



Impact of China's Science and Technology System Reform on Rural Development and Poverty Reduction

*Case study report prepared for
UNAPCAEM*

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OUTLINE



Background of the Reform on S&T System in China



Objectives of the S&T System Reform



Policies of the Reform and Their Implementation



Achievements



Impact of the S&T System Reform on Rural Development and Poverty Reduction



Case Studies



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Background of the Reform on S&T System in China

The science and technology system of China used to be a rigid one, characterized by rigid planning and separation was separated from the economy. From 1985, a full-scale reform was carried out in China's S&T system , and its impact has been far-reaching, bringing about tremendous favorable outcomes, including improvements in the rural areas.



1. The pre-reform S&T system

The disadvantages of pre-reform S&T system is:

- Oriented towards the planned economy, there existed a big gap between scientific research and economic development;
- Restrictions on the researchers existed;
- Due to the insufficient fund appropriation from the central government to R&D, research results were not applied to industries such as in the agricultural sector, and formed a vicious circle.



2. Main factors leading to the reform

- 1) The previous S&T system, in its tight planned fashion, proved to be inefficient in transforming R&D results to increased productivity, and thus was unable to provide the needed support to the overall social and economic development.
- 2) China's restricted S&T system negatively affected China's competitiveness in the international community.
- 3) China's overall economic reform created a favorable background for the reform on its S&T system.



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Objectives of the S&T System Reform

Since release of the *“Decisions on the Reform of Science and Technology System”* in 1985, the S&T endeavors were carried out in three levels:

- Serving the economic construction;
- Following and developing high Technologies;
- conducting basic research.



Objectives of the S&T System Reform

1. Facilitating economic development through narrowing the gap between scientific research and its application;
2. Revitalizing the initiative of scientific researchers;
3. Mobilization of multi-channel financial resources;
4. Poverty reduction in rural areas through technology;
5. Promoting the development of township enterprises and other small and medium sized enterprises (SMEs), as well as the private sector;
6. Prioritizing high technology research and enhancing rapid application of its research results;
7. Capacity building of research institutions



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Policies of the Reform and Their Implementation

- Basic principle: the economic construction must rely upon science & technology; while science & technology endeavors must be oriented towards economic construction.
- Implementation of the reform so far could be divided into three phases.



Policies of the Reform and Their Implementation

1. Phase I (1985-1992): Marked by the release of *“Decisions on the Reform of Science & Technology System”* in 1985.
2. Phase II (1992-1998): Marked by a series of laws and regulations were promulgated, including *Law on the Advancement of Science and Technology* (1993), and *Decisions on Promoting the Advancement of Science and Technology* which was issued by the Central Government in 1995.
3. Phase III (1998 to present): Marked by the national policy of “revitalizing the country through science and education”, and a series of laws including *the Patent Law* .



