

# Trade Sustainability Impact Assessment of the Negotiations of a Partnership and Cooperation Agreement between the EU and China



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## Global Analysis Report

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**Trade Sustainability Impact Assessment of the Negotiations of a Partnership and Cooperation Agreement between the EU and China – Global Analysis Report**



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## EXECUTIVE SUMMARY

*The purpose of the Global Analysis Report is to analyse the context in which the trade-related negotiations of the EU-China Partnership and Cooperation Agreement will take place, and identify an early set of horizontal and industry sector-specific priority sustainability issues that are likely to emerge as the negotiations progress.*

This Global Analysis Report is the first in a series of stakeholder focused reports of the Trade Sustainability Impact Assessment (Trade SIA) for a new Partnership and Cooperation Agreement (PCA) currently being negotiated between the EU and China. The economic opportunities and challenges arising from increasing trade and investment with China have been well documented in recent studies by DG Trade.<sup>1</sup> This Trade SIA, however, explores the economic impacts of further trade liberalisation in the context of the PCA and widens the scope of analysis to the possible social and environmental impacts. In its latter stages, the Trade SIA is mandated to propose mitigation and enhancement measures for these impacts. The purpose of this report is to develop the baseline context in which the trade-related negotiations of the PCA will take place, and identify an early set of horizontal and industry sector-specific priority sustainability issues that are likely to emerge as the negotiations progress.

China's emergence will continue to define the character of globalisation in the 21<sup>st</sup> Century. The rapidly growing competitiveness of China's fast growing economy make a new trade agreement with China felt on a global scale. The immense social changes of China's integration into the world trading system continue to bring about an increasing global environmental impact. This will make the EU-China Trade SIA different from other Trade SIAs conducted to date. The impacts of trade liberalisation will require the analysis to focus on Europe as much as on China, as well as on higher value added and emerging sectors.<sup>2</sup> The launch of the EU-China PCA negotiations reflects the strong intention for both partners to broaden and deepen their relationship. Although bilateral trade and investment between the EU and China has brought with it immense opportunities, increasing challenges have already started to emerge for the partnership.

### Early Sustainability Issues Identified by the Global Analysis Report

Although the **Chinese economy** continues to see impressive growth rates, important economic imbalances remain. The economy remains reliant on exports and investment-driven growth over domestic consumption. Over-investment in products which have no outlet in the domestic market has led to Chinese export-surges and dumping of Chinese products in overseas markets. This has been a major contributor to increasing trade frictions between China and some of its trading partners. Although the EU-China trade dialogue remains constructive, both parties now agree that the EU's trade deficit with China, which increased to € 159bn in 2007, is unsustainable.<sup>3</sup>

*Although the EU-China trade dialogue remains constructive, both parties now agree that the EU's trade deficit with China, which is expected to increase by as much as € 170bn by the end of 2007, is unsustainable.*

<sup>1</sup>See e.g. DG Trade (2006) 'Global Europe: EU-China Trade and Investment Competition and Partnership' and DG Trade (2007) Study on the Future Opportunities and Challenges in EU-China Trade and Investment Relations 2006-2010. Available at: <http://ec.europa.eu/trade>

<sup>2</sup>Previous Trade SIAs mainly dealt with a trading partner which is relatively less developed (or less ardently competitive) than China. These Trade SIAs therefore focus primarily on the impact of a trade agreement on the trading partner with whom an agreement is being sought. This also means that whereas previous Trade SIAs have focussed on relatively traditional industries such as agriculture, textiles, fisheries and automotives, the EU-China SIA will focus on higher value added and emerging industries such as machinery, banking services and the environmental goods and services sector. See <http://www.sia-trade.org/> or <http://www.sia-acp.org/> for other examples of recently conducted Trade SIAs.

<sup>3</sup> Eurostat

*The deepening of the EU-China trade relationship is bringing to the forefront long-held concerns among European stakeholders that social and labour standards could suffer under a new trade agreement...*

The entrenchment of the current growth model stems from the omnipresent **social challenge** of finding employment for the estimated 20 million new jobseekers entering into the labour market each year. Although gradually changing, traditionally this surplus of labour has contributed to the downward pressure on wages and labour standards. Faced with the multitude of risks associated with economic reforms, which in the short-term could derail growth and cause further localised employment pressures, continuous job creation remains the priority for the Chinese government. The deepening of the EU-China trade relationship is bringing to the forefront long-held concerns among European stakeholders that social and labour standards could suffer under a new trade agreement. Since enlargement in 2004 and 2007, **Europe's own regional differentials** have become an important consideration for EU policymakers. Whilst the comparative advantage of Europe's most advanced economies is well matched to the emergence of the Chinese economy, other member states, notably those in Southern and Central Europe, are relatively worse placed and at a higher risk of a delocalisation of jobs as a result of low-cost Chinese imports.

*...equally European civil society groups are concerned of the environmental impact of China's further integration into the world economy.*

The costs of China's priority on economic growth are becoming increasingly apparent, through severe **environmental challenges**. Statistics show that an estimated one-third of China's 1.3 billion people live in areas where the air is polluted, and around 700 million Chinese do not have access to drinking water that meets minimum purity standards. The scale of China's environmental pollution also has global consequences. By some estimates China is the world's largest contributors to global warming, while polluted water from its rivers has ended up in its neighbouring countries.<sup>4</sup> There are concerns amongst European civil society groups regarding the environmental impact of China's further integration into the world economy. These concerns focus on the high levels of pollution caused by China's industries and the growing consumption of natural resources derived from unsustainable sources. China's trade in environmental technologies could be expected to increase further if intellectual property was properly protected, royalties paid and technology transferred on a consensual basis.

*Despite these concerns, the Partnership and Cooperation Agreement provides a unique opportunity to integrate trade policy goals with wider cooperation objectives on the environment and social issues.*

Alongside concerns in Europe, China is experiencing its own domestic debates of the merits of further reforms and the opening up of its economy. Some policy-makers are wary of continuing at the current pace of economic reform, as the cost of liberalisation for households may outweigh short-term gains leaving people disenchanted with the broader economic policy. Besides this, Chinese policymakers point to an increasing number of domestic policy initiatives that are being undertaken to address not only international, but also increasing domestic concerns to address the social and environmental challenges.

<sup>4</sup> According to the Netherlands Environmental Assessment Agency China became the largest emitter of carbon dioxide in 2006. The World Resources Institute estimates that the country will become the largest emitter in 2008 or 2009. The International Energy Agency estimates that China became the largest emitter of CO2 in 2007. The United Nations Statistics Division only provides data through 2004, which lists China as closely following the United States in total emissions. China now no.1 in CO2 emissions; USA in second position, Netherlands Environmental Assessment Agency, 5 December 2007  
Environmental Trends to Watch in 2008, World Resources Institute, 18 December 2007  
World Energy Outlook 2007, International Energy Agency, 2007  
Environmental Indicators – Climate Change, United Nations Statistics Division, September 2007

*The Global Analysis Report suggests five sectors be taken forward for more in-depth analysis in the proceeding stages of the Trade SIA:*

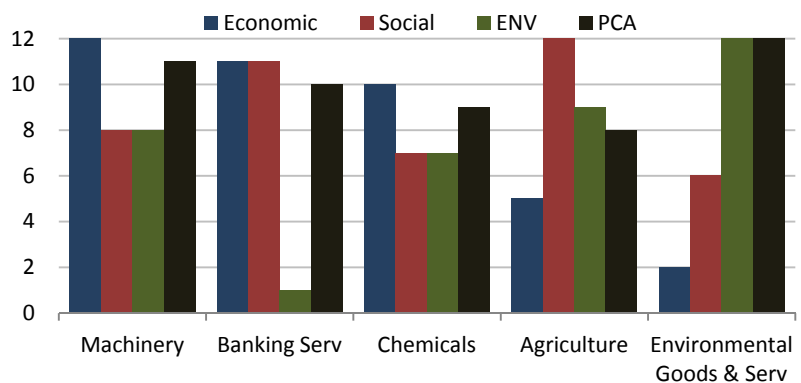
- 1. Machinery Sector**
- 2. Banking Services**
- 3. Chemicals Industry**
- 4. Agricultural Produce**
- 5. Environmental Goods and Services**

