NORTH HEAD | 诺 恒

Reflections

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Changing Trends for R&D

Inside this issue:

Business Take-Aways

Rapid growth of funding has prompted many MNCs to reassess the roles of their R&D assets in China. Opportunities exist to **acquire technology.** This trend will strengthen over time.

Increasingly, R&D facilities are being included in the overall commercial offering, while IPR models are shifting from exclusive proprietary systems towards more **open innovation**.

The challenges of navigating the Chinese S&T landscape are compounded by pockets of policy makers and **officials that are wary of R&D by MNCs** and skeptical of the benefits to the country.

Given the complexity of the R&D market, a structured **business development approach** is required to identify and analyze opportunities. Risk assessment and due diligence are necessary. This entails assessing a matrix of technologies and funding flows. Recipients are both private and public institutions, often concentrated in geographical clusters.

The core success factor is the ability to develop and sustain optimal **local partnerships that are meaningful**, productive and contribute to Chinese **capacity building**.

Rather than viewing it solely as a threat, MNCs should treat "**indigenous innovation" as an opportunity**, pushing forward with the next phase of localization, where appropriate to the business. Without local IPR, options for cooperation are narrow.

Coupled with robust risk management, **segmented IPR policies** can be instituted that domicile non-core and repatriate core IPR.

Where domestic companies lack S&T capacity or competitiveness, the government has shown a **readiness to tighten restrictions** for incumbents on the scope of R&D in China, if it considers there is inadequate technology transfer or know-how.

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About Us

North Head is a strategic communications and public affairs consultancy with a clear China focus. It specializes in partnering with multinational companies operating in this dynamic but challenging market, and supporting Chinese companies extending their reach globally. To receive future issues of China Reflections, please send an email to *info@northheadcomms.com*

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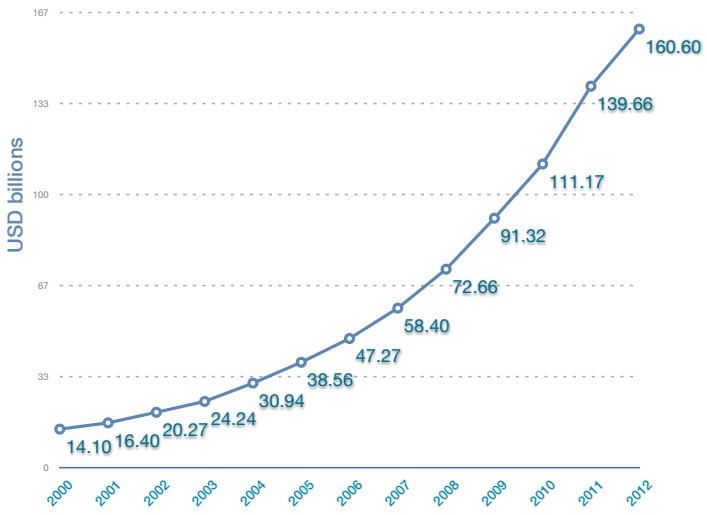
Indigenous Innovation presents opportunities

Multinational companies can leverage China's indigenous innovation policies in order to maximize their research opportunities and enhance their reputations in China. The Chinese government has established R&D as a top priority and supports it with a complex network of policies. While indigenous innovation has been the subject of heated debate both within China and abroad, this article examines ways in which companies can navigate this complexity and use it to their benefit.

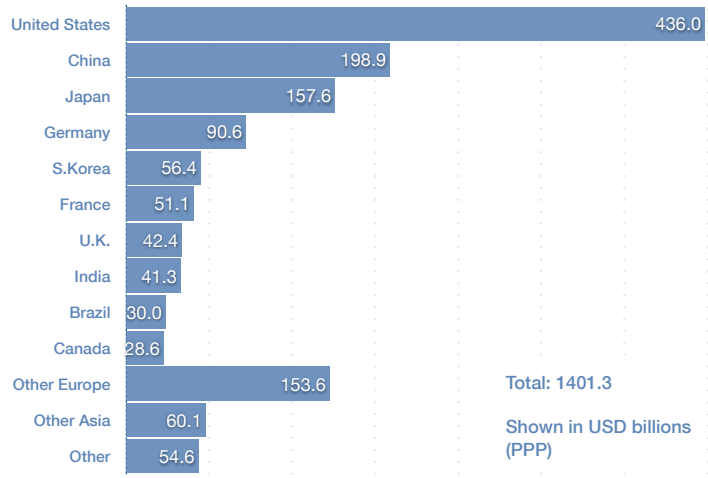
Total R&D Spending in China (2000-2012)



