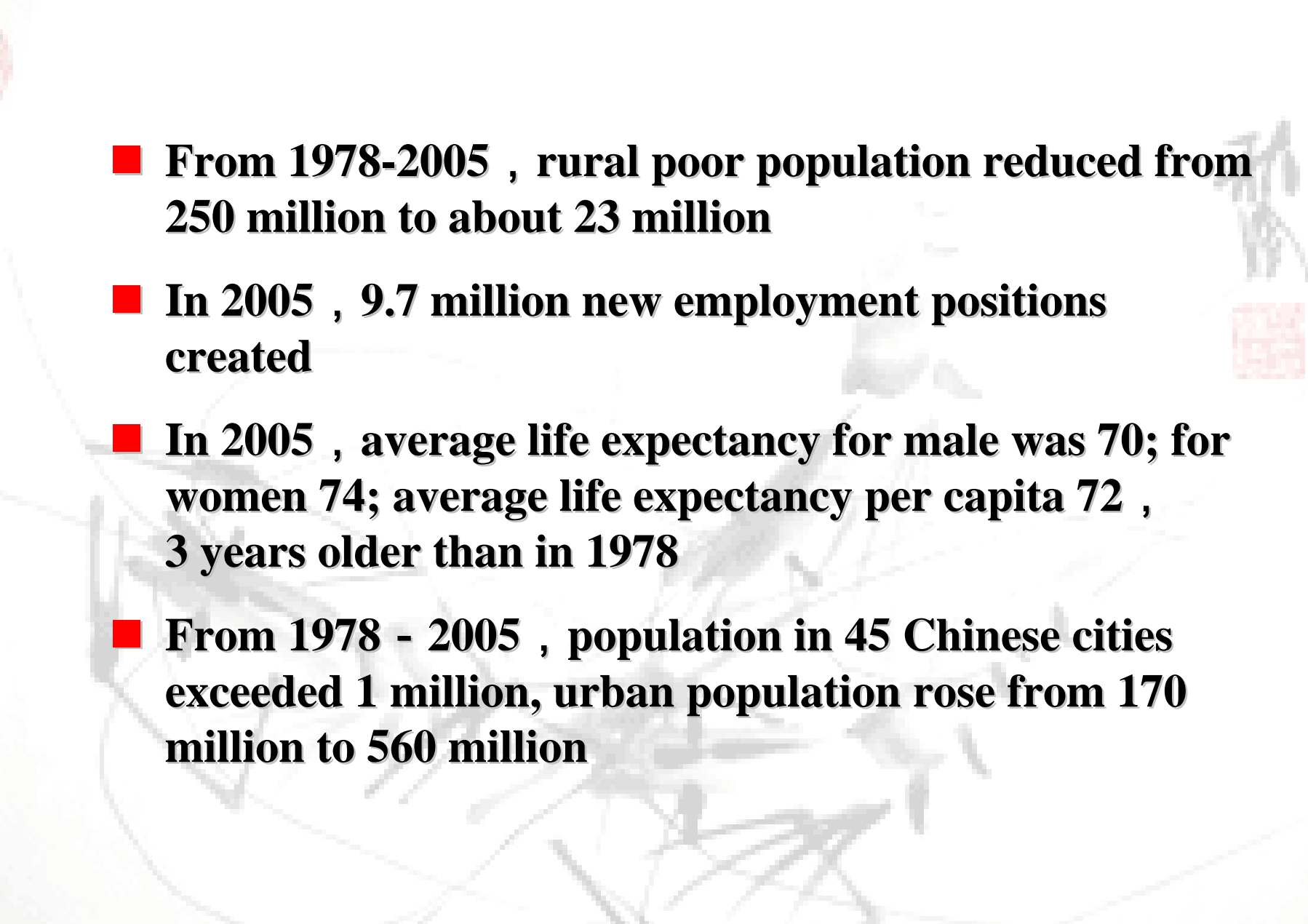


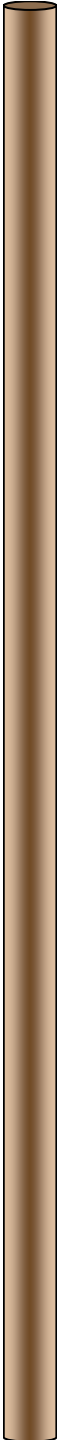