*During all phases of the Trade SIA an active dialogue with stakeholders will be sought.*

Despite these challenges, the broad scope of the PCA provides a **unique opportunity** to integrate trade policy goals with wider cooperation objectives. These objectives range from energy efficiency, the preservation of biodiversity and natural resources, and a host of social issues at a time that many of China's social infrastructure and institutions are being shaped. There seems particular scope for cooperation between the EU and China on the environment and energy efficiency. China has already adopted a number of EU-inspired environmental standards. Bilateral technical cooperation between Europe and China is expected to further increase in the near future. European suppliers of environmental goods and technologies leveraging their 'green competitiveness' are already well established within the Chinese market. Under the Kyoto Protocol's Clean Development Mechanism, trade in environmental technologies is expected to further increase.

### Sector Case Studies Proposed by the Global Analysis Report

The Global Analysis Report suggests five sectors be taken forward for more in-depth analysis in the proceeding stages of the Trade SIA that are deemed particularly representative in terms of expected sustainability outcomes. These are the Machinery Sector (including power generating machinery), Banking Services (including insurance), the Chemicals Industry (including pharmaceuticals), Agricultural Produce (including processed food); and Environmental Goods and Services. These sectors were chosen on the basis of a 'Sustainability Scorecard', which was used to comparatively assess twelve industry sectors for their sustainability importance and relevance to the PCA<sup>5</sup>. The results for the five selected sectors are shown in the figure below. The figure highlights the high relative importance of the machinery sector in economic terms, while the agricultural sector is noted for its social importance. The environmental goods and services sector is highlighted for its relatively high importance with regards to the environment, but also the sector's substantial scope for cooperation possibilities within the framework of the PCA negotiations.



Note: The 'Economic' label denotes the relative significance of the sector in terms of EU-China trade and investment flows. The 'Social' and 'Environmental' label denotes the impact the sector has socially/environmentally. The 'PCA' label denotes the degree to which the sector is expected to be impacted by changes in the trade measures included in a future PCA.

<sup>5</sup> The full sector choice justification and methodology is included in **Technical Annex I**

The findings of this report will be presented to stakeholders for consultation at a Civil Society Dialogue meeting to be held in Brussels. An additional workshop will be held in Beijing following the Brussels meeting. These stakeholder consultations will provide further input on how best to proceed with the EU-China SIA and provide an opportunity to highlight areas of importance for further research. Forthcoming deliverables include:

- A **Mid-Term Report** which will explore the sustainability issues in the Global Analysis Report in more detail and contain sector specific case studies with detailed quantitative modelling work.
- A **Final Report** which will include policy recommendations including mitigation and enhancement measures for the expected impacts of the PCA.

## Section 1: Stage of Negotiations of the EU-China Partnership and Cooperation Agreement

*On 12 June 2007, the 22<sup>nd</sup> EC-China Joint Committee agreed on the terms of reference for the update of the 1985 Trade and Economic Cooperation Agreement and announced the start of substantive negotiations.*

*The PCA will be inclusive and ambitious, with endorsement at the highest political levels, following up on proposals and commitments made at EU-China summits.*

The current legal framework under which contemporary EU-China relations are structured is the Trade and Economic Cooperation Agreement (TECA) signed in 1985. Since then, the EU-China relationship has expanded organically through separate, smaller framework agreements on cooperation and dialogue in specific policy areas. Following agreement between the two parties that the TECA no longer reflects the scope, depth, and overall nature of their current relationship, it was announced at the 2006 EU-China Summit in Helsinki that negotiations on a new China-EU Framework Agreement would begin in early 2007. On 12 June 2007, the 22<sup>nd</sup> EC-China Joint Committee held in Brussels, agreed on the terms of reference (TORs) for the upgrade of the 1985 agreement and announced the start of substantive negotiations.<sup>6</sup>

The negotiating objective of the Framework Agreement is to reach a comprehensive and balanced Partnership and Cooperation Agreement (PCA), covering political issues, economic issues, and cooperation, including an updating of the 1985 TECA. The PCA will be inclusive and ambitious, with endorsement at the highest political levels, following up on proposals and commitments made at previous EU-China summits. The new PCA will cover all components of the EU-China relationship and provide a comprehensive management framework. The prospective PCA is expected to lay the foundation for enhanced cooperation, including the enforcement and, where possible, the upgrading of environmental, social, labour and safety standards. It will also hold comprehensive dialogues on over 20 ongoing sectoral dialogues with a view to promote cooperation in all sectors, including on economic and financial matters, in both bilateral and multilateral fora. With regard to these existing sectoral agreements, the PCA will complement rather than replace these agreements.

In general, the PCA will be negotiated on the basis of a commitment to the principles of good governance, the rule of law, effective multilateralism, the fight against corruption and improved transparency. As such the PCA will contain a standard clause on human rights. The PCA will foster cooperation to find international solutions to global issues such as climate change, including energy cooperation, by stimulating energy efficiency and the promotion of renewable energy. Increased cooperation will also be sought in education, culture and science. It is envisaged there will be increased grass-roots level peer-to-peer exchanges of unions, students, academics, business associations, non-governmental organisations and other areas of cooperation.

<sup>6</sup> Further information and updates of the EU-China PCA Negotiations and Trade SIA can be found at <http://www.euchina-sia.com>

*The focus of the PCA will be on ensuring that a sustainable trade agreement is reached, including a commitment to standards aimed at ensuring that environmental or social standards are not reduced.*

*The Trade SIA provides the opportunity for key stakeholders both in China and Europe to directly feed into the PCA negotiations, asking their opinion on what issues are the most important to them.*

## Trade Provisions under Negotiation for the PCA

An important component of the PCA will be to make further progress on the trade liberalisation agenda to facilitate trade and investment flows by removing market access obstacles. However, the PCA is not a preferential agreement, and tariffs will, therefore, not be discussed. The PCA negotiations will take place within the framework of the World Trade Organisation's (WTO) rules and obligations and will cover important provisions such as the protection of Intellectual Property Rights (IPR), trade in natural resources, the liberalisation of capital movements, investment, non-tariff trade barriers and competition in goods and services. The focus of the PCA will be to reach a sustainable trade agreement, including a commitment aimed at ensuring that environmental or social standards are not reduced in order to artificially attract investment or enhance trade. In addition, the possible impacts on third country partners, particularly least developed countries, will be taken into account. The broad scope of the PCA provides a unique opportunity to integrate trade policy goals with wider cooperation objectives, such as in the areas of sustainability, energy efficiency, social issues and the preservation of biodiversity and natural resources.

## The Trade SIA: An Opportunity for Dialogue

The EU-China Trade Sustainability Impact Assessment (SIA) sets out to assess the economic, social and environmental impacts of the trade liberalisation provisions of the PCA. The SIA provides an opportunity for key stakeholders both in China and Europe to provide input into the PCA negotiations by engaging in consultations on sustainability issues of importance. These contributions ensure that negotiations are addressing the most relevant areas. This process will also play an important role in formulating the possible policy measures that can be taken to reduce any negative impacts, and enhance the positive impacts, resulting from trade liberalisation.