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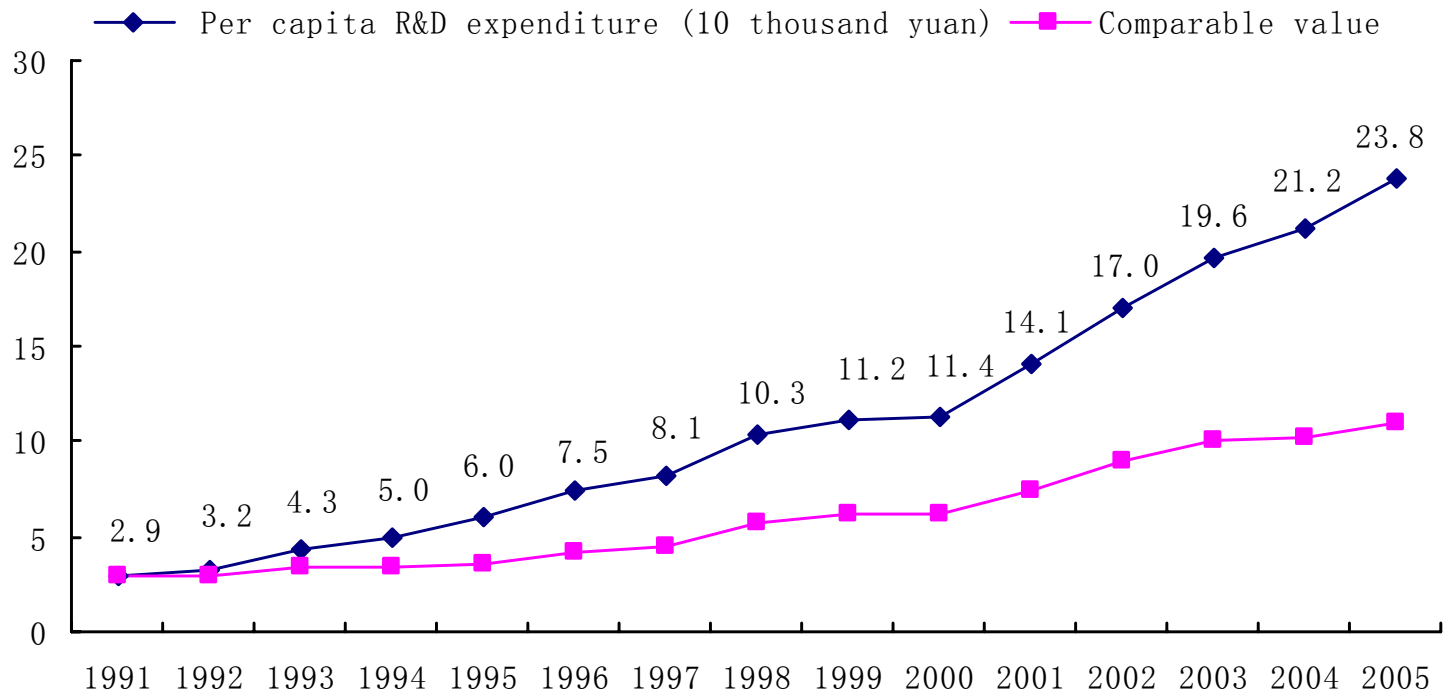


Achievements

1. Closer integration of S&T with economy
2. Enhancement of the creativity of S&T personnel
3. More favorable layout of the S&T activities to the economic development
4. Set-up of a new S&T planning and management system to accommodate the requirements of market economy
5. Establishment of a modern R&D institute system
6. Establishment and development of High & New Tech Development Zones
7. Enhancement of scientific literacy of the public

Achievements

R&D investment per researcher in governmental institutes from 1991 to 2005:



(Source: S&T Yellow Book, 2005, Ministry of Science and Technology of China)



Achievements

Statistics of the 188 market-oriented institutes who are amongst the first group to undergo the reform^[1].