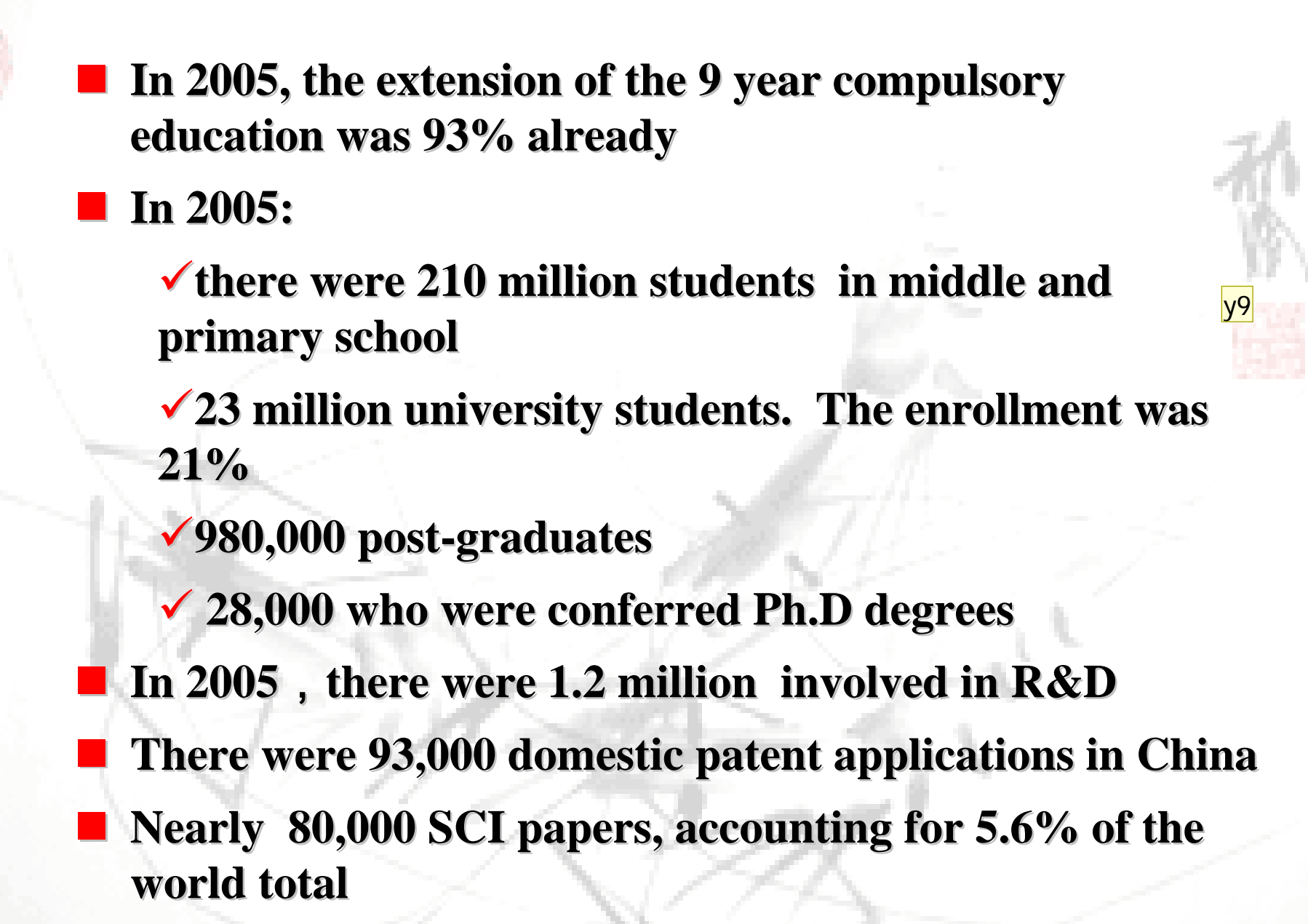