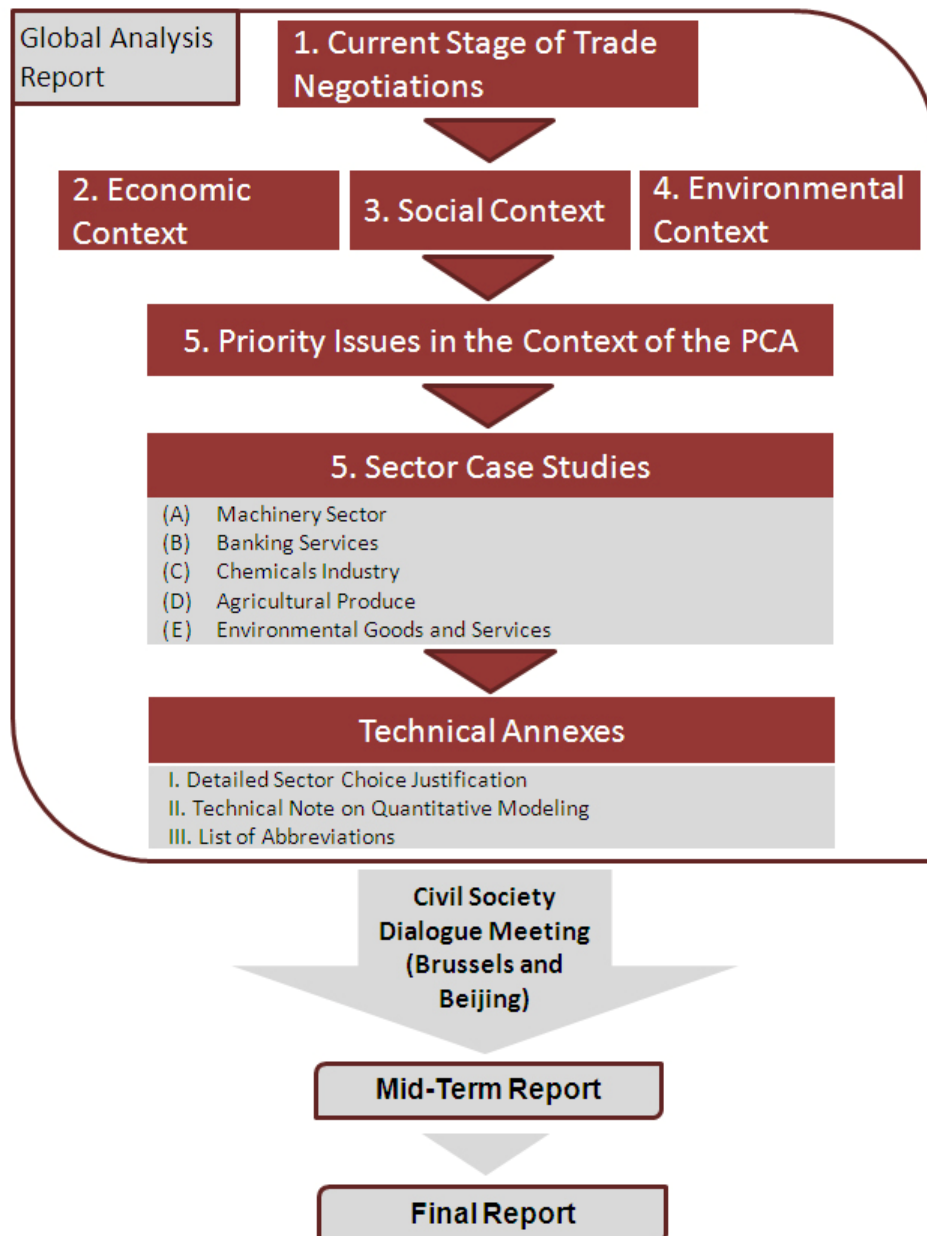
## Structure of the Global Analysis Report

This Global Analysis Report is the first of a series of stakeholder-focused reports for the EU-China Trade SIA. The Global Analysis Report formulates the baseline context for PCA negotiations and identifies priority sectors which are likely to be impacted by the PCA. **Sections 2-4** start with an overview of the most important indicators relevant to understanding the economic, environmental and social context in China and compare these, where applicable, with the European context. These sections take Chinese indicators as a starting point for analysis as European Stakeholders are assumed to be more familiar with European indicators that are also more readily available<sup>7</sup>. **Section 5** looks at the current context of EU-China Trade relations and explores the key issues which will likely be discussed at the PCA. On the basis of this analysis, three plausible scenario outcomes are constructed to be taken forward in the proceeding stages of the Trade SIA. **Section 6** provides exploratory case studies of the sectors proposed for in-depth analysis at the proceeding stages of the Trade SIA. These sectors include **(A) Machinery**

<sup>7</sup> Notable sources include, Eurostat <http://ec.europa.eu/eurostat>, EEA <http://www.eea.europa.eu/>, EU Export Helpdesk <http://export-help.ec.eu.int/>, the ECB <http://www.ecb.int/>, the OECD <http://www.oecd.org/>.

Sector, (B) Banking Services, (C) Chemicals Industry, (D) Agriculture Produce, and (E) Environmental Goods and Services.

The main body of this report is followed by an extensive Technical Annex. A detailed justification for the sector choices is provided in **Technical Annex I**. **Technical Annex II** includes a technical note on the trade simulation models that have been prepared for this Trade SIA and provides further detail on the technical workings of the models.<sup>8</sup> **Technical Annex III** provides a list of abbreviations used in this report.



<sup>8</sup> Note: Early modelling undertaken for the draft Global Analysis Report in Fall 2007 has been updated to both incorporate new data and revised scenarios. Final results are available in Section 4 of the Final Report available at the project website.

# SECTION 2

## ECONOMIC CONTEXT

### Summary

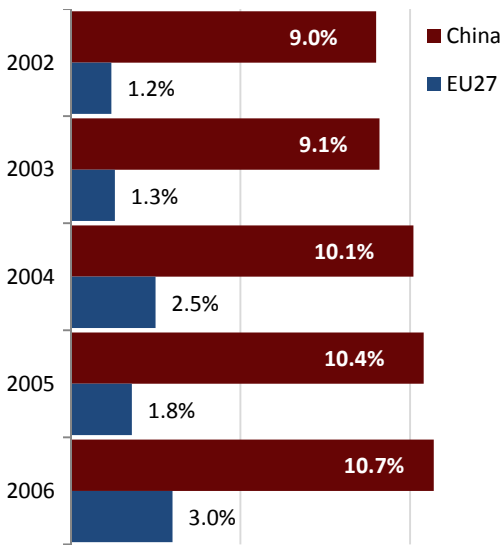
By some measures China is now the world's second largest national economy after the United States. The European Union's combined single market surpasses the size of both these countries. The economic impact of any trade agreement, between what are notionally the world's first and third largest economies, will therefore have an impact beyond the confines of the bilateral trading relationship. Beyond their sheer size, however, the Chinese and European economies have arguably little in common. While China is an emerging economy which has experienced double-digit growth for the last few years, the mature European economy has only recently started to recover after a period of low growth. Behind the impressive headline figures of China's economic rise, the Chinese economy suffers from a number of substantial imbalances which are causing increasing domestic and international frictions.

Despite the Chinese leadership's declared intention to promote slower and more sustainable growth, progress on this front has been slow. The risk of overheating in key sectors ranging from real estate to steel production, and the overhang of a large stock of (potential) non-performing loans in the banking sector, continue to seriously threaten the overall health of the economy. The most serious of these imbalances are caused by the over-reliance of economic growth based on investment-driven industrial manufacturing, which unless the current rate in export growth continues, is in many sectors economically unviable. In combination with a low value currency, this makes China's economy particularly vulnerable to external developments in the global economy.

