

Torch High Technology Industry Development Center, Ministry of Science & Technology, China



Enhancing technology innovation and industrialization

- Cultivating Tech-based SMEs
- Developing Innovation Clusters
- Building an Innovative Environment

Message from the Director

In 1988, the State Council of China officially approved the implementation of the Torch Program -- a plan to develop hi-tech industries in China. As the executor of the program, Torch High Technology Industry Development Center (Torch Center) was founded in October 1989, as an independent legal entity, subsidiary to the Ministry of Science and Technology (MOST). Under the guidance of the Ministry, and devoted to the mission of “Developing High Technology & Realizing Industrialization”, Torch Center has been making daring explorations and constant innovations to promote the advancement of high-tech industries in China.



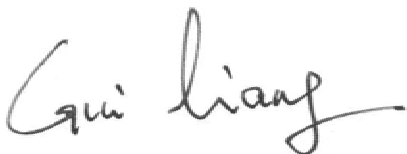
Liang Gui (Dr.), Director General

For over a decade, with the formulation and implementation of a series of policy tools such as the National Science and Technology Industrial Parks (STIPs), the Innovation Fund for Tech-based SMEs (Innofund), and Technology Business Incubators (TBIs), Torch Program has made outstanding achievements in improving the environment for innovation, allocating science & technology resources, promoting technological innovation and transformation, facilitating the integration of the economy with science & technology, adjusting the industrial structure, and strengthening regional innovation abilities. As an important driver for the commercialization, industrialization and internationalization of new and high technologies, the Torch Program has become a bright banner for the development of hi-tech industries in China.

In order to better carry out the National Plan for Medium to Long-term Science and Technology Development, realize the national goal of “strengthening indigenous innovation capacities and building an innovative country”, and accelerate the construction of technology innovation environment and industrialization of new and high

technologies, MOST has restructured the Torch High Technology Industry Development Center, by integrating the former Torch Center, the Innofund Administrative Center, and China Technology Market Management & Promotion Center. With reinforced and expanded functions, the new Torch Center has been commissioned to be a leading player in promoting the innovation environment building and high-tech industrialization in China.

In the face of new opportunities and challenges, we will continue to uphold the “Torch” banner to construct an environment focused on improving innovation in enterprises by implementing strategic tasks to promote the vigorous growth of tech-based SMEs, upgrade industrial clusters into innovative clusters, and mobilize, in a global context, the necessary forces including talent, technology, capital, etc., to make a significant contribution to the construction of an innovative country.

A handwritten signature in black ink, appearing to read 'Gui Liang', with a stylized, cursive script.

Gui LIANG (Dr.)

Director General

Torch High Technology Industry Development Center

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Mission

With the general purpose of reinforcing the overall environment for technology innovation and promoting high-tech industrialization, Torch Center seeks to achieve four major objectives by cooperating with other pertinent authorities at central and local levels.

- To perfect the support system for high-tech industrialization, focusing on promoting indigenous innovation;
- To foster the growth of tech-based SMEs and boost technological innovation in enterprises;
- To promote the development of innovation clusters and advance upgrades in high technologies;
- To mobilize innovative resources including capital, technology and talent to reinforce support for innovation and industrialization.

To realize the above goals, we will try to carry out nine pillar tasks:

- To create favorable high-tech industrialization systems and mechanisms propitious to indigenous innovation;
- To boost the capacity for independent innovation in tech-based companies;
- To strengthen the construction of high-tech industrial bases;
- To speed up the establishment of the fostering and tutorial system of technology companies;
- To intensify the construction of a service system for innovation clusters;
- To further improve the financing and investment system for high-tech industrialization;
- To promote technology transfers and business-research cooperation;
- To encourage the globalization of high-tech industries.