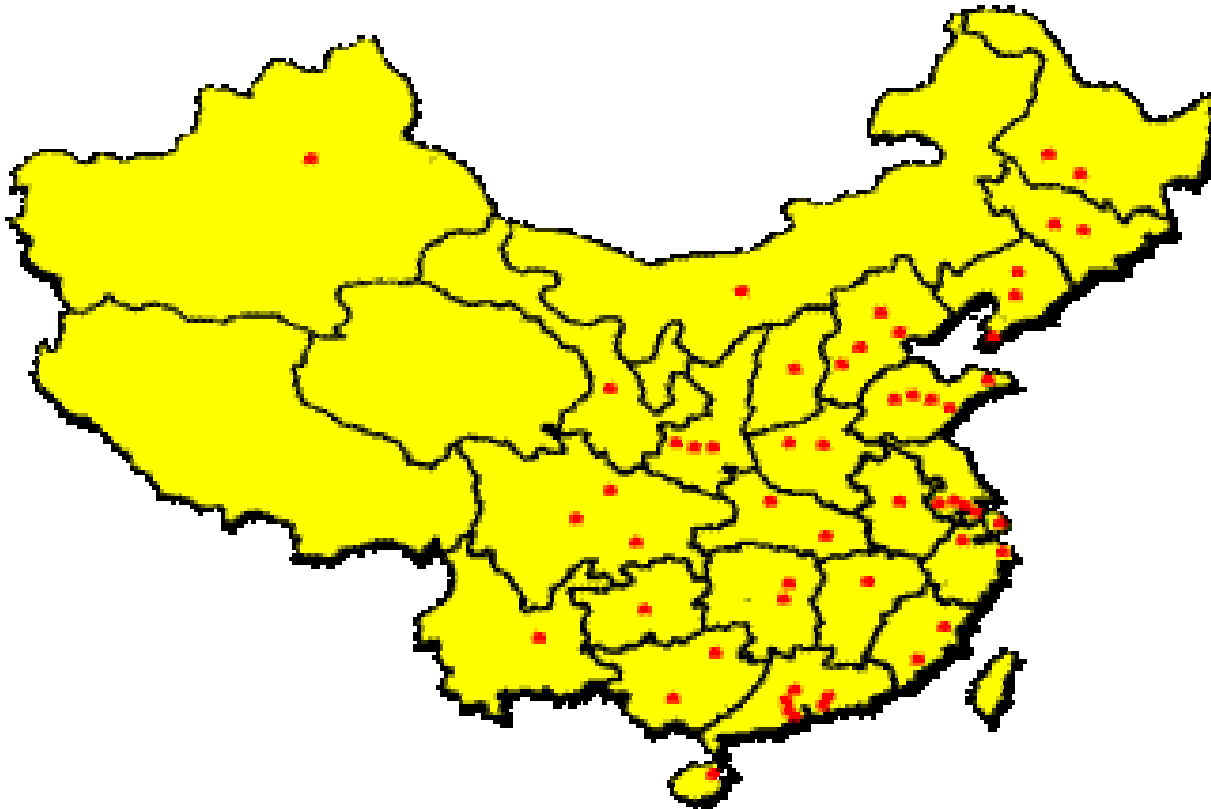
Items Year	Gross revenue	Total profit	Investment on R&D	Government Fund received
1999	10.59 billion yuan	0.48 billion yuan	1.01 billion yuan	0.45 billion yuan
2002	14.89 billion yuan	1.1 billion yuan	1.52 billion yuan	0.68 billion yuan
2005	58.9 billion yuan			2.25 billion yuan
1999-2002 Percentage increased	40.6%	127.8%	51.2%	51%
1999-2005 Percentage increased	456.2%			400%

* 100 RMB yuan equals roughly to 12 US dollars in 2002.
(Source: *China S&T Indicators*, 1999-2002, Ministry of Science and Technology of China)

^[1] The total number of institutes in the first group is 242.

Achievements

map of 54 national HNTDZs:





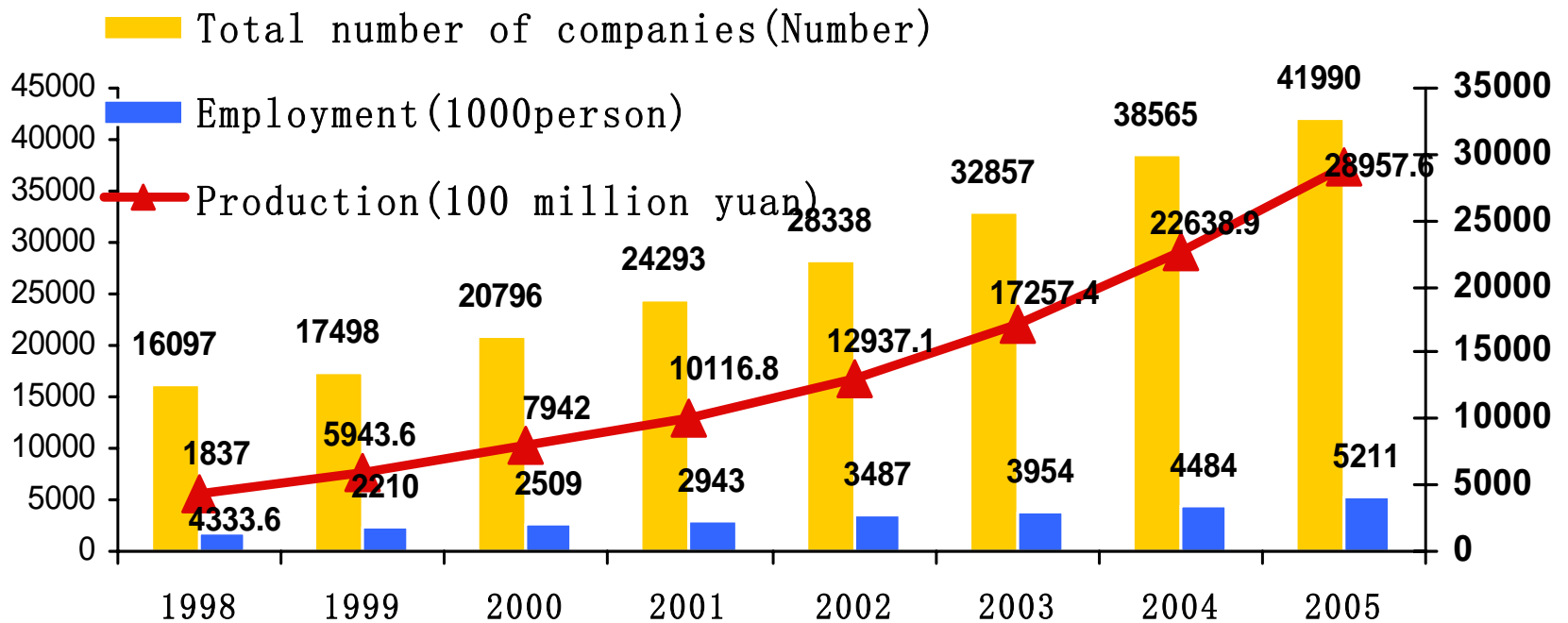
Achievements

Statistics of national HNTDZs :

	1998	1999	2000	2001	2002	2003	2004	2005
Total number of companies(Number)	16097	17498	20796	24293	28338	32857	38565	41990
Employment (10000 persons)	183.7	221.0	250.9	294.3	348.7	395.4	448.4	521.1
Total production(100 million yuan)	4333.6	5943.6	7942.0	10116.8	12937.1	17257.4	22638.9	28957.6
Total output value added (100 million yuan)	1060.7	1476.2	1978.8	2621.3	3286.1	4361.4	5542.1	6820.6
Total revenue(100 million yuan)	4839.6	6774.8	9209.3	11928.4	15326.4	20938.7	27446.3	34415.6
Net profit (100 million yuan)	256.2	398.7	597.0	644.6	801.1	1129.2	1422.8	1603.2
Taxes (100 million yuan)	220.8	338.6	460.2	640.4	766.4	990.0	1239.6	1615.8
Export (100 million USD)	85.3	119.1	185.8	226.6	329.2	510.2	823.8	1116.5

Achievements

State-level High and New Tech Development Zones (HNTDZs)





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Impact of the S&T System Reform on Rural Development and Poverty Reduction

- 1. Popularization of new technologies**
- 2. Training of farmers**
- 3. Poverty reduction through science & technology**
- 4. Promoting the development of township enterprises**
- 5. Introduction of market mechanism in poverty reduction through S&T**



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Case 1: The Spark Program

- In 1986, the Spark Program was launched as the first national program targeted at vitalizing rural economy through the application of practical agricultural technologies.
- It was implemented by the State S&T Commission (SSTC) following the approval of the State Council.
- It became one the major components in the national economic and S&T development.



The Spark Program: Contents

1. Support many advanced and practical technological projects which do not require heavy investment but yield quick results;
2. Set up a group of demonstrative rural enterprises which are empowered by S&T, to lead the development of township enterprises and serve as a model for transition to S&T industries;
3. Develop series of whole-set equipment suitable for the rural areas and agro-based SMEs, and organize their mass production;
4. Train groups of rural technologists, rural managers and farmer-turned entrepreneurs;
5. Develop high-yielding, high-quality and high-efficiency agriculture, promote welfare in the countryside, to lead the development of rural economy.