China's pattern of growth has been at the expense of domestic consumption, reflected by the relatively small role which the services industry plays in the economy. Over-investment in products which have no outlet in the domestic market has led to export-surges and dumping of Chinese products in overseas markets. Such imbalances are an important contributing factor to rising trade frictions between China and its trading partners. Although the EU-China trade dialogue remains constructive, both parties now agree that the EU's trade deficit with China, which reached €159bn in 2007, is unsustainable. A high-level working group has been set up on how to address the trade imbalance, which will report its initial findings at the next EU-China summit on 28 November 2007. The challenge remains how to formulate policies to address economic challenges within the trade realm which are in many ways rooted in domestic social concerns.

## 2.1 Economic Context: China's economy in perspective

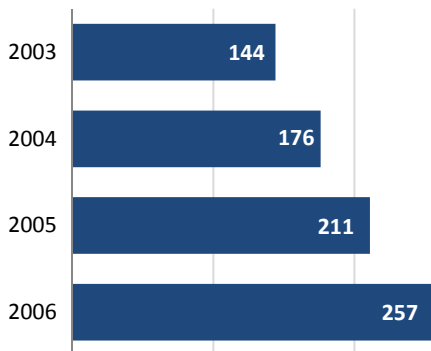
Figure 1: China and EU GDP Growth (Real GDP)



Source: IMF, Eurostat (2007)

China has benefited enormously from integration into the world economy. China's incremental liberalisation process emphasises export-driven growth and the incorporation of foreign technologies to achieve rapid economic transformation. The process was, and is, able to be sustained by a large surplus of labour, which together with high savings channelled through state-owned banks, fuels investment on a massive scale. Since the mid-1980s China's economy has grown at nearly 10 percent per year and, as measured by purchasing power parity (PPP), has increased over six-fold during this period. In the last few years China has reached double-digit growth rates (Figure 1). Measured in PPP-terms, China's size could approximate that of the enlarged European Union as early as 2010.<sup>9</sup> However, taking these figures at face value arguably overstates China's size.<sup>10</sup> Using the more traditional current exchange rate method, China's GDP in 2006 was still only marginally larger than that of the United Kingdom. Using this measure, it is not until 2010 that China's GDP is expected to be around the size of Germany. China's current GDP size of around US\$ 3 trillion is regarded as still comparatively small to Europe's current GDP size of around US\$ 16 trillion.<sup>11</sup>

Figure 2: Total EU-China Trade (€ bn)

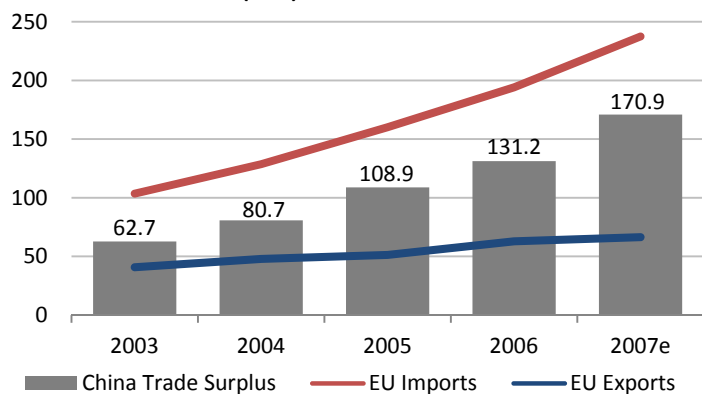


Source: Eurostat Comext (2007)

## 2.2 China in International Trade

The main force behind China's rapid growth has been its exports, which have grown annually by around 25 percent for the last 20 years. Today, exports account for around 60 percent of GDP. China is the world's third largest trading nation, with over seven percent of world trade. This figure is expected to rise to 10 percent by 2010 making China the world's biggest exporter<sup>12</sup>. Following enlargement in 2004, the EU became China's largest trading partner and China became Europe's second largest. According to Eurostat, bilateral trade stood at over € 257 billion in 2006 (Figure 2). As seen in Figure 3, Europe's trade deficit with China is expected to increase from € 131.2 billion to € 170bn by the end of the year 2007.

Figure 3: EU 27 trade with China (€ bn)



Source: Eurostat Comext (2007); EMG Analysis

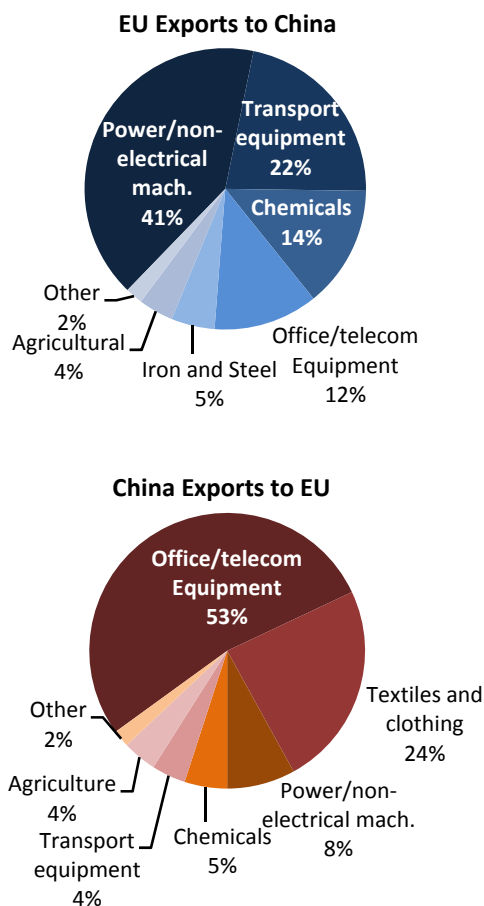
<sup>9</sup> The IMF (2007) estimates that in 2007 China's size measured in PPP US\$ will amount to US\$ 11,207 billion. GDP in PPP-terms for the EU-27 is estimated at US\$ 14,519 billion.

<sup>10</sup> Various studies have concluded that PPP estimates for China are particularly weak and have a tendency to overestimate its size. See e.g. Yao (2007); Riskin (2004); Keidel (1994)

<sup>11</sup> IMF (2007) estimates

<sup>12</sup> OECD (2005); DG Trade (2007)

Figure 4: EU-China Trade Profile (2005)



Source: Eurostat Comext (2006)

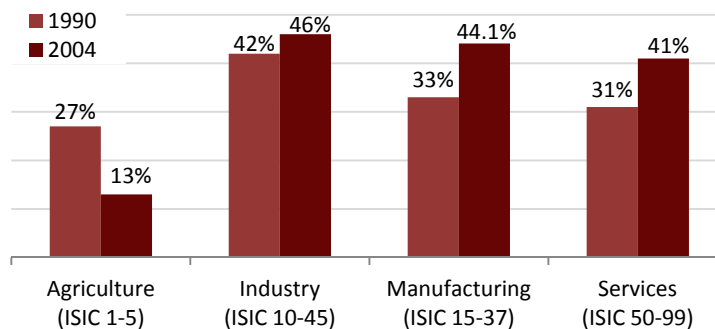
Although China's growing trade imbalance with its trading partners (most notably the United States and Europe) is to an extent attributable to China's comparative advantage, there is growing international pressure for China to take action on non-tariff barriers to market entry<sup>13</sup> and allow its currency, the Yuan (RMB), to appreciate.<sup>14</sup>

Despite China's substantial advantages in exporting a large number of goods, China increasingly relies on raw materials, technology, capital goods and other intermediate goods from other trading partners.<sup>15</sup> Although more sophisticated electronics, furniture and transport goods have now replaced textiles and other light manufacturing as the largest share of Chinese exports,<sup>16</sup> most of the products exported from China are still assembled from parts made in more advanced economies. Countries which have invested the most in China such as Japan, Taiwan, Korea and other Asian countries, are among those which enjoy a trade surplus with China, exporting higher value parts and components for assembly. Only a relatively small, although rapidly increasing, proportion of the total value added is generated in China. The country's growth in exports is closely followed by growth in imports, with China now having become the world's 4<sup>th</sup> largest importer. The structure of China's trade with Europe reflects the country's comparative advantage. Relatively lower value added sectors such as electronic equipment and textiles continue to make up over three-quarters of Chinese exports to Europe. Whereas Europe continues to export higher value products to China such as mechanical machinery, transport equipment and specialised Chemicals (Figure 4).