Areas of Activity

For the fulfillment of above-mentioned, Torch Center devotes itself to accomplish strategic tasks in three aspects including the “Seedling Cultivation Engineering” to cultivate tech-based SMEs, the “Forestation Engineering” to develop innovation clusters and other environment-building efforts to create a “fertile soil” for technology innovation and industrialization. Each activity is to be carried out by utilizing the synergic function of related policy tools under Torch Program, including Science & Technology Industrial Parks (STIPs), Technology Business Incubators (TBIs) and Innovation Fund for Tech-based SMEs (Innofund), etc.

Cultivating Tech-based SMEs

Since it has been well recognized that most innovative technologies are generated by SMEs, promoting the development of tech-based SMEs to ensure innovative headstreams is one of the strategic tasks prioritized by Torch Center. The corresponding initiative of “Seedling Cultivation Engineering” is in place to strengthen the incubating and fostering services for tech-based SMEs to lower the individual risks and costs of their innovation activities. A funding system leveraged by Innofund and a support system with TBIs as key players are to be established to facilitate this process.



▪ Innovation Fund for Tech-based SMEs

With references drawn from the experiences of industrialized countries, Innofund was set up in 1999 by the State Council as a central government funding program for technology-based SMEs. Innofund is targeted at “market failure” where government support is needed and it mainly supports projects in their early stages of commercialization with innovative technology and good market potential, but are unattractive to commercial capital. The ultimate goal of Innofund is to leverage other financial capital for innovative start-ups.

Since its establishment, Innofund has received more than 30,000 applications, and has provided a total of 5.3 billion Yuan to almost 8,000 projects in various technology sectors (refer to Figures 1 & 2). In the mean time, 17 times more funds have been leveraged by Innofund from local governments and social forces. With the support of Innofund, over a hundred technology-based SMEs, with Suntech Power as a good example, have been listed on domestic and overseas stock exchanges.

After seven years of operation, a national electronic management system and a service network for Innofund has been set up. As a major government funding source for tech-based SMEs, Innofund has become an important component of the national innovation system and has achieved remarkable results in generating both economic and social benefits.



■ Technology Business Incubators (TBIs)

Although the history of technology business incubators (hereinafter as TBIs) in China can be traced back to Wuhan East Lake Innovation Center, established in June 1987, the vigorous development started with the implementation of the Torch Program. With the support of the Torch Program and other related policies that promote technological innovation by the central and local governments, TBIs have enjoyed rapid growth over the past two decades. Currently, there are over 500 TBIs all across the country, hosting nearly 40,000 tenant companies.

TBIs in China are targeted at technology start-ups and aim to provide a comprehensive value-added service system for the tenants. In recent years TBIs have developed into diverse models. For example, 62 University Parks which have been jointly ratified by the Ministry of Education and the Ministry of Science & Technology, and more than 100 incubators have been set up around the country to accommodate enterprises founded by returned overseas scholars. In addition, 9 International Business Incubators (IBIs) and a dozen sector-specific incubators have also been established.



Chengdu High-tech Business Incubator

As important generators of innovative technologies as well as cradles of technology-based enterprises, TBIs have made a remarkable contribution to China's economic development and industrial restructuring by nurturing the development of 15,931 successful enterprises in the past 20 years, of which 50 had gone public by 2006. Some of these enterprises have become international companies, such as Lenovo, Huawei, Suntech Power, etc. As customized incubation services with entrepreneurial tutoring are being promoted, TBIs in China will play an even more important role in encouraging the development of tech-based SMEs.