■ 中国GDP ■ 其他国家GDP

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前后矛盾，中国的GDP只占世界总量的百分之五左右!

yxlu, 30/07/2006

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- **From 1978-2005 , rural poor population reduced from 250 million to about 23 million**
 - **In 2005 , 9.7 million new employment positions created**
 - **In 2005 , average life expectancy for male was 70; for women 74; average life expectancy per capita 72 , 3 years older than in 1978**
 - **From 1978 - 2005 , population in 45 Chinese cities exceeded 1 million, urban population rose from 170 million to 560 million**

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- **In 2005, the extension of the 9 year compulsory education was 93% already**
 - **In 2005:**
 - ✓ **there were 210 million students in middle and primary school**
 - ✓ **23 million university students. The enrollment was 21%**
 - ✓ **980,000 post-graduates**
 - ✓ **28,000 who were conferred Ph.D degrees**
 - **In 2005 , there were 1.2 million involved in R&D**
 - **There were 93,000 domestic patent applications in China**
 - **Nearly 80,000 SCI papers, accounting for 5.6% of the world total**
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Closer Economic Ties between China and the World through Reform and Opening-up

- **From 1978 to 2005 , China's total imp/exp volume rose from USD 20.6 billion to USD 1400 billion, its share in int'l trade rose from 0.8% to 6.8%**
- **Since entering WTO in 2001 , China has attracted over USD 220 billion foreign investment, only second to the United States**

- **China and Australia enjoy solid friendship and are partners for full-scale cooperation**
- **Both economies are strongly complementary to each other**
- **The trade between us has grown fast. The total trade volume was 5.0 billion USD in 1997 only, then 10 billion USD in 2002, but the number reached 27.3 billion USD in 2005 already.**
- **A huge potential exists for enhanced economic cooperation between the two countries**

China ——Upholding an Independent and Peaceful Foreign Policy

- **China actively upholds and promotes resolution of international disputes by peaceful consultations**
- **Has Played an active role in safeguarding world peace, anti-terrorism, resolving the Korean and Iranian nuclear issues, as well as in maintaining regional stability and development**
- **Has actively promoted regional cooperation and international cooperation**
- **Has actively promoted cooperation with Asia-Pacific region and the cooperation with Australia particularly**

Chinese scientists fully recognize importance of international exchanges and cooperation, and actively participate and enhance int'l exchanges & cooperation

- **In 2005, China's annual scientific personnel exchanges were over 125,000 person-times**
- **Over 800,000 Chinese students have either studied or trained overseas**
- **China has received over 500,000 foreign students to study in China**

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Challenges Ahead in China's Development



Natural Conditions for China's Development

Of China's Land Area:

- Average altitude of Chinese land is 1.83 times of the world average, 17% of it constitutes the “roof of the world”, 55% of it is not suitable for human living and productive activities
- 65% are in mountainous and hilly areas, 33% are arid deserts, and 35% suffer from soil and desertification erosion
- 30% farmlands are acid soil with PH smaller than 5, and 20% farmlands suffer from salinization or sea water invasion to various levels

Huge Population——has exerted and will exert huge pressure on social-economic development

- **China has 1.3 billion pop. It is expected to peak to 1.5 billion by 2030**
- **With such a huge population, whatever huge amount of wealth will become insignificant if divided by 1.3 billion**
- **In 2005, China ranked well after 100th place in the world with 1,700 USD GDP per capita**
- **Any personal requirement of basic needs will become a huge figure when multiplied by 1.3 billion**
- **Even with the fastest fiscal budget growth and market scope, such huge public demands and market needs can not be satisfied in a short period of time**

Level of Public Education still not High

- **Still has not realized the full practice of the 9-year compulsory education. A distinct difference exists in level of education between regions and between urban and rural**
- **Both scope and structure of professional education can not satisfy the demands of social and economic development**
- **The overall quality of university education in China is still behind that of int'l advanced level**
- **Still has not set up lifelong education system that suits the needs of our time**
- **Still lack of innovative talents and high-skilled workers**

