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Feature of Innovation System and Innovation Policy Trend in China

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I. Basic Feature of China Innovation System

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Ⅰ. Basic Feature of China Innovation System

Basic feature of China innovation system

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- **China's Reform and Opening-up Policy for 30 years**
  - Planned Economy - Market economy
  - Science & technology system reform - Building national innovation system
  - Relatively complete scientific research and technology development system has been built
  - The innovation system taking enterprises as main part, with the combination of production, learning and research has been basically formed

Basic feature of China innovation system

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- **Since the 90's, R&D expenditure has increased faster than GDP's increase**
  - ❖ R&D total expenditure has accessed to the world's top 5
  - ❖ R&D input intensity has reached the level of middle-income countries: more than 1.4%
  - ❖ The total number of scientific and technical personnel has ranked the top in the world

Basic feature of China innovation system

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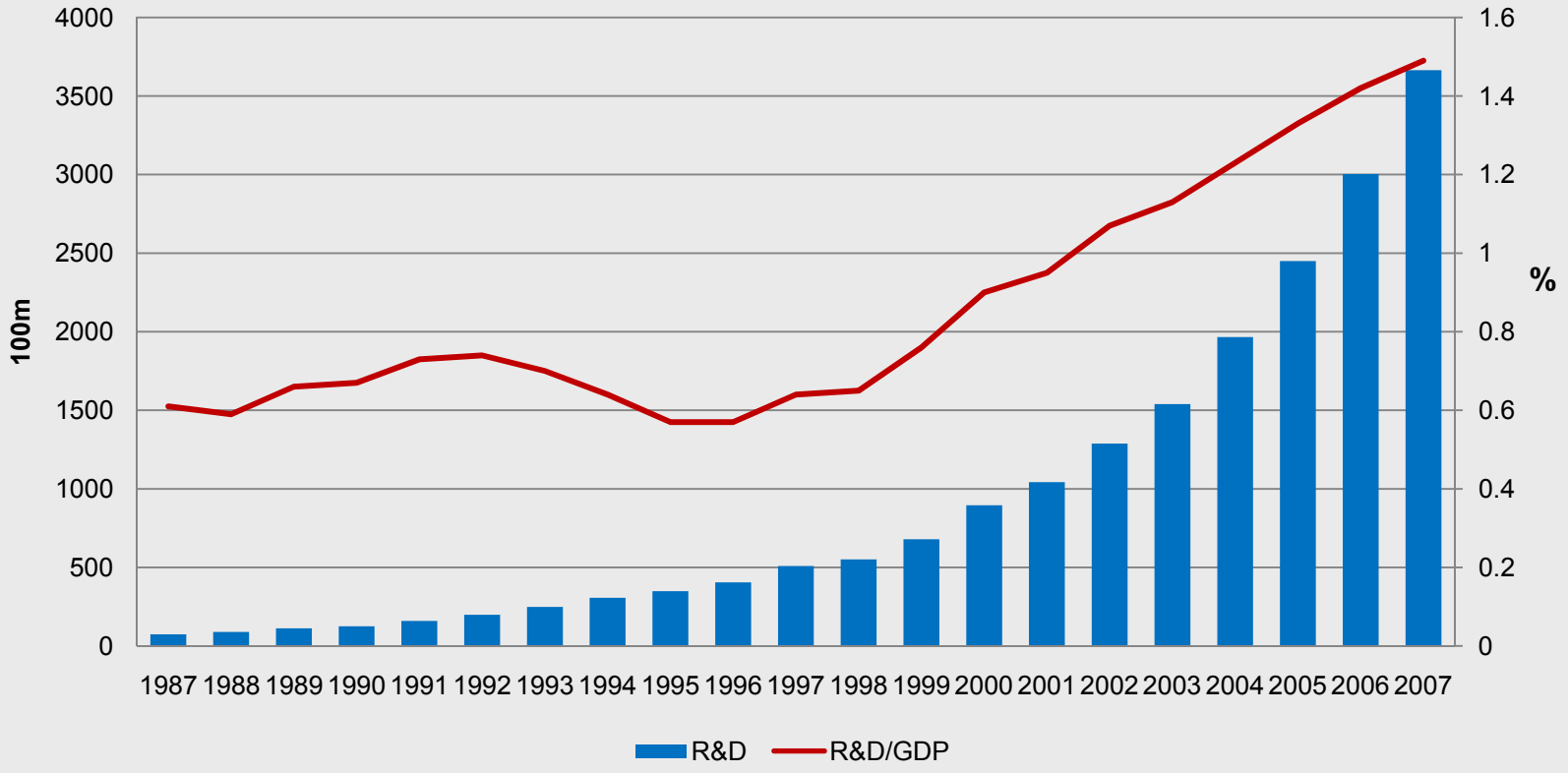