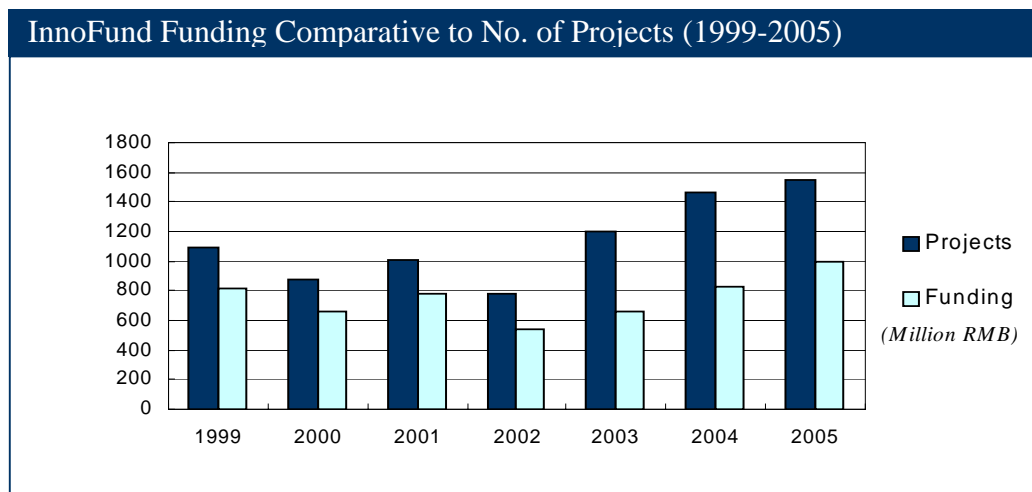


Figure 1

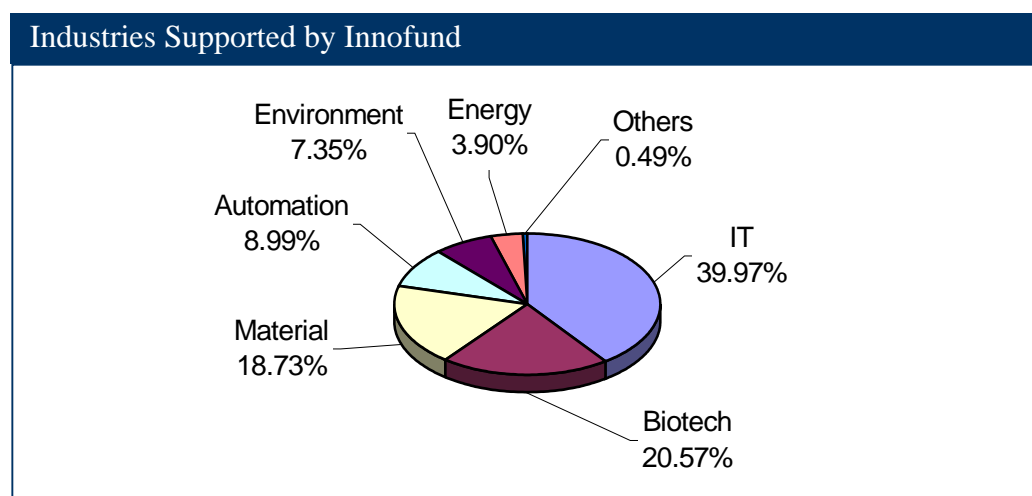


Figure 2

Developing Innovation Clusters

Parallel to the “Seedling Cultivating Engineering”, another strategic task for Torch Center is to promote the upgrading of industrial clusters to innovation clusters by “Forestation Engineering”. By further deepening the functions of Torch Program’s tools, including the national Science & Technology Industrial Parks (STIPs), Specialized Industrial Bases and Software Parks, promoting the establishment of industrial technology alliances, facilitating business-research-education collaboration, as well as networking and interaction among key innovation players, this initiative aims to build a batch of competitive innovation ecosystems and thus make even greater contributions to the growth of local economies and regional development.



Zhongguancun Science Park

▪ Science & Technology Industrial Parks (STIPs)

As a major content of Torch Program, the national Science & Technology Industrial Parks (STIPs) have been established by the State Council to develop new & high-tech industries, adjust industrial structure, promote the reconstruction of traditional industries and increase international competitiveness.