A Big Challenge in Public Hygiene & Health

- **Seeing an earlier arrival of the aging population in China**
- **Diseases typical of developed countries have occurred in the urban pop. 40 million diabetes, accounting for 1/5 of the world total and 40 million patients with cardiovascular diseases**
- **There widely exists epidemics typical of developing countries in the rural areas**
- **Traditional diseases re-emerged such as TB, hepatitis B, schistosomiasis**
- **Also seeing newly emerging epidemics such as Aids,SARS, Bird flu**
- **A huge task ahead in setting up a fair medical care system for the whole people**

A Worsening Constrain of Resources and Energy

Low energy resources per capita

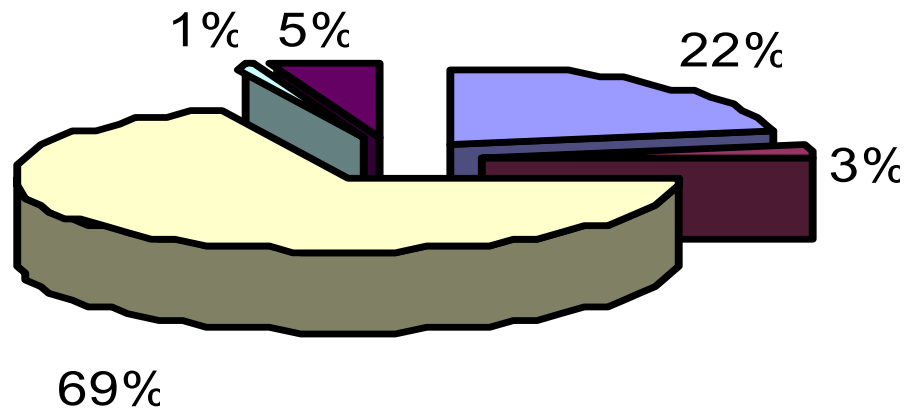
- **Based on explored energy resource reserve per capita in 2001:**
 - Petroleum is only 11.1% of the world average**
 - Coal is 55.4% of the world average**
 - Natural gas is 14.3% of the world average**

Higher energy consumption

- **With 5% of the world GDP in 2005, China consumed:**
 - 7.2% of the world petroleum**
 - 30.6% of the world coal**
 - 27.3% of the world steel**
 - 40.0% of the world cement**

Structure of Energy Resources in China

Structure of China's Energy Resources in 2004



- | | |
|--|--|
|  Petroleum |  Natural gas |
|  Coal |  Nuclear energy |
|  Hydroelectricity | |

Imbalanced Time/Space Distribution of Water Resources and Water Pollution

- **China's water resources per capita is only $\frac{1}{4}$ of the world average. Flooding frequently occurs in the South and drought in the North**
- **Among over 600 cities in China, over 400 suffer from water shortage to various extent. Underground water for 50% of the cities are contaminated**
- **Of China's 7 major river systems, over half of the river segments are polluted to various extent and there is a worsening situation of eutrophication in lakes. In addition, about $\frac{1}{3}$ of the coastal seas are somewhat polluted**

Enhanced Pressure on Eco-environment

- **In 2004, China discharged 48.2 billion tons of waste water**
- **180 million tons of industrial solid wastes**
- **22.5 million tons of SO₂ ,and 41.1% of the 660 cities were affected by acid rain**
- **The soil and water erosion area is as big as 37.1% of the total national territory**
- **There is only 18.2% forest coverage**
- **Grassland further degrades and desertification worsens**
- **A continuous loss of biodiversity and serve intrusion of alien invasive species**

A Rough Economic Mode of Growth

- **The general energy efficiency in China is 33%, about 10% less than that of the world average**
- **Energy consumption for every US dollar produced in Chinese economy is:**
 - 4.3 times that of the EU**
 - 3.9 times that of the USA**
 - 8.9 times that of Japan**