### 2.3 Structure of the Chinese Economy: Fast modernisation, but an over-reliance on investment-driven growth

Economic growth in China continues to be industry-led and reliant on export growth and investment.<sup>17</sup> This pattern of growth is an important determinant of China's relatively old-fashioned economic structure in which industry still accounts for the largest share of GDP (see Figure 5).

Figure 5: China's Economic Structure (% of GDP)



Source: World Bank (2007); NBS (2006)

<sup>13</sup> A study published in February 2007 estimated the economic cost of market access obstacles for European companies to be € 21.4 billion.

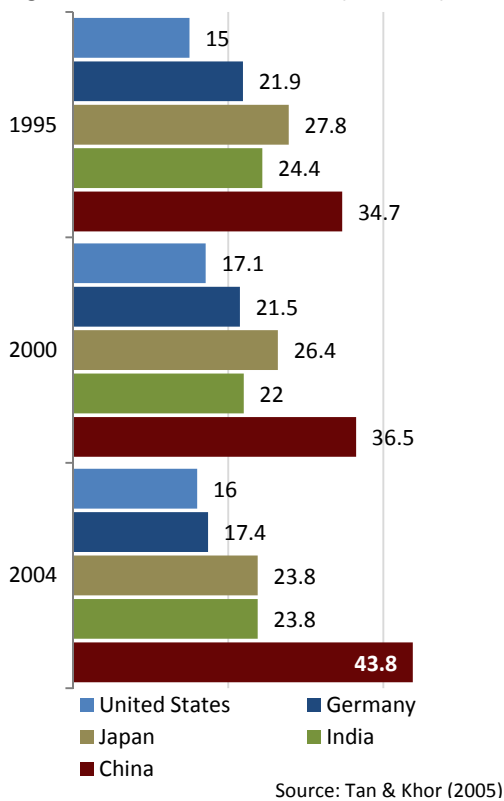
<sup>14</sup> According to China's Ministry of Commerce, China's RMB cumulative appreciation to the US dollar will likely reach 9 - 10 per cent by the end of 2007, despite increasing international pressure for more rapid appreciation.

<sup>15</sup> According to the Institute of World Economics and Politics Chinese at the Academy of Social Sciences (CASS), China's processed exports account for approximately 57.8% of total manufacturing exports.

<sup>16</sup> In the early 1990s, textiles and other light manufacturing accounted for more than 40% of China's exports. The growth of more sophisticated electronics, furniture and transport goods grew from 17.3% of total exports in 1990 to 41.7% in 2004 (OECD, 2006).

<sup>17</sup> World Bank (2007) China Quarterly Update - May

**Figure 6: Gross Fixed Investment (% of GDP)**



In the early 1990s around a third of China’s economy was still attributable to agricultural output. Since the 1990s over 20 million Chinese workers per year have moved from rural areas to work in urban areas. This rapid process of urbanisation has reduced the relative economic importance of agriculture to less than 13 percent of GDP. The modernisation of China’s economic structure has been away from primary industries and towards the manufacturing and service industries. There is increasing evidence that China is rapidly moving up the technology and value chains. In certain segments, China is fast gaining competitiveness at the high-end of the production value chain. For some time, China has been producing and exporting goods that are more typical of those from advanced economies.<sup>18</sup>

Leaving aside the social and environmental ramifications of this otherwise impressive economic transformation (discussed in **Sections 3 & 4**), China’s economy remains vulnerable due to high degrees of investment over consumption-enticed growth.<sup>19</sup> Investment still accounts for over 40 percent of China’s GDP growth, more than 2.5 times that of countries such as the United States and Germany (**Figure 6**). This figure has progressively increased since the 1990s and despite measures by the Chinese government to cool down the economy, there has been little sign of growth moderating. Although there is some evidence that investment is increasingly being financed from profits rather than (soft) credit and that the highest investment growth is happening in the largely ‘commercialised’ sectors.<sup>20</sup> Firm-level data for listed enterprises suggests that Chinese enterprises still cannot generate enough cash flow to pay interest on about 20 to 30 percent of their total debt. A moderate rise in interest rates or a moderate drop in sales could cause 40 to 60 percent of the debts of all firms to become unserviceable.<sup>21</sup> This risk is amplified by the fact that the absolute number of non-performing loans has continued to grow, even though their share of the total number of loans has decreased.<sup>22</sup> The majority of these loans still went to SOEs.

China’s dependence on relatively volatile investment and exports for growth remains an important weakness of the economy, carrying with it the continued risk of disruptive boom and bust cycles. China’s economic policy has started to move away from growth based on exports towards growth based on more stable consumer spending. A consumer economy limits the vulnerability of the Chinese economy to external demand while also improving the living standards of ordinary Chinese households. However, a successful transition to a consumer economy remains at risk due to China’s slow progress in substantially reforming its financial sector. Moreover, China’s high level of consumer savings restricts growth in domestic demand. High level personal savings is unlikely to change barring an improvement in the country’s social safety net (discussed in more detail in **Section 3**) and the creation of alternative sustainable investment vehicles for consumers (discussed in more detail in **Case Study E: Banking Services**).

<sup>18</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

<sup>19</sup> Lardy (2007) ‘China’s Consumption Driven Growth Path’ available at: <http://www-agecon.ag.ohio-state.edu/programs/Anderson/trade/LardyInv.pdf>

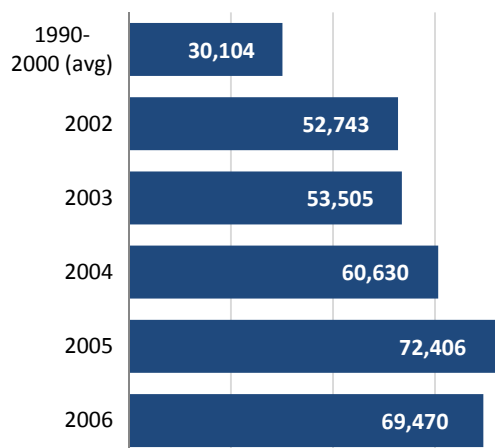
<sup>20</sup> World Bank (2006) China Quarterly Update – August, ‘Commercialised’ sectors refers to sectors in which the presence of the state is relatively small.

<sup>21</sup> DG Trade (2007) Study on the Future Opportunities and Challenges of EU-China Trade and Investment Relations (Study 7: Financial Services)

<sup>22</sup> Despite a rise in interest rates, bank lending in 2006 was almost double the level of a year earlier. In the first quarter of 2007, China’s banks posted 16.25 percent growth in loans, up 1.52 percent from the same period in 2006 (China Daily, 29 April 2007).