The history of STIPs in China can be traced back to May 1988, when Beijing New Technology Industry Experiment Zone (Zhongguancun Science Park) was approved by the State Council as the first STIP. Up to now, 54 national STIPs (refer to Appendix) had been established all over China with the approval of the central government. By 2006, these national STIPs were host to 45,828 tenant companies with 5.74 million employees. The total output of industrial value-added from these STIPs in 2006 accounted for 9% of the national total and they contributed to 5% of the national GDP and one-third of the country's R&D expenditures.

With support from both central and local governments, national STIPs have experienced rapid growth over the past two decades (refer to Figures 3 & 4) and have thus become major drivers of local economies (refer to Figure 5). By making full use of preferential policies as well as their administrative advantages, STIPs in China have proven themselves with fruitful achievements in new high-tech industrialization, where high-tech enterprises are concentrated with flourishing private companies, where an entrepreneurial atmosphere is encouraged and where financial resources are attracted to.

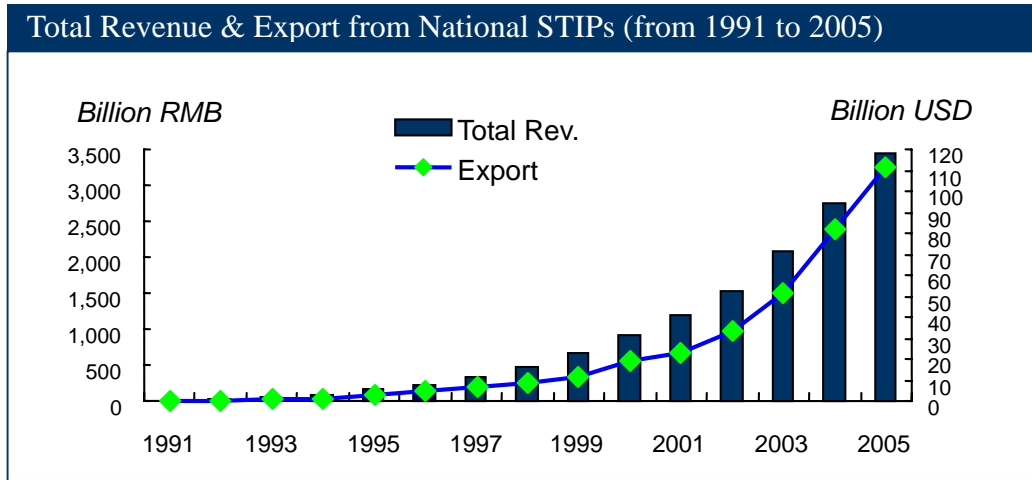


Figure 3

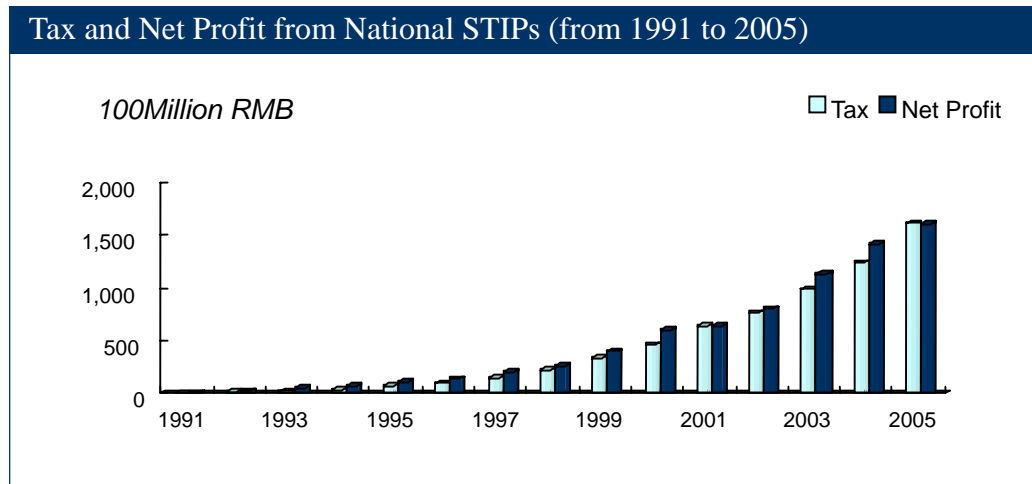


Figure 4

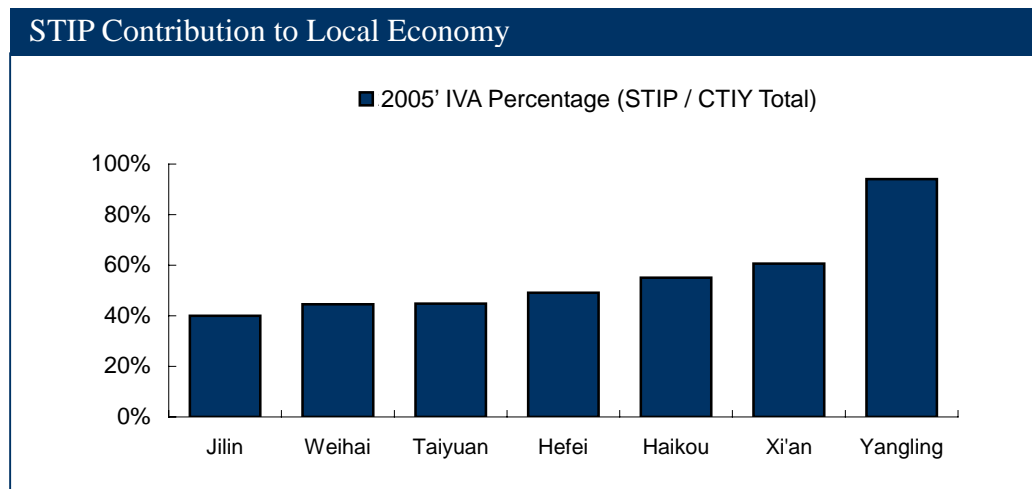


Figure 5

▪ **Torch Program Specialized Industrial Bases**

Torch Program Specialized Industrial Bases are high-tech industrial clusters based on the development of pillar enterprises and their subcontracting SME suppliers. These enterprises usually enjoy adequate innovative abilities with shared distinct industrial features and are closely related along the value chains. By taking advantage of local talent, technology and capital, these specialized industrial bases have been set up to improve regional innovative capabilities and enhance the competitive advantage of their featured industries. From 1995 to 2005, 129 Torch Program Specialized