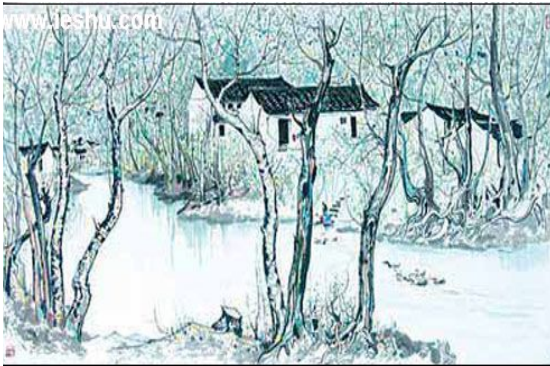
Imbalanced Development: the period with USD2,000-4,000 GDP per capita is one that sees more frequent outbreaks of social problems

- **Imbalanced social and economic development: Although being the 4th largest economy, China Human Development Report 2005 by UNDP points out that China's human development index only ranks 85th among 177 countries and regions**
- **Imbalanced regional development: GDP per capita in central China is only about 50% of that in the East, while GDP per capita in the West is equivalent to 43% of that in the East**

Imbalanced Development

- **Imbalanced development between the urban and rural:** In 2005, the ratio of per capita income between the urban and rural was as high as 3.22 : 1. There also exists an obvious gap between the urban and rural in medical care, education, cultural enjoyment, etc.
- **A further widening of the gap between the rich and the poor:** In 2005, China's Gini coefficient already exceeded 0.4

3



Building a Harmonious Society and Revitalize the Chinese Civilization

Must Adjust Economic Structure

- **Change the mode of economic growth and optimize industrial structure**
- **Facilitate industrialization with information technology**
- **Develop hi-tech industry and service industry so as to create more employment opportunities**
- **Develop sustainable agriculture of high efficiency**
- **Must shift mode of economic growth from resources and capital driven to knowledge innovation and improved quality of human resources**

Must Build a Resources-efficient Society

- **Economize resources and energy: by 2010, energy consumption per unit of GDP is to drop by 20%; water consumption per unit of industrial added value is to drop by 30%; coefficient of water utilization in agricultural irrigation is to rise to 0.5; comprehensive utilization rate of industrial solid wastes is to rise to 60%**
- **Develop resources and energy-efficient technologies and industries**
- **Create resources and energy-efficient life style**

Must Build Environmental Friendly Society

- **To basically bring the deterioration of eco-environment under control: **By 2010, the total volume of major pollutants is to be reduced by 10%, forest coverage is to reach 20%, and obvious achievements are to be made in the control of greenhouse gas emission****
- **Make protection of our environment a national policy**
- **Further perfect laws and regulations on environmental protection and strictly implement them**
- **Make environmental protection a responsibility of both government and enterprises alike, and subject to public supervision**
- **Vigorously develop environmental friendly materials, techniques, products and process technologies**

Must Strive to Achieve Sustainable Development

- **Must keep low population growth**
- **Maintain continuous growth of personal wealth**
- **Use technological progress to offset the diminishing marginal benefits of investment**
- **Balance deforestation and afforestation**
- **Limit pasturing to the grazing capacity of grassland**
- **Limit aquatics fishing within the range of natural replenishment**

Must Achieve Sustainable Development

- **Keep the dynamic balance between the utilization and replenishment of freshwater resources**
- **Maintain the balance between soil erosion caused by human activities and natural protection ability of soil**
- **Keep the balance between the consumption and replenishment of exhaustible resources**
- **Keep the balance between the release and fixation of greenhouse gases**
- **Keep the balance between the production of wastes and their recycling as resources**
- **Keep the balance between the rate of pollution and its control**

Must Achieve Sustainable Development

- **Keep the balance between the value of “ecosystem services” and rate of economic growth**
- **Keep the balance between regional environment protection and development**
- **Keep the balance between national efficiency and fairness**
- **Bring natural population growth gradually to zero**
- **Bring depletion of resources and energy gradually to zero**
- **Make rate of eco-environment degradation gradually to zero**