The Spark Program: Main approaches

The Spark Program, characterized by the integration of S&T and economy, S&T and finance, the central and local governments, and the government and farmers, opened up a new path for China's rural development. The main approaches include the following:

1. Governmental support
2. Multi-channeled financial resource mobilization
3. Market orientation
4. Involvement of S&T personnel
5. Setting up key industries
6. Training of farmers



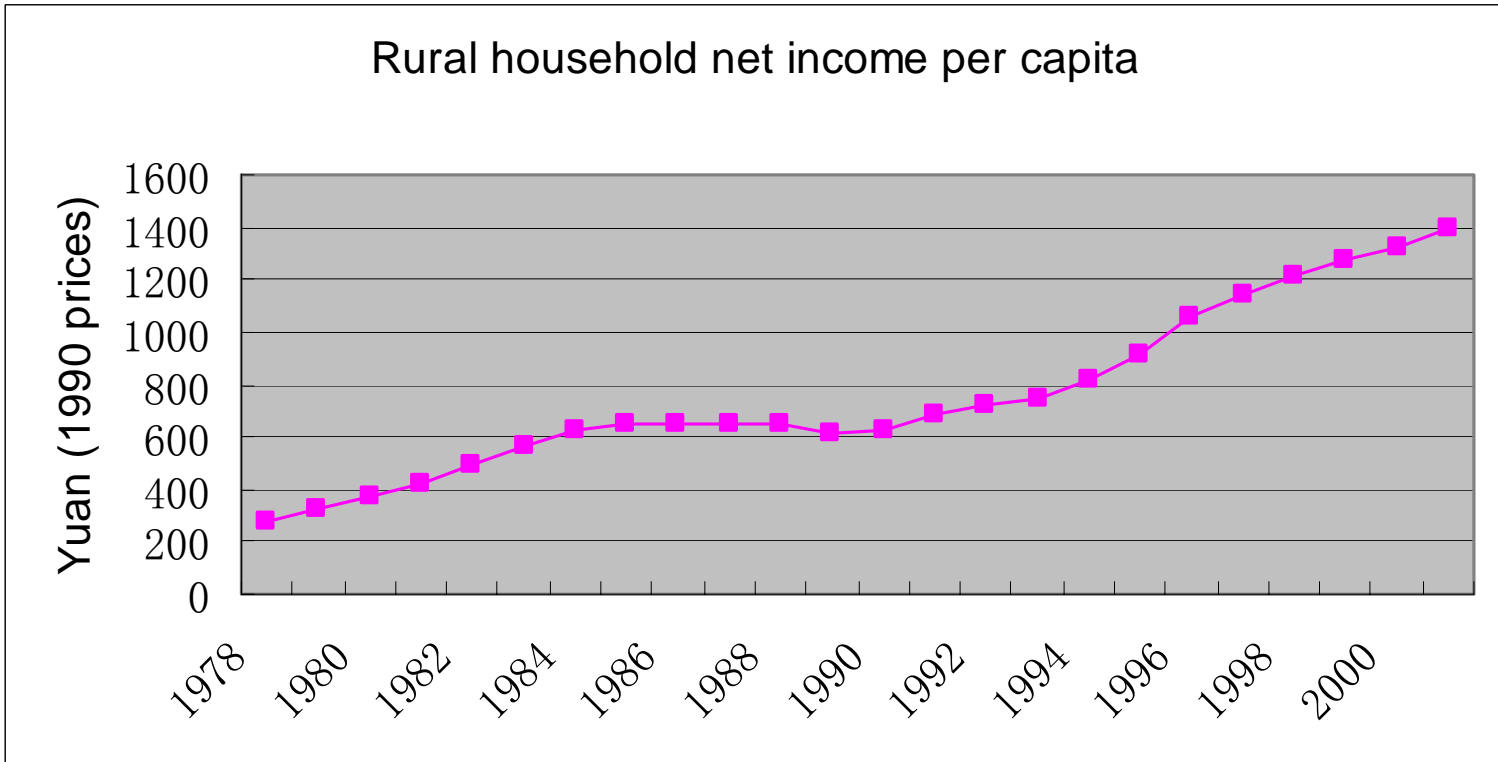
The Spark Program: Achievements

Currently the Spark Program and poverty reduction through science & technology is implemented in 90% of the counties in China. The achievements:

1. Outlook of the countryside has been changed;
2. The rural industrial structure was optimized, and this sped up the transformation from conventional agriculture to modern agriculture;
3. Scientific literacy of the farmers improved, generating more income.