Industrial Bases were ratified by MOST, covering nearly 20 high-tech sectors. A large number of rapidly growing industrial clusters, specializing in software, IC, communication equipment, biotechnology, etc., have thus taken form across the country. These clusters have become the main support of regional restructuring industries and have clearly demonstrated their leading power in technology innovation.

▪ **Torch Program Software Parks**

As a major group of the specialized industrial bases, 32 Torch Program Software Parks have been ratified since 1995, when MOST began to organize the work. After more than 10 years of construction and development, a support system composed of governmental services, technology backup, intermediary consultation, talent training and park administration had been established for these parks. With an average annual growth rate of 49.6% since 2000, Torch Program Software Parks have grown into an important driving force for the development of the software industry in China. In 2005, the total sales and export from these software parks accounted for 55.5% and 45.7%, respectively, of the national total.

▪ Productivity Promotion Centers

Productivity Promotion Centers are intermediaries that expedite the growth of SMEs, enhance their innovative abilities and market competitiveness, and provide assistance in technological and economic development. In 1992, MOST approved the establishment of the first productivity center in China - Shandong Productivity Center. After more than 10 years' development, a country-wide network of productivity centers covering all major industries has already taken shape. By the end of 2005, there were 1,270 such centers in China, and 128 of them had been approved by MOST as state-level exemplary productivity centers. In its future task of developing innovation clusters, Torch Center will guide these productivity centers in promoting collaboration between research and business, as well as between large enterprises and tech-based SMEs.