Source: MOST 2012 Science and Technology Yearbook

The development of science and technology (S&T) is at the heart of China's industrial policy that seeks to move the Chinese economy up the value chain, becoming a leader in innovation. At the 18th Party Congress, the importance of S&T innovation in "building a moderately prosperous society [and] achieving the great rejuvenation of the Chinese nation" was re-

Global R&D Spending (2012)



Source: Batelle 2013 Global R&D Funding Forecast

Market Features

High Growth.

China is now an important center of gravity for global R&D. Behind only the U.S., China has 12 % of the global market, spending RMB 1 trillion (US $160.6 billion) in 2012. With 3.2 million research personnel it has the largest reservoir of scientists and engineers. Budgets are growing at double digits, with strategic sectors experiencing over 20 % growth. Accordingly, multinational companies are reassessing the roles of their R&D centers in China.

Complexity.

Despite a top-down approach there is a layering of programs over three decades, caused by a reluctance to consolidate programs. This results in complexity and lack of coherence.

Headwinds.

MNCs struggle to attract and retain R&D talent that sustains innovative capacity.

Bias to Commercial Applications.

With a relatively small percentage of funds deployed to basic research, the focus is towards practical applications. Government policies seek to incentivize R&D within domestic enterprises.

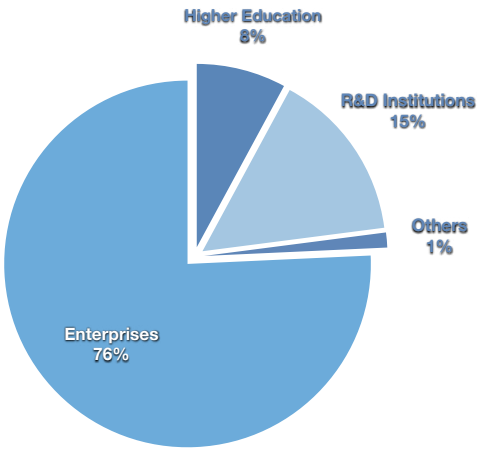
Evolution of R&D Centers.

Set up originally in response to government incentives or as a low cost location, MNCs' China R&D centers have evolved quickly over the past decade. As China sales increased, these centers customized existing products and developed new products for local needs. In recent years, large facilities integrated into global research business units have been established. MNCs are now increasingly targeting China for acquiring technology, and looking to reconfigure their R&D operations to avail themselves of the opportunities on offer.

emphasized. With this goal in sight, the Chinese government developed the Medium to Long-term Plan for the Development of Science and Technology and Improving the Indigenous Innovation Capacity (MLP), a complex fifteen-year plan (2005-2020) that serves as China's guiding document on innovation policy and scientific modernization. The MLP introduced the policy of indigenous innovation, which explicitly states that a key tool for China's development is to adapt and develop intellectual property and standards.

The MLP is an expansive and sometimes confusing plan made all the more complex by the hundreds of overlapping central and local government S&T programs that channel funding into China's priority areas of research. Total overall government spending (central and local) for S&T was around USD 75 bn in 2012, and is expected to increase by more than 10% in 2013. Government support ranges across a variety of fields stretched across industries from high technology to agriculture. Each government program has a different application procedure and some programs explicitly call for cooperation with MNCs. In order to take advantage of these government programs, companies must dedicate time to researching and identifying specific programs that align with their R&D priorities and the procedures necessary for application.