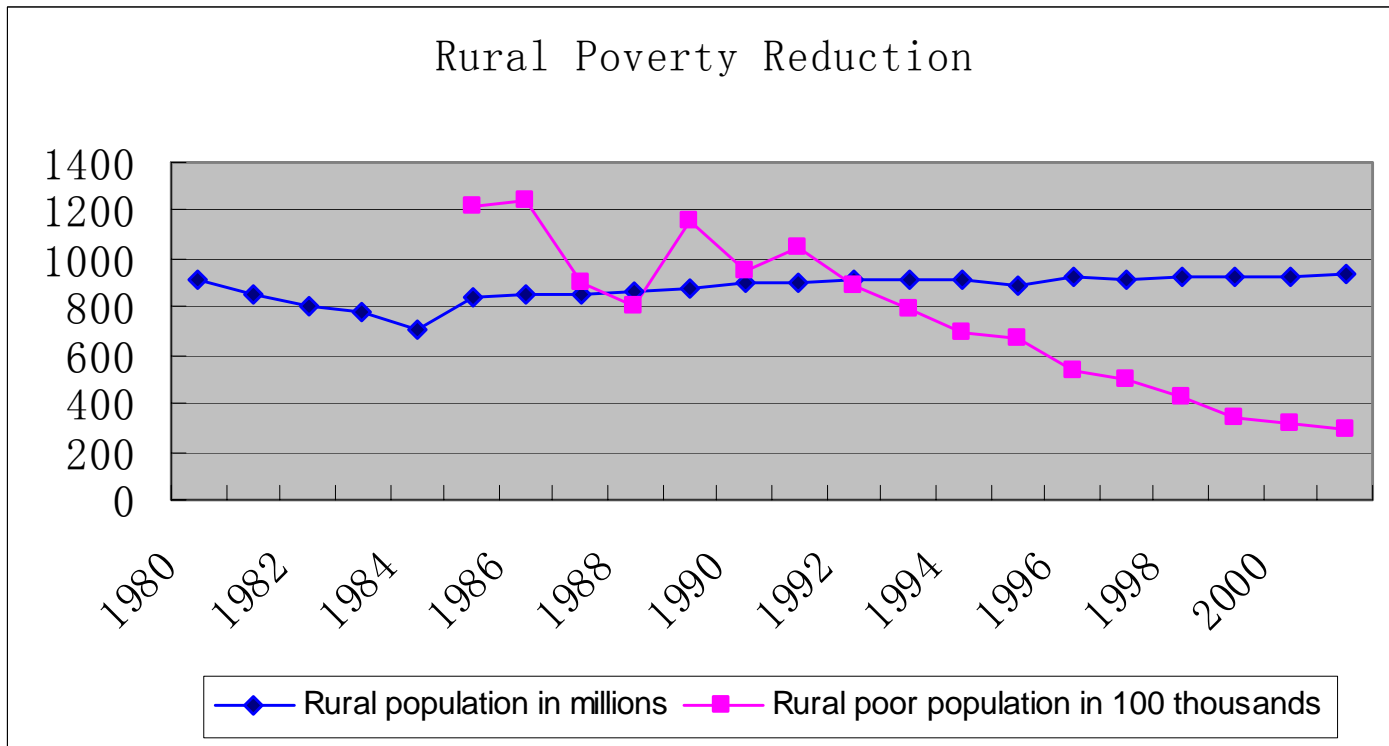


The Spark Program: Achievements





The Spark Program: Achievements





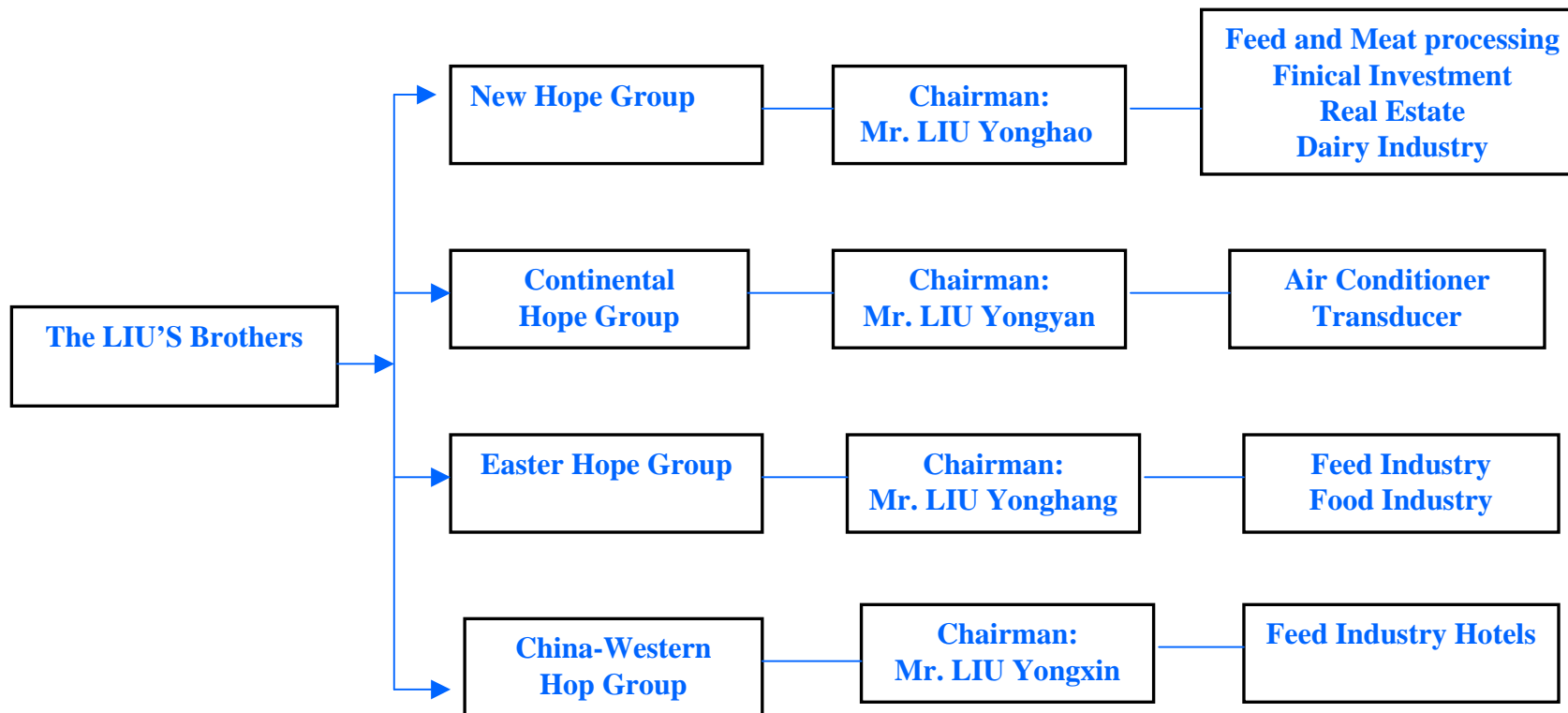
Case 2: The Legend of the Hope Group

The Hope Group, is a large company that started as a small quail breeding agro-based enterprise in the rural areas of Sichuan Province.

“Hope of revitalizing China’s economy lies in socialist entrepreneurs”

_ Dr. SONG Jian, former State Councilor and Chairman of the State S&T Commission (SSTC).