Picture 1 R&D and R&D strength

Basic feature of China innovation system

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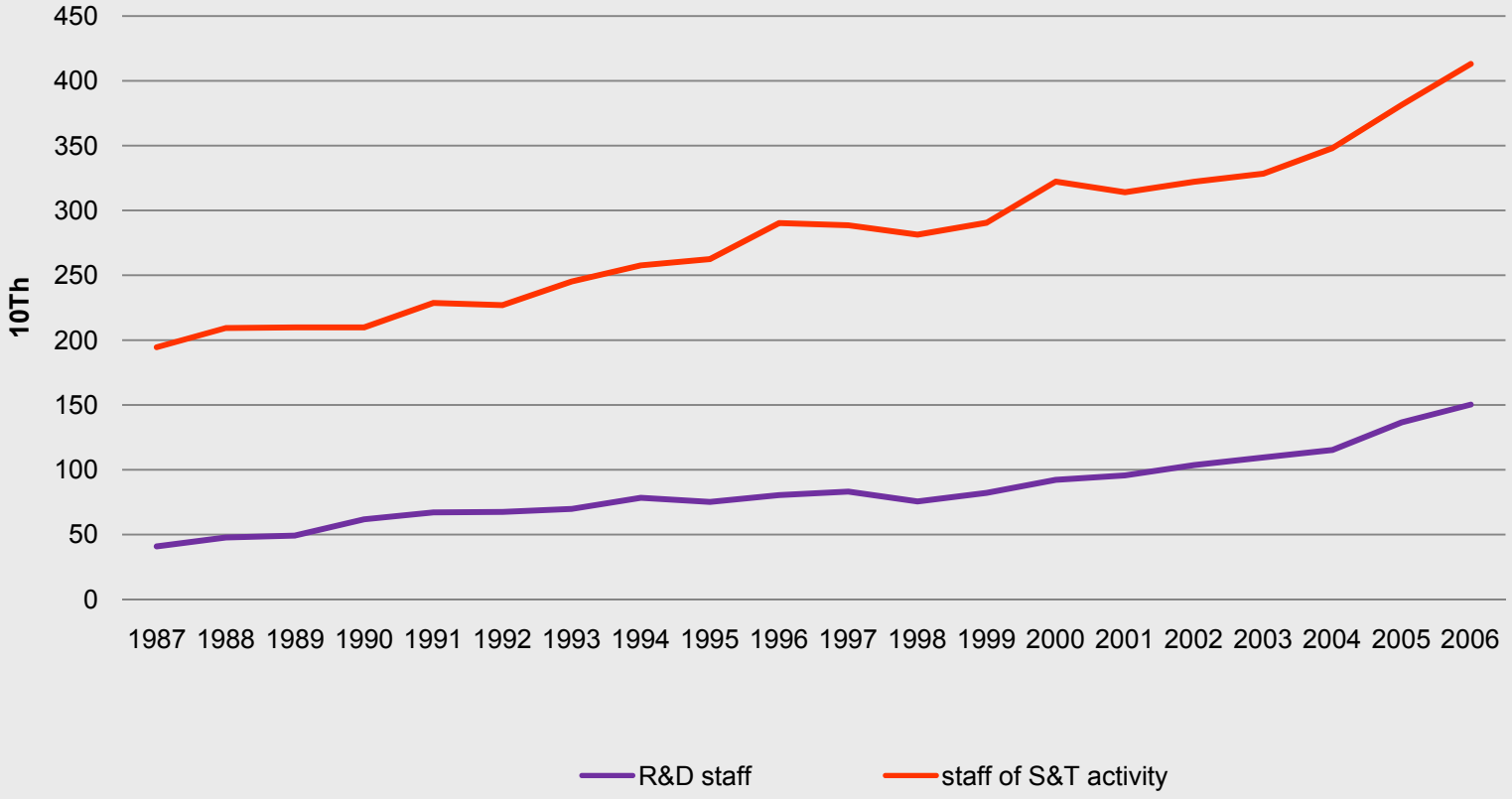