Qilu Software Park, Shandong

Building an Innovative Environment

For the smooth implementation of the “Seedling Cultivation Engineering” and “Forestation Engineering” programs, a fertile soil is necessary to ensure that the proper conditions for growth are met. To achieve this, Torch Center has commissioned itself to mobilize and integrate key innovative elements including capital, technology, and expert personnel in an international context through the accompanying programs.

▪ Roadmap Scheme for Growth of Tech-based SMEs

The construction of a sound capital investment and financing system is essential to technological innovation. To enlarge the leveraging effect of public funding and increase the access to capital for tech-based SMEs, a Roadmap Scheme for Growth of Tech-based SMEs was initiated by Innofund in 2004, with participation from Shenzhen Stock Exchange (SSE), State Development Bank (SDB), National Incubator Association, and the National Venture Capital Association.

Since its initiation, the Roadmap Scheme has achieved effective results in promoting the combination of capital and technology, and strengthening the support and nurturing of tech-based SMEs. Starting in 2005, Innofund has provided grants to “Start-up” projects undertaken by tenant companies which received investments from selected incubators. To lead commercial loans to tech-based SMEs, the State Development Bank has been providing policy loans to commercial banks, which in turn provide loans to tech-based SMEs, while the default reserve is assumed by Innofund. The Scheme has also actively promoted the establishment of a multi-layered capital market system. The OTC Stock Trading System at Zhongguancun Science Park, which opened on January 23, 2006, was the first trial step and more STIPs are expected to join soon.

▪ **Tech-based SMEs Venture Capital Introductory Fund**

As an influential participant in venture capital development in China, Torch Center has been actively exerting itself in efforts to improve the policy environment and guiding VC investment in tech-based SMEs. Symbolic of recent progress, the Tech-based SMEs Venture Capital Introductory Fund has just been launched to start operations in 2007. By making equity investments and providing investment subsidies, this government VC fund is aimed at encouraging commercial VC firms to make investments in technology-based SMEs. The capital of this fund will be allocated from the Innofund annual budget with an initial capital base of 100 million RMB in 2007. Four instruments have been designed under this fund including:

- A fund of funds, which will hold 25% equity shares at most in VC firms, requiring only a fixed rate return;
- Parallel investment, where the fund will co-invest with other VC firms with 50% of other VC firm's equity investment or 3 million RMB at most;
- Risk subsidies for VC firms, where the fund will be compensated for the cost and loss of VC firms which have made investments in technology-based SMEs;
- Grants for portfolio reserves, where the fund will provide grants for technology-based SMEs which are being incubated and coached by VC firms.

■ Technology Transfer Promotion Activities

To build up a technology transfer system and mechanism which is beneficial to commercialization and industrialization of S&T achievements, the central government decided to establish technology markets across China in the 1990's. Over the past two decades, the technology market system has greatly promoted technology transfer throughout the country. In 2005, 260,000 technology contracts closed with a total transaction volume of 155.1 billion Yuan (refer to Figure 6), accounting for 0.85% of the national GDP.

On the basis of the technology market system, Torch Center is now working on the implementation of the Technology Transfer Promotion Activities to establish a national technology transfer mechanism which will help to create a technology innovation system with enterprises as the central player in partnership with research and education organizations. The implementation of these activities will promote the dissemination and transfer of key industrial technologies, encourage and facilitate the establishment of regional technology transfer service alliances, ratify national technology transfer agencies at different levels, as well as the international technology transfer bases.