The Legend of the Hope Group





The Legend of the Hope Group

1. Taking up with China's reform: three leaps(1982-1990s-1997)
2. A path to affluence by way of S&T
3. The Hope management conceptions



Case 3: The Yangling Agricultural High and New-tech Industry Development Zone

1. The Establishment of a Demonstration Base in a Less-developed Area for Agricultural Development in Arid and Semiarid Areas
2. Integration of central and provincial S&T resources
3. Integration of research and industrialization
4. Exploration of the path of development

Overview of Yangling Agricultural High and New-tech Industry Development Zone

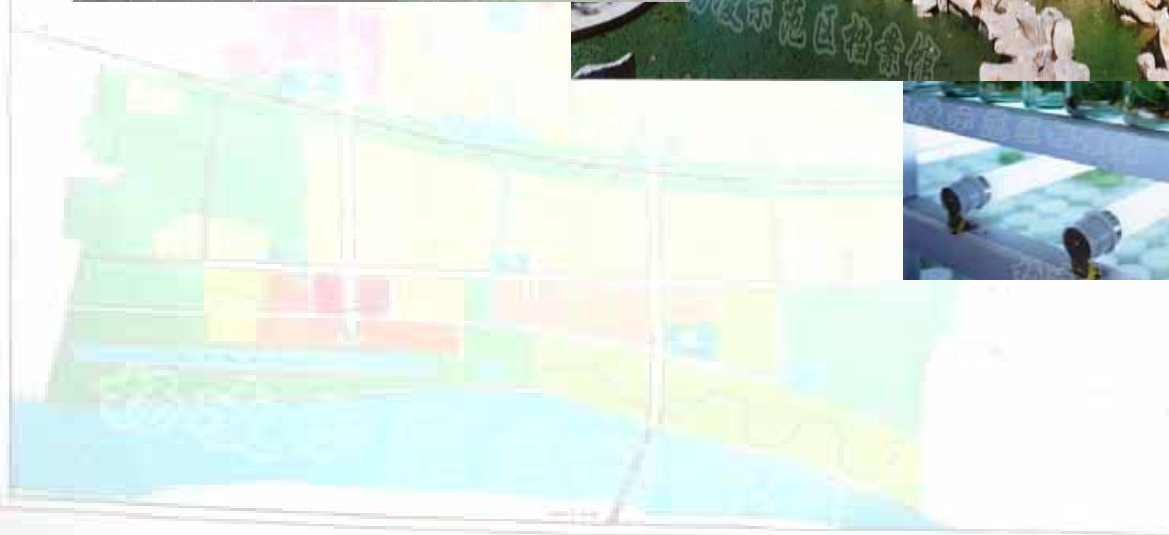
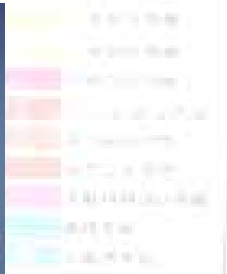
杨凌农业高新技术产业示范区总体规划(1997-2010)



用地规划图

编号

比例尺



1997年12月



Conclusions

Throughout the past twenty years' of S&T system reform, China achieved remarkable developments even in the rural areas. In summary:

1. Governmental policy is essential in outlining a nation's strategy, objectives and programs for promoting scientific R&D, agricultural and rural development including poverty alleviation, and economic development as a whole;
2. Involvement of scientific personnel in rural development will facilitate applications of appropriate technologies;
3. Increased public awareness of technology among rural farmers will contribute to the dissemination and expansion of technology, and poverty reduction;
4. Governmental "seed money" may lead to multi-channel mobilization of financial resources;



Conclusions (cont'd)

5. Agro-based SMEs play a pivotal role in poverty reduction and rural development;
6. R&D endeavors must cater to the market: the R&D activities must be oriented towards the market and the national situation, and cater to the needs of social and economic development, including rural development;
7. The Agricultural High and New-tech Industry Demonstration Zone is recommended as a pilot demonstration base in incubating agro-based SMEs and facilitating the integration of R&D and agribusiness industry;
8. Technological innovation is essential in sustainable development of an enterprise.



Assertions following the S&T system reform:

- 
- the hope of agricultural development lies in the advancement of science & technology;
 - the future of Chinese farmers lies in the enhancement of their scientific literacy;
 - the outlet of rural development in China lies in the revitalization of rural areas through science and education.



Thanks