Picture 2 S&T staff in firms

Basic feature of China innovation system

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- **Enterprises have become the major force for R & D expenditure, the combination of production, learning and research has been strengthened**
  - The reform of scientific research institutions
- **The enterprises share increased in innovation input during the year 1987 to 2006**
  - implemented R & D: 30% -71%
  - The proportion of personnel in scientific and technological activities: 36% -46%
  - The amount of scientific and technological activities funds: 27% (1990) -66%
- **Scientific research institutions R & D: 55% -18.83%**
- **University R & D total expenditure was substantially increased by about 10%**

Basic feature of China innovation system

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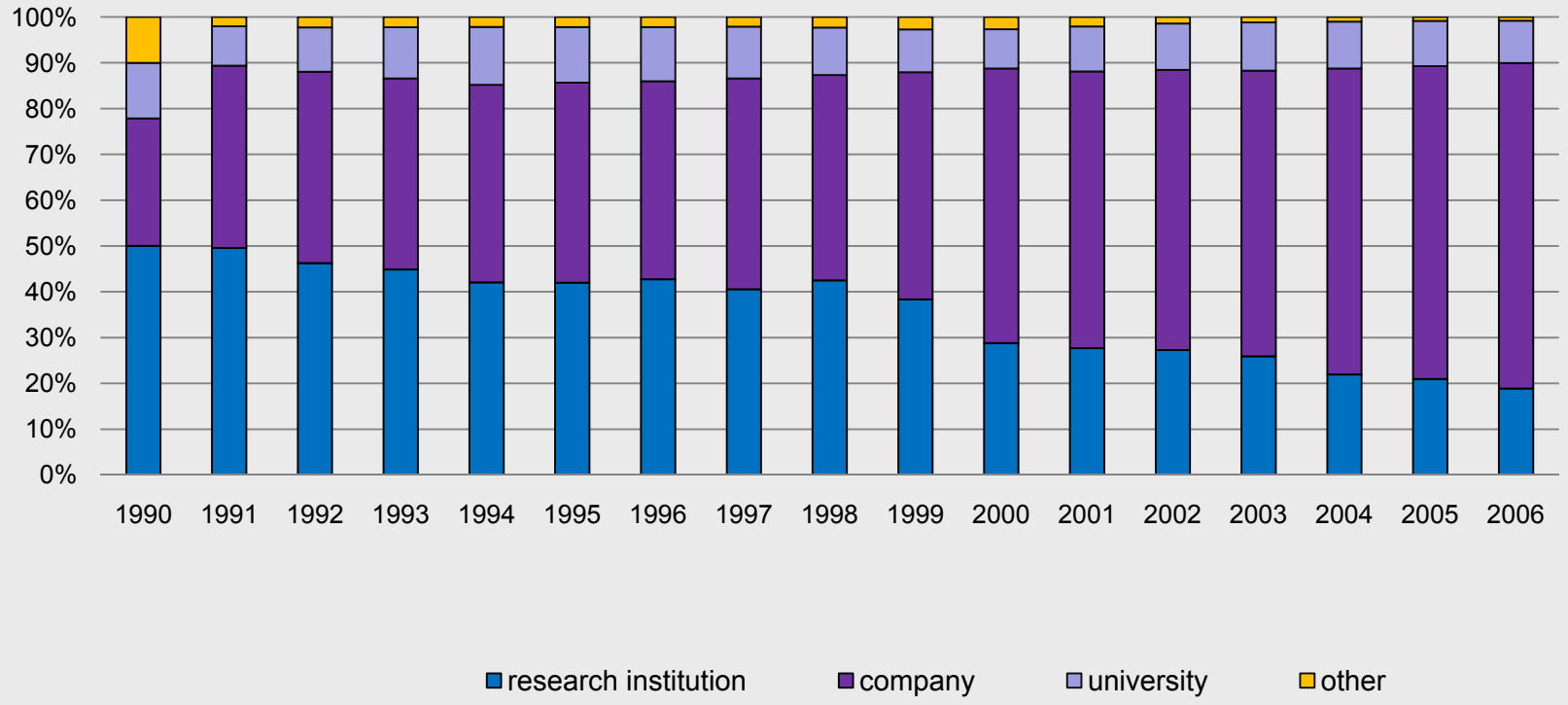