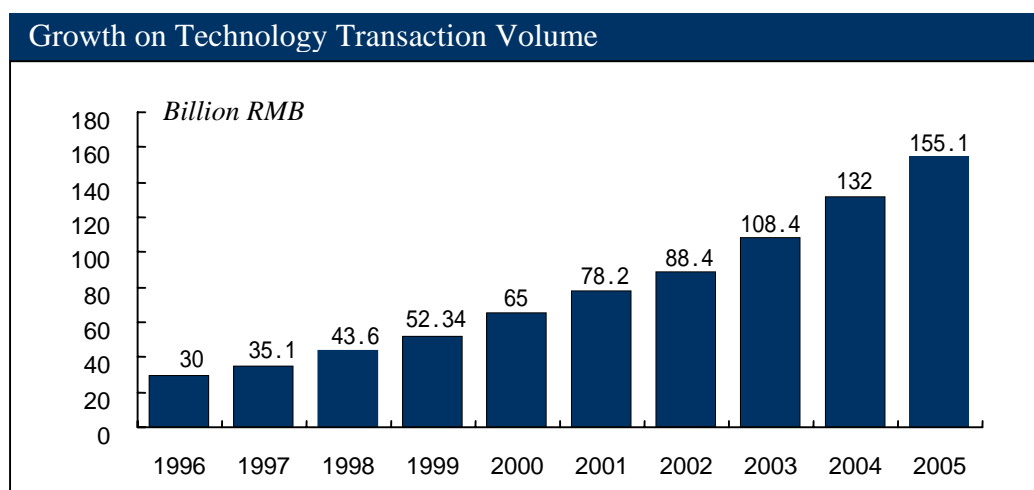


Figure 6

▪ **Torch Entrepreneur Mentors Action Program**

To address the problem of lack of management skills that are commonly hindering the development of tech-based SMEs, the Torch Center has recently initiated the “Torch Entrepreneur Mentors Action” program jointly with other related partners. With the purpose of bringing professional and practical business mentoring to entrepreneurs and tech-based SMEs, this initiative has been brought about as a strategic means to further reinforce the incubation capacities of TBIs, which will serve as the bridge between the tenant companies and the mentors who will provide customized specific advice to meet entrepreneurs’ needs.

The “Torch Entrepreneur Mentors Action” program will be supported by a volunteer team composed of working and retired technopreneurs, executives and corporate leaders; investment and financial experts; notable business counselors as well as other professionals with extensive experience in science and technology fields. With the mentors’ expertise and know-how passed on to the SMEs, the action program is expected to enhance the survival rate of tech-based SMEs and help them grow and prosper.

▪ **Globalization Programs**

To help Chinese tech-based enterprises realize their goal of “going global”, Torch Center has taken specific measures, including the establishment of 9 International Business Incubators (IBIs) and 6 Overseas Science Parks including China Torch (Singapore) Innovation Center, the ratification of 25 Export Bases of High-Tech Products as well as the organization of the China Offshore Software Engineering Project (COSEP). All these have developed into important bridges and platforms for technology and business collaboration between tech-based enterprises in China and their foreign partners in research, business and investment.