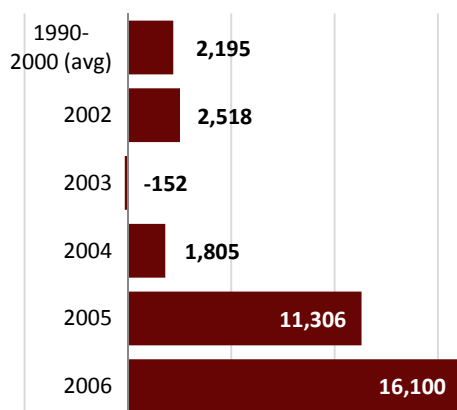
## 2.4 Foreign Direct Investment (FDI): Inward FDI remains strong, outward FDI gains momentum

Figure 7: China FDI Inflows (US\$ mn)



Source: UNCTAD (2006); USCBC (2007)

Figure 8: China FDI Outflows (US\$ mn)



Source: UNIDO (2006); USCBC (2007)

FDI flows into China remain strong, increasing progressively for the last two decades (see **Figure 7**). Although last year saw a slight decrease in the total amount of FDI inflows compared with 2005, this does not mean that China's FDI inflows have reached their peak. 2005 was an unusual year due to the amount of foreign financial institutions making equity investments into local Chinese banks in anticipation of the opening up of the banking sector. When subtracting these one-off financial sector transactions from overall FDI inflows, China's non-financial FDI inflows actually increased 4.5 percent, from US\$60.3 billion in 2005 to US\$ 63 billion in 2006.<sup>23</sup> According to Chinese statistics, the EU ranks as the third largest investor in China, after Japan, Taiwan, and ahead of the US.<sup>24</sup> However, the EU is the largest technology exporter to China with a contracted value of US\$ 7.54 billion in 2006 (42% of the total).<sup>25</sup>

A new and important trend that will likely have a long-term impact on China's relationship with its trading partners is China's increasing outward FDI, which has erupted since 2005 and reached over US\$ 16.1 billion in 2006<sup>26</sup> (**Figure 8**). In 2005, 90 percent of Chinese FDI outflows were concentrated in the oil and gas, ICT, telecom and industrial sectors. According to China's Ministry of Commerce (MOFCOM), over half (52.6%) of outward invest went to Latin America (including the off-shore banking hubs Cayman and British Virgin Islands), followed by Asia (35.6%). In value terms, the majority of these investments were made by a limited number of large-scale state-owned enterprises. Of the US\$ 35 billion of China's total outward FDI between 1979 and 2004, US\$ 496 million (0.5%) went to the EU-15.<sup>27</sup> The largest recipients of China's FDI stock in Europe are Germany (26%), Spain (25.7%), the UK (21.9%) and Denmark (13.5%). For the moment the numbers remain relatively small and a large amount of it is state sponsored, however, a number of high-profile investments are increasingly making headlines (see **Box 1**, on the next page). By some estimates, China's overseas investments could reach up to US\$ 60 billion by 2010.<sup>28</sup>

## 2.5 China's Economic Outlook: Mildly slower, but higher quality growth?

Proposals for the 11<sup>th</sup> Five Year Programme, approved in 2005, aim to double GDP per capita by 2010 relative to 2000. The Programme also prioritizes the tackling of disparities in income distribution, energy efficiency, the environment, and developing a "harmonious society". To achieve this, the Chinese government has announced a large number of policy initiatives that could potentially support the rebalancing agenda in favour of more equitable and environmentally sustainable growth.

<sup>23</sup> USCBC (2007)

<sup>24</sup> [http://www.fdi.gov.cn/pub/FDI\\_EN/Statistics/Home%20News/t20060906\\_61679.htm](http://www.fdi.gov.cn/pub/FDI_EN/Statistics/Home%20News/t20060906_61679.htm)

<sup>25</sup> Xinhua (2006) 'China's technology imports up 45.2%' [http://news.xinhuanet.com/english/2006-10/09/content\\_5181857.htm](http://news.xinhuanet.com/english/2006-10/09/content_5181857.htm)

<sup>26</sup> Official statistics are likely to significantly underestimate the actual size of China's outward FDI. For instance, the "Errors and Omissions" items in China's balance of payments statistics (which include unauthorised overseas investment), amounted to over US\$27 billion in 2004 (Cheng & Stough, 2007).

<sup>27</sup> Van Den Bulcke & Zhang (2006)

<sup>28</sup> Pamlin & Long (2007)

### Box 1: High Profile Cases of Chinese FDI

#### China BlueStar

China BlueStar became the largest Chinese investor in Europe after its acquisition of France-based specialty chemicals producer Rhodia's for €5 billion. The purchase included Rhodia's organic silicon business, including its patents, manufacturing equipment and distribution channels, as well as the company's sulphide business. Earlier, BlueStar bought France-based Adisseo Group, the world's second largest producer of methionine, a supplement in animal feed.

Source: Xinhua (28 October 2006)

#### Blackstone Group

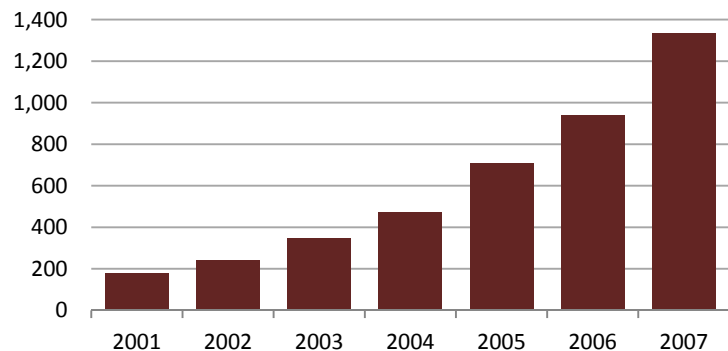
In May 2004, the Chinese government announced that it would invest US\$ 3 billion for a 10% stake in the Blackstone Group, one of America's leading private equity firms. Commentary speculated that the primary reason for China's investment is to diversify its foreign holdings. Most of China's substantial US\$ 1.2 trillion foreign reserves have been held in U.S. Treasury bonds and other government debt. Chinese officials have indicated for some time that they planned to put a portion of reserves into investments with higher returns.

Source: BusinessWeek (24.5.2007)

Rapid GDP growth at 10.7 percent in 2006 set a high starting point for the 11th Five-Year Programme (2006–2010), which has an indicative average annual growth of 7.5 percent. The government's preferred approach has been to use fiscal policy measures to restrict investment growth in an attempt to cool the economy. Since 2004, such 'guidance' has been provided the financial sector, for example, with financial institutions being advised to stop the provision of financing to certain types of projects.

However, a rapidly growing money supply, resulting from the record trade surpluses described above, has continued to fuel investment growth. **Figure 9** shows the rapid growth of China's foreign currency reserves, which are major cause of this liquidity glut. The People's Bank of China (PBOC) has therefore increasingly resorted to monetary policy measures to try to mop-up excess liquidity. At the time of writing, the PBOC has raised interest rates three times since the beginning of 2007, with more expected later in the year.<sup>29</sup>

Figure 9: China Foreign Currency Reserves (June, US\$ bn)



Source: safe.gov.cn

Despite such measures, economic growth has continued to grow at a rate of 11.9 percent in the second quarter of 2007 and more recently the economy has experienced a surge of inflation which, although up to now has been largely confined to food prices, is at risk of spreading to other sections of the economy.<sup>30</sup> Further inflationary pressures are expected to develop in the near future, with wages expected to increase, rising costs of oil and electricity, and the continuation of the "wealth effect" produced by a stockmarket boom.<sup>31</sup> For now the Chinese government has been able to contain inflation in some areas, such as by putting price-caps on inputs such as oil and electricity.

In the medium to long-term, the aim of the Chinese government will be to achieve sustainable growth by establishing a more balanced and inclusive economy, dependent less on exports, investment, and industry, and more on private consumption and services. The Asian Development Bank (ADB) expects such policies will start having an effect in the near future, resulting in softer external demand and policy curbs which are expected to gradually lower GDP

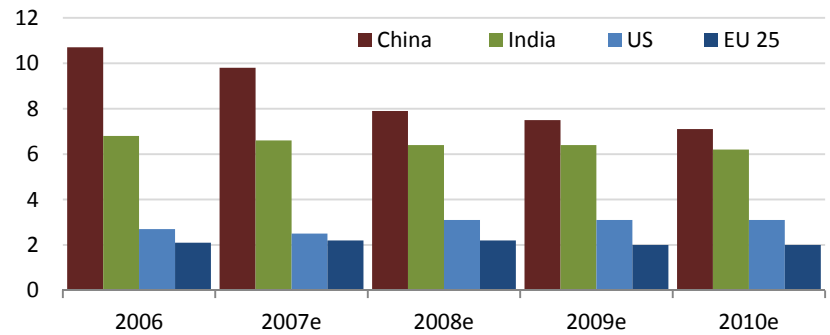
<sup>29</sup> FT (13 August 2007)'Chinese inflation hits 10-year high'

<sup>30</sup> China's inflation rate accelerated to 5.6 percent in July 2007. In the same month prices of pork and other meat surged 45.2 percent and that of eggs 30.6 percent <http://www.iht.com/articles/ap/2007/08/13/business/AS-FIN-ECO-China-Inflation.php>.