Picture 3 Distributing figure of R&D expenditure's implementation

Basic feature of China innovation system

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- **Enterprises are lack of innovation abilities**
  - R&D / sales income of large-scale industrial enterprises: 0.6%
  - Most of the enterprises are lack of their own intellectual property rights
  - Lack of business model innovation
- **The combination of production, learning and research in various forms is gradually taking shape**
  - Taking short-term cooperation, commissioned research and development as major forms

Basic feature of China innovation system

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- **Technology development strategy: combining the independent research and development and the introduction of technology**
  - ❖ R & D takes the experimental development as major part, the scientific research total expenditure has increased, but the share is relatively lower
  - ❖ In 2006, the ratios of basic research, applied research and experimental development were 5.19%, 16.8% and 78.01% respectively
  - ❖ The technology introduction focus has transferred from equipment import to the introduction of technology

    ○ 1991－ 2006：the technology cost ratio in technology introduction contract was 14% -67%

    ○ 2000－2005: the amount of foreign companies technology introduction contracts: 40% -45%

Basic feature of China innovation system

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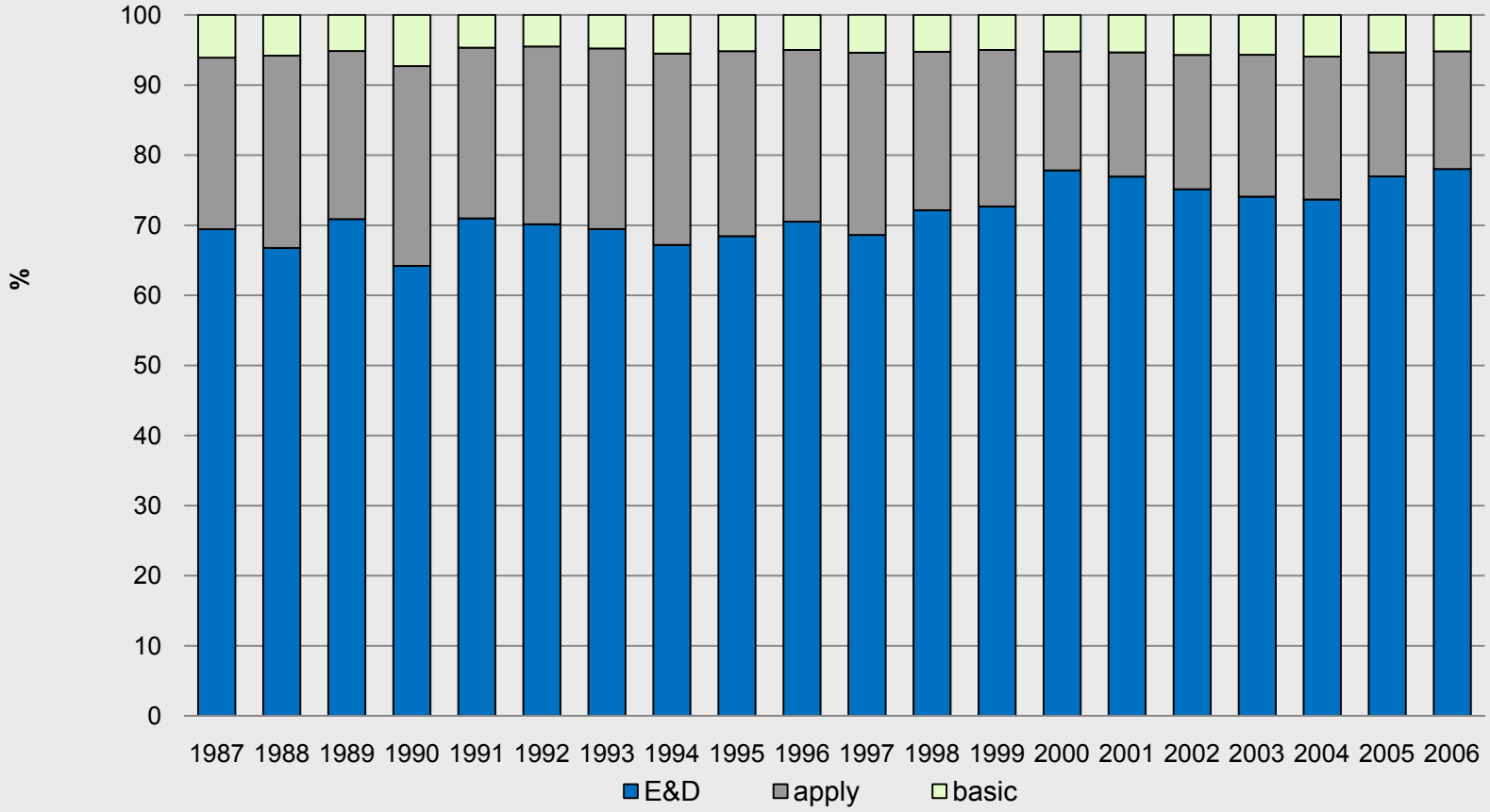