Building a Harmonious Society

- **Harmony between the urban and rural**
- **Inter-regional harmony**
- **Harmony between domestic and global development**
- **Harmony between human individuals**
- **Harmonious sustainable development between today and future generations**
- **Harmony between Man and Nature**

Inherit Traditional Culture and to Revitalize the Chinese Civilization

- **Unity between Heaven and Man**
- **Interpersonal trust, friendship, cooperation and joint-progress**
- **Harmonious families, neighbors and society**
- **Of nations, should cooperate each other on the basis of mutual respect, equality, mutual benefits, peace and harmony for win-wins**
- **In the world's rich cultural diversities, nations should promote communications, exchanges and understandings for better civilization on the basis of mutual respect**

4



Strengthen Innovation Capacity and Build an Innovation-oriented Country



An Increasing More Important Role of Science and Technology in Social Economic Development

- **Knowledge based economy**
- **Scientific and technological progress develops by leaps and bounds**
- **Knowledge has become the most important resources and driving force**
- **Science and technology has become the corner stone and engine for today's social and economic development**

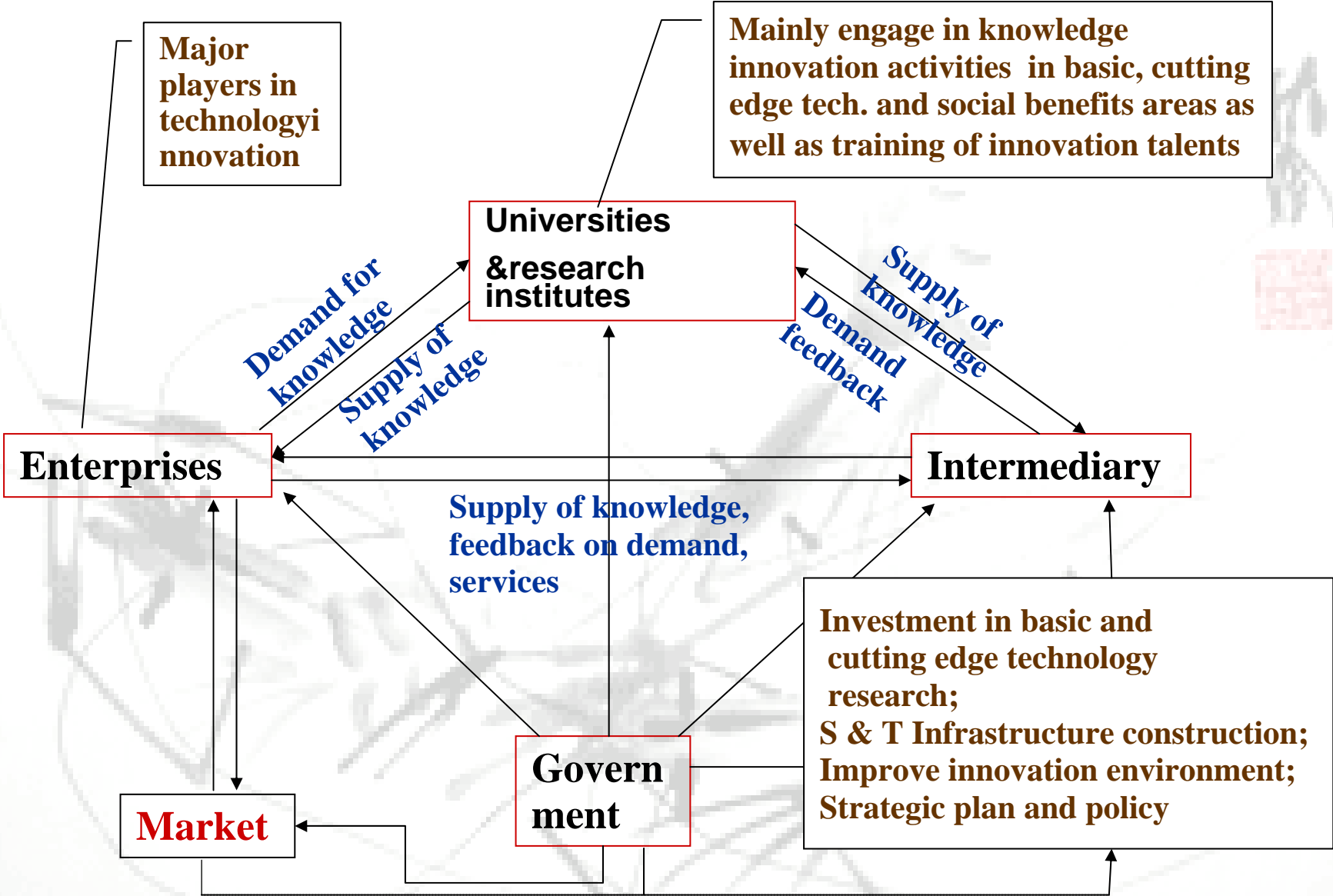
Whoever creates knowledge, technology and human talents will be in an advantageous position to take the lead in the world's peaceful development and competitive cooperation