<sup>31</sup> China's main stock index is up more than 70 percent this year, making speculators rich on paper and fuelling spending. The interest rate rises have had little effect on the Chinese stockmarket.

growth rates.<sup>32</sup> Despite this, the Chinese economy is expected to continue to maintain the highest growth rates of any of the world's major economies (Figure 10).

Figure 10: Global Expected GDP Growth Rates Compared (%)



Source: IMF, ADB, Goldman Sachs, Deloitte, Bloomberg (2007)

The rebalancing of the economy will be fundamental in addressing China's environmental and social challenges as well as reducing increasing frictions with its trading partners in a long-term and sustainable way. As explored in the following sections, despite recent and mixed progress, China's environmental and social development has so far lagged behind China's economic success.

<sup>32</sup> ADB (2007) Asian Development Outlook

# SECTION 3

## SOCIAL CONTEXT

### Summary

The challenge of rebalancing the Chinese economy, and the entrenchment of the current growth model, stems from the day-to-day reality of an estimated 20 million new entrants coming into the labour market each year. A multitude of risks associated with economic reforms could in the short-term derail growth and create unpalatable employment pressures. Continuous job creation, particular in a number of regional hotspots, remains the priority for the Chinese government.

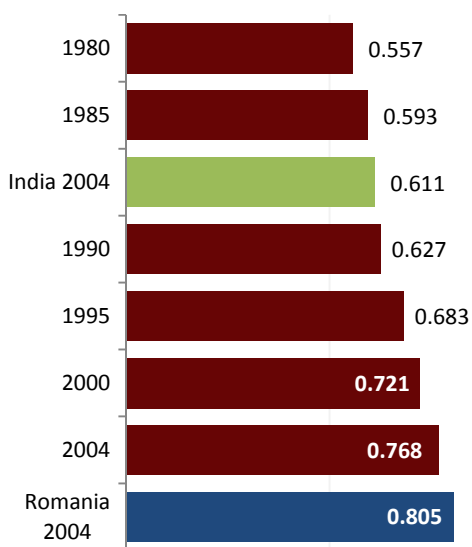
China's rapid economic growth has certainly already brought about far-reaching social implications. Reform has brought better living conditions to millions and China no longer has any province or autonomous region which is classified as of "low human development" according to the United Nation's Human Development Index. Despite this impressive achievement, China's rapid new economic wealth has not been spread equally over the entire population and social inequalities have rapidly increased. The greatest inequalities exist between China's urban populations (located on the eastern seaboard) and rural populations (located in the central and western regions).

The urban population earns on average three times more money than their rural counterparts - an inequality factor double almost all other Asian countries and one of the highest in the world. Urban populations live six years longer than those in the countryside; and have better access to clean water, sanitation, education and medical treatment. This makes China a difficult country to compare in an international perspective. Whereas cities like Shanghai are similar in terms of human development to Greece, rural areas in Guizhou province have more in common with countries such as Botswana.

Since enlargement in 2004 and 2007, the EU's own regional differentials have become a far more important consideration for policymakers than previously. Average EU income is estimated at €24,600 in 2007, but new member states such as Romania and Bulgaria have less than half the EU average with a per capital income of only €9,700 and €9,400 respectively. Whilst the comparative advantage of Europe's more advanced economies is well matched to the emergence of the Chinese economy, other member states, notably those in Southern and Central Europe, are relatively worse placed and at a higher risk of seeing a delocalisation of jobs as a result of low-cost Chinese imports.

### 3.1 Social Context

**Figure 11: Evolution of China's Human Development Index Score**



Source: UNDP (2006)

Note: The HDI ranks countries according to their citizens' quality of life rather than strictly by traditional economic figures. The criteria for calculating rankings include life expectancy, educational attainment, and adjusted real income.

In the last 20 years, economic restructuring has seen 250 million people move from China's farms and villages to the cities. The urban population has more than doubled to nearly 550 million over the past 20 years. However, due to population growth the absolute number for the rural population still remains high, accounting for 57 per cent of China's total population in 2005. In the next 20 years another 300 million are expected to move to the cities.<sup>33</sup> According to the Asian Development Bank, the number of rural poor has fallen from around 250 million in 1978 to 23.7 million in 2005. The population living below the international standard of US\$ 1 per day (using PPP) fell from 374.8 million (33% of the population) in 1990 to 135 million (10% of the population) in 2005.<sup>34</sup> Improvements as measured by the United Nation's Human Development Index (HDI) now categorises China as a middle-income country (**Figure 11, Box 2**). China no longer has a single province or autonomous region in the low human development category.<sup>35</sup>

These aggregated improvements taken at face value mask increasing social challenges and divisions. The divide between urban and rural areas are important in understanding the reality of a 'two speed China' – one China being the booming coastal cities in the east, the other the countryside in the central and western parts of the country. It is illustrative that national statistics for urban and rural areas in China are usually collected separately and often provide a more meaningful insight than aggregated national level statistics. The 2005 Human Development Report for the first time separated urban and rural areas, illustrating that one part of China can be compared with countries such as South Africa and Mongolia, while the urban areas are approaching some European member states in terms of quality of life (**Figure 12**).

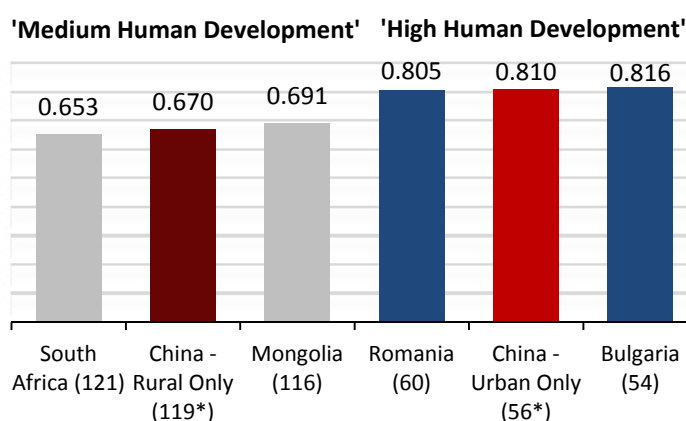
#### Box 2: China's Urbanisation and MDG

##### Living Space Expands with Urbanisation

Improving the lives of urban slum dwellers is just one of the Millennium Development Goals (MDG) where China has enjoyed noted success achieving. In 2007 the United Nations 7<sup>th</sup> Global Forum on Reinventing Government noted that China's policies promoting urbanisation and population control had contributed significantly to a reduction of slum residents in recent years. According the Ministry of Construction, average living space in China has grown beyond low and medium income country averages to reach 20.4 square meters per household, with a stated goal of 35 square meters per household. High income countries, such as Germany and France, enjoy an average of 46.6 square meters per household.