Picture 4 structure of R&D

Basic feature of China innovation system

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- **The technology market is relatively active, enterprises are the important transactions subjects.**
  - 2000—2006, technical trading contracts amount annually grew 35%
  - Enterprises are the main body of technical trading, taking technology development and technology services as major parts
  - In 2006, enterprises technology purchase accounted for 84%, domestically-funded enterprises accounted for 77% of all enterprises

Basic feature of China innovation system

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- The framework of regional innovation service system has been basically established.
  - With the guidance of Central Government, mainly based on the local efforts, the regional innovation service system has been established
  - The establishment of various types of technology enterprise incubators: in 2007, there were 614 incubators, 44,750 enterprises were in the incubators, with 933,217 employees, totally 23,394 graduate enterprises
  - Set up technology transfer institutions:
    - Universities and research institutes set up national technology transfer centers
    - Set up technology trading market based on local efforts
  - Set up productivity center. In 2006, there were 1,331 productivity promotion centers.
  - Venture capital and business establishment investment institutions: by the end of 2005, there were 319 such institutions

Basic feature of China innovation system

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- **Has become the key region of the R & D internationalization, foreign-funded enterprises take active innovation activities in China**
  - In 2005, foreign-funded enterprises R & D expenditure accounted for about 19% of Chinese large and medium-sized enterprises R & D expenditure
  - The foreign direct investment in scientific, technical services sectors has grown rapidly
  - The number of foreign R & D institutions has increased: in the end of 2006, there were about 1,000 R & D institutions
  - 2004-2005 survey of United Nations Trade and Development Organization: more than half of the surveyed companies carried out R & D activities in China, India and Singapore
  - The number of multinational companies' R & D institutions in China rank the third in the world, following the United States and Britain

Basic feature of China innovation system

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- **Intellectual property rights activities enter into the active period: the number has increased, the quality needs to be improved**
  - The number of accepted patent applications ranks the fifth in the world
  - PCT patent application enters the world's top 8
  - The total number of various types of trade mark application consecutively ranks the first in the world for four years
  - The number of international trademark registration applications enter the world's top 8
- **Compared with the main intellectual property rights countries, there is a big distance**
  - The lack of ability to use the intellectual property rights system
  - The quality of intellectual property rights needs to be improved: the proportion of invention patents is lower, the proportion of international patents and tripartite patents in the world is low.
  - The number of trademarks is big, but the world's well-known brands are few
  - The level of intellectual property rights protection needs to be improved