Appendix: 54 National STIPs

Name of STIPs	Website
01. Zhongguancun Science Park	http://www.zgc.gov.cn
02. Tianjin Hi-tech Industrial Park	http://www.thip.gov.cn
03. Shijiazhuang National High-tech Industrial Development Zone	http://www.shidz.com
04. Baoding National High-tech Industrial Development Zone	http://www.bd-ctp.net.cn
05. National High-tech Industrial Development Zone of Taiyuan	http://www.tyctp.com.cn
06. Baotou National Rare-Earth Hi-tech Industrial Development Zone	http://www.rev.cn
07. Shenyang National New and High-tech Industrial Development Zone	http://www.hunnan.gov.cn
08. Dalian National High-tech Industrial Development Zone	http://www.ddport.com
09. Anshan National High-tech Industrial Development Zone	http://www.asht-zone.gov.cn
10. Changchun National High-tech Industrial Development Area	http://www.chida.gov.cn
11. Jilin National High-tech Industrial Development Zone	http://www.jlhitech.com
12. Harbin High-tech Industrial Development Zone	http://www.kaifaju.com.cn
13. Daqing National High-tech Industrial Development Zone	http://www.dhp.gov.cn
14. Zhangjiang High-tech Industrial Development Zone	http://www.sh-hitech.gov.cn
15. Nanjing New and High-tech Industrial Development Zone	http://www.njnhz.com.cn
16. Changzhou National Hi-tech District	http://www.czxd.gov.cn
17. Wuxi New District	http://www.wnd.gov.cn
18. Suzhou National New and High-tech Industrial Development Zone	http://www.snd.gov.cn
19. Hangzhou High-tech Industrial Development Zone	http://www.hhtz.gov.cn
20. Hefei New and High-tech Industrial Development Zone	http://www.hefei-stip.com.cn
21. Fuzhou Science & Technology Park Zones	http://www.fzhitech.com
22. Xiamen Torch Hi-tech Industrial Development Zone	http://www.xmtorch.gov.cn
23. Nanchang State High-Tech Industrial Development Zone	http://www.nchdz.com
24. Jinan High-Tech Industrial Development Zone	http://www.jctp.gov.cn
25. Qingdao Hi-Tech Industrial Park	http://www.qdhtp.com
26. Zibo State New & High-tech Industrial Development Zone	http://www.china-zibo.com
27. Weifang New & High Technology Industry Development Area-Location	http://www.wfgx.gov.cn
28. Weihai Torch Hi-tech Science Park	http://www.whtdz.com.cn
29. Zhengzhou Hi-tech Industrial Development Zone	http://www.zzgx.gov.cn
30. Luoyang National New & High Tech Industry Development Zone	http://www.lhdz.gov.cn
31. Wuhan East Lake High-Tech Development Zone	http://www.wehdz.gov.cn
32. Xiangfan Hi-tech Development Zone	http://www.xfgx.com/
33. Changsha National High-Tech Industrial Development Zone	http://www.cshztz.gov.cn
34. Zhuzhou National Hi-tech Industrial Development Zone	http://www.zzhitech.com
35. Guangzhou Development District	http://www.getdd.gov.cn
36. Shenzhen High-tech Industrial Park	http://www.ship.gov.cn
37. Zhuhai National Hi-tech Industrial Development Zone	http://www.zhuhai-hitech.com
38. Zhongkai Hi-tech Industrial Development Zone	http://www.hzzk.cn
39. Zhongshan Torch Hi-tech Industrial Development Zone	http://www.zstorch.gov.cn
40. Foshan National Hi-tech Industrial Development Zone	http://www.fs-hitech.gov.cn
41. National New and High-tech Industrial Development Zone	http://www.nnhitech.gov.cn
42. Guilin National Hi-tech Industrial Development Zone	http://www.eguilin.org
43. Haikou National Hi-tech Industrial Development Zone	http://www.haikou.gov.cn
44. Chongqing Hi-tech Industrial Development Zone	http://www.hnzcq.gov.cn
45. Chengdu Hi-Tech Industrial Development Zone	http://www.cdht.gov.cn
46. Guiyang National High-Tech Industrial Development Zone	http://www.gyhtz.gov.cn
47. Kunming High-tech Industrial Development Zone	http://www.kmhnz.gov.cn
48. Mianyang State Hi-Tech Industrial Park	http://www.myship.gov.cn
49. Xi'an National Hi-tech Industrial Development Zone	http://xaportal.xdz.com.cn
50. Baoji State Level New & High-tech Industries Development Zone	http://www.bj-hightech.com
51. Yangling Agricultural Hi-tech Industries Demonstration Zone	http://www.ylagri.gov.cn
52. Lanzhou National New & High Technology Industrial Development Zone	http://www.lzhtp.gov.cn
53. Urumqi State High-tech Industrial Development Zone	http://www.uhdz.gov.cn
54. Ningbo Hi-Tech Park	http://www.nbhtp.gov.cn



**Torch High Technology Industry Development Center,
Ministry of Science & Technology, China**

54, Sanlihe Road, Beijing, 100045 China P.O.BOX 2143, Beijing
<http://www.ctp.gov.cn>
TEL/FAX:86-10-68514068
E-MAIL:guoj@ctp.gov.cn