R&D Spending by Performer (2011)



Source: MOST 2012 Science and Technology Yearbook

Partnership Opportunities

The government estimates that China's R&D spending will surpass that of the U.S. by 2023. This means that there are ample funding opportunities for research that aligns with government S&T priorities. There are 1,345 universities, 3,700 gov-

Key Government-funded S&T Projects

Program	Purpose	Budget (Millions USD)
Key Science and Technologies Program	Applied research and development with commercial application.	790
"863" National High Technology Research and Development Program	Increase China's international competitiveness in high technology and support indigenous innovation.	800
Spark	Spread agricultural technology to rural areas.	31.5
Torch	Commercialize high technology through incubators and high technology zones.	34.6
State Key Laboratories	Support the work of laboratories in universities, research institutes, the Chinese Academy of Science (CAS) and enterprises.	430
"973" National Basic Research Program	Focus on basic research, developing scientific talent, and building research centers.	627
Knowledge Innovation Program (KIP),Innovation 2020	Reform and revitalize CAS.	n/a
Program 211 and 985	Improve China's universities.	n/a
National New Products Program	Promote domestic innovation, competitiveness of Chinese products, and import substitution.	310
R&D Infrastructure and Facility Development Program	Increase competitiveness of Chinese R&D infrastructure.	3.34

All numbers from 2010

ernment research institutes, and 36,000 enterprises conducting R&D in China. However, complexity is mitigated by concentrating funding for specific technologies at key institutions, companies and geographic clusters. Companies should identify which institutions are currently pursuing their target areas of research and seek partnerships that can lead to development of relevant technology.

Building Reputation

Many of China's R&D programs encourage collaboration between universities, research institutes and enterprises. Establishing and sustaining effective partnerships in the R&D marketplace not only gains access to technology, but also provides opportunities for relationship building. The great importance placed on R&D at a national level creates incentives for officials to deliver research results; supporting the priorities of a local government or institution gives companies the opportunity to promote themselves as partners in China's development.

> *"Collaboration with foreign companies should have a positive impact on Chinese industrial development and contribute to building local businesses."*
>
> *-State Council official*

Investment no Longer Enough

Chinese leaders are increasingly concentrating on the quality of economic growth. Previously, local officials were focused on attracting foreign investment to contribute to GDP; they are now increasingly evaluating the benefits of MNC investment based on how it contributes to broader policy goals, including domestic capacity building and indigenous innovation. To take advantage fully of the opportunities created by China's innovation drive, MNCs may need to reconsider their China R&D operations, perhaps by domiciling more IP in China, and forming "meaningful" collaborations with Chinese partners.

A Tale of Two Sectors: Agriculture and Pharmaceuticals

As one of China's seven strategic emerging industries, biotechnology receives high priority with respect to R&D funding and encouragement via advantageous public policies. At the end of 2012, biotech industrial output was estimated at RMB 2.5 tn (USD 400 bn). The development plan for the sector envisages output growing to 8 % of GDP by 2015, totalling over RMB 4 tn (USD 625 bn). Growth rates of over 20 % are anticipated.

But market structures and competitive landscapes differ markedly, especially between MNCs and domestic companies, across the various segments of biotech. Not surprisingly, attitudes of the Chinese government also vary. None more so than the contrasting priorities and funding for biotech in the pharmaceutical and agricultural sectors, respectively.

The development plan for biotech released in January 2013 reflects a contrast in the relative market power of MNCs in the agritech and biopharmaceutical industries. By 2015, healthcare will contribute 90% of the industrial production value of the biotech sector. Despite food security being a strategic goal, agricultural biotech languishes a distant third behind biological manufacturing among biotech industries due to the hurdles to developing competitive domestic capacity.

Biopharma vs. Bio-agriculture

Biopharmaceuticals & medical devices	Market Characteristics	Bio-agriculture
Relatively fragmented	MNC consolidation	Concentrated
Significant "open innovation", including use of CRO	R&D model	Essentially proprietary
Large but bridgeable	Technical gaps to Chinese domestic companies	Very large, little sign of gap closing in next 5-10 years
Good	Capacity of the Chinese market to absorb and optimize technology	Poor
Slow but adequate	Effective technology and "know-how" transfers as viewed by government	Little and inadequate
Encouraged	Trend of the Dec 2011 FDI catalogue	Tighter restrictions