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II. Main Trend of China Innovation Policy

Main Trend of China Innovation Policy

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- **China's innovation system building has entered the strategic transition period**
  - ❖ Innovation policy will mainly aim at the transition of scientific research activity policy to the system building which has impact on innovation
  - ❖ The transition from the emphasis on the number of scientific and technological input to the output effect improvement of scientific and technological input
  - ❖ The transition from encouraging the increase of innovation direct elements input to the balance of various related elements input

Main Trend of China Innovation Policy

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- **Transfer from the science and technology policy to innovation policy, increase the coordination of innovation policy**
  - The Innovation policy is not only the science and technology policy, but also the result of various policies comprehensive function
  - It will strengthen the policy coordination between government departments, the integration of innovation policy and industrial policy, trade policy, education, fiscal and monetary policies, as well as other policies
  - Strengthen the policies and actions coordination between central and local government, make ensure that during the implementation process, all departments' policies could get the support and co-operation from local government
  - Break the departments' bounds, make the innovation policies

Main Trend of China Innovation Policy

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- **While increasing the science and technology input, pay attention to the improvement of innovation input efficiency**
  - Improve the government science and technology allocation mechanism, improve the efficiency
  - Establish the science and technology plan's transfer and proliferation mechanism, strengthen the government-funded technology's responsibility transfer, incentives and supervision system
  - Establish the joint R & D mechanism of common technology and sharing technology
  - Establish the long-term mechanism which takes enterprises as the major part, with the combination of production, learning and research, promote the research achievements transfer of universities and scientific research institutes to enterprises
  - Establish the fairly competitive market order, play the role of market resources allocation

Main Trend of China Innovation Policy

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- **To encourage the combination of supply and demand, strengthen the innovative demand policy**
  - Effective innovation means to achieve commercial success in the market
  - The market expansion of innovative technologies and products is the best support for innovation
  - To strengthen and encourage the use of innovative products and technology policy, establish the innovation risk-sharing mechanism
  - To improve the enterprise's market exploration ability

Main Trend of China Innovation Policy

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- **To promote the balanced supply and development of innovative elements**
- **To promote the balance of funds input and human resources input**
  - ❖ It should strengthen the education input, improve the education model and optimize the education structure
  - ❖ To form the talents structure that meets the innovation need
  - ❖ To establish the talent evaluation system and incentive policy that take innovation as the target
- **Various institutions equally get the innovative resources**
  - ❖ To establish the fairly competitive market environment, promote the private enterprises, small and medium-sized enterprises to equally get innovative resources

Main Trend of China Innovation Policy

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- **The balance between government and market in the area of resources allocation**
  - To play the role of market mechanism in resources allocation
  - Be effective to play the role of government: science and technology have strong outside character, there is the field of market malfunction, it is impossible to rely on market mechanism for resources allocation
  - In stead of playing a role in the market, the government can play guiding and complementary roles in the field which the private enterprises can not afford to and would not like to devote.
  - China is in the period of transition, the government plays an irreplaceable role in the areas of system reform and system building.

Main Trend of China Innovation Policy

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- **To implement the national intellectual property rights strategy, play the role of intellectual property rights system in innovation promotion**
  - ❖ In June 2008, the State Council issued the "National Intellectual Property Rights Strategy Outline"
    - ○ Objective: to enhance our national intellectual property rights creation, application, protection and management capabilities, build a innovation-oriented country
  - ❖ To strengthen the protection of intellectual property rights: impenetrate the links of creation, application and fighting against the rights infringement
  - ❖ The combination of protection and abuse restriction

Main Trend of China Innovation Policy

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- **To establish more open innovation system, promote the international cooperation about science and technology, as well as innovation**
  - To carry out the technical projects cooperation at state level
  - To carry out the non-governmental co-operation extensively
  - To strengthen the personnel and information exchanges
  - To overcome the technical barriers, improve the actual effects of cooperation
  - Around the areas of common concern, China, Japan and South Korea strengthen the cooperation in science and technology

Thank you !