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- **The function of Science is to cognize the rules of nature and to reveal the truth**
 - **The role of technology is to create new modes of production and ways of living**
 - **Science and technology innovation includes:**
 - Original science and technology innovation**
 - Innovation in key technologies and system integration of key technologies**
 - **For developing countries, it should include:**
 - Re-innovation on the basis of introduction, digestion, and absorption**
 - **All innovation activities are inseparable from international exchanges and cooperation**

China's Major Scientific Policy for Next 15 years

- **More Investment in R&D: Current R&D input percentage of GDP is only 1.3%. By 2010, it is to reach 2.0%. By 2020, to 2.5%**
- **Further improve the legal system, formulation of policy and cultural atmosphere**
- **Respect and protect IPR, and build up market economic environment that is open, fair and based on law**
- **Promote enterprises to be major players in technology innovation system that incorporates industry, universities and academia**
- **Construct a highly efficient national innovation system with Chinese characteristics that is conducive to knowledge innovation, technology innovation and industrialization**

Diagram of China's National Innovation System



Priorities in Basic Research

- **Quantum structure and information**
- **Molecular and systems biology**
- **Energy and environment sciences**
- **Nanotech and materials science**
- **Brain and cognitive science**
- **Astrophysics**
- **Mathematics and systems science**
etc

Priorities in Application Fields (To meet the needs of China)

- **Energy saving, high-efficiency conversion and application, renewable, CCT, alternative and advanced nuclear power etc.**
- **Technologies for saving, recycling, extending and recovery of resources**
- **R&D related to population, health, hygiene and disease control and bio-safety**
- **Cross-disciplinary R&D of agricultural technologies**
- **New generation of microelectronics, electronics and their material devices, and new generation of computer network technology**
- **Advanced materials, advanced manufacturing and process techniques, high performance materials and processes that are resources-saving and environmental friendly**
- **Eco-environment, natural disasters and global change, disaster prevention and control as well as disaster restoration**

Priorities in Application Fields

- **Space and marine science**
- **Research on national, social, information, life and environmental safety**

Strengthen infrastructure and create a innovation environment

- **Strengthen the construction of scientific infrastructure such as innovation platform, network, field stations and large facilities**
- **Strengthen the build-up of scientific ethics and morality**

Building an Innovation-oriented Country (Goal of 2020)

- **Total R&D investment will reach 2.5% of GDP**
- **Contribution by science and technology to social economic development will reach 60 % (Now about 40%)**
- **Reliance on foreign technology will be less than 30% (Now about 60%)**
- **Contribution to world S&T will be obviously much higher**
- **Consumption of energy and resources per unit of GDP will significantly drop, so will the discharge of pollutants**

China is making big efforts in enhancing its innovation ability and in building it into an innovation-oriented country. This not only symbolizes that China has entered into a new stage of development, but also marks the opportunity of China's more contributions to the world, particularly to the sustainable development and prosperity in Asian Pacific region. China needs and will further facilitate, develop and deepening cooperation with Asia-Pacific countries particularly with Australia in science and technology, culture and economic trade

Thank you!