Sources: United Nations Department of Economic and Social Affairs, People's Daily

**Figure 12: Human Development Levels of Chinese Urban and Rural Areas Compared (2005)**



\*Hypothetical Ranking  
Source: UNDP (2006)

<sup>33</sup> Ziegler, 'China's New Towns, Housing, Sprawl, the Automobile and Sustainable Development', Ljubljana, 2006

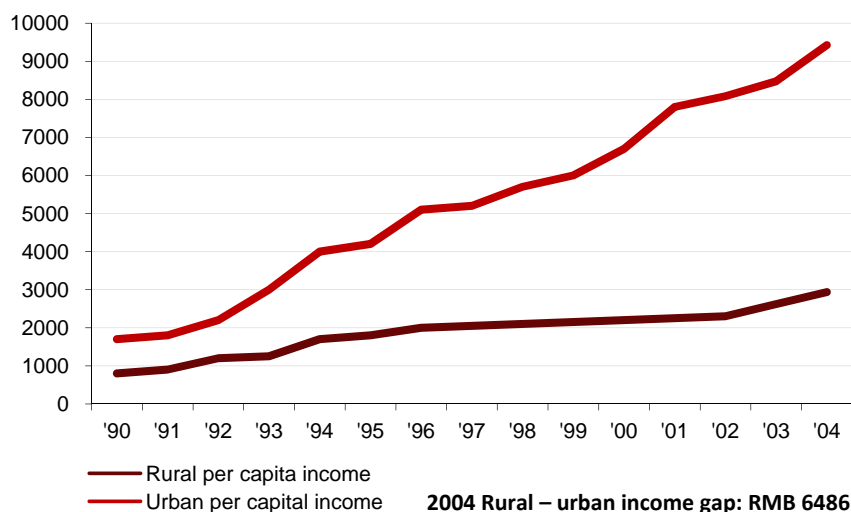
<sup>34</sup> ADB (2006)

<sup>35</sup> UNDP China Human Development Report 2005, [http://www.undp.org.cn/downloads/nhdr2005/NHDR2005\\_complete.pdf](http://www.undp.org.cn/downloads/nhdr2005/NHDR2005_complete.pdf)

### 3.2 Income Disparities

Widening wealth disparities are the most straightforward manifestation of inequity in China. In 2005, the richest 10 percent of the population owned 33.1 percent of the country’s monetary wealth, while the poorest 10 percent owned only 1.8 percent. Although inequality exists within cities and within rural areas, the most remarkable difference lies in the disparity between the two areas. In rural areas, about 30 million people still live in poverty and 60 million live close to the national poverty line set at an annual income of RMB 637 (€ 61). **Figure 13** shows the development of the rural – urban income gap since 1990. This gap has widened from less than RMB 1,000 (€ 96) to almost RMB 6,500 (€ 625). At a factor difference of 3:1, China’s income inequality is approximately double that of almost all Asian countries, and one of the highest in the world.<sup>36</sup> In Beijing and Shanghai municipalities, two of the most prosperous areas in the country, average earnings were estimated to be 75 to 93 percent higher than the national average.<sup>37</sup>

**Figure 13: Rural and Urban Income Gap in China (RMB)**



Source: China Statistical Yearbook (various years); EMG Analysis

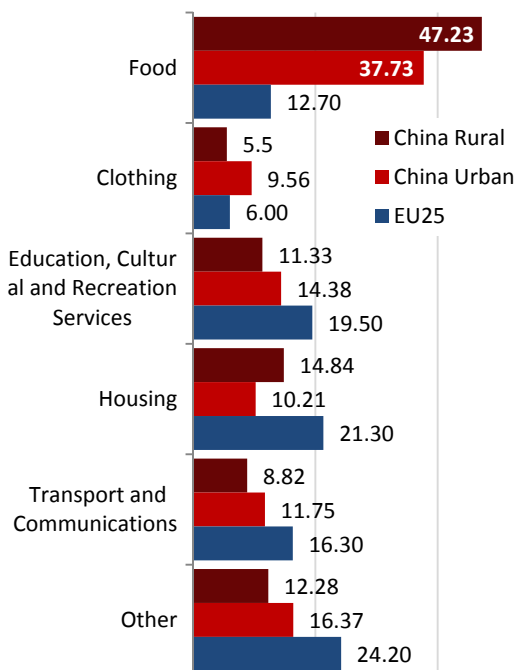
**Figure 14** (see next page) shows the development of the Gini coefficient over the two decades, a common way to illustrate income inequality. Since the early 1990s, China’s Gini coefficient has floated above the UNDP’s so-called “alarm boundary”, indicating unsustainable levels of inequality. Among the 131 countries in the UNDP’s most recent survey, only 31 countries score worse than China in terms of equality of income distribution.<sup>38</sup> Whilst an increase in inequality is a common feature of developing countries, certain government policies have created additional challenges in reducing inequality. These include barriers to employment and public services due to residency-restrictions (*hukou*), inequitable valuations of land classified along rural and urban lines, and fiscal regimes which require local governments to fund public services through local tax revenue.

<sup>36</sup> Dollar (2006), ‘Poverty, inequality and social disparities during China’s economic reform’, World Bank Policy Research Working Paper 4253, June 2007

<sup>37</sup> ‘Perspectives on the social security system of China’ ESS Extension of Social Security, Global Campaign on Social Security and Coverage for All, ILO (2006)

<sup>38</sup> UNDP Global Human Development Report (2006)

**Figure 15: China Rural, China Urban and EU 25 Household Expenditures Compared (2005)**



Source: China Statistical Yearbook (2006); Eurostat; EMG Analysis

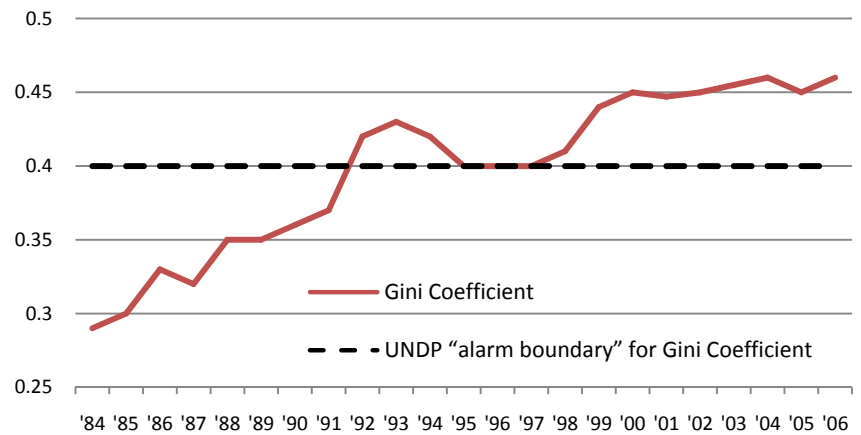
**Box 3: China’s New Labour Law**

**Ensuring Stability and Fair Treatment for Workers?**

On a legislative basis, China’s labour law provides for workers’ rights. Key provisions of the Labour Law Act (1994) reinforce the duty of employers to abide by contractual obligations which include pay, terms of employment and length of service. In reality some employers, particularly those employing low-skilled workers, regularly withhold pay from their employees. In addition, many low-skilled or undocumented workers are working without contracts or lack their own copies. The new Labour Contract Law (2008) has been introduced to address these problems, stipulating harsher penalties for employers in breach of the law and closing several loopholes, such as setting a limit to the number of short term contracts that can be signed in succession by an employee. Despite this positive direction concerns remain that without stronger support on the part of regional authorities, enforcement of existing legislation will remain inconsistent and that abuses will continue.

Sources: Baker & McKenzie Client Alert Feb 2006, Financial Times, Christian Science Monitor

**Figure 14: Development of the Gini Coefficient in China (1984-2006)**



Source: Ravallion and Chen (2004); EMG Analysis

Income disparity is also apparent from the very different consumption patterns of Chinese urban and rural households. Rural households still spend over half of their income on basic needs such as food and clothing (Figure 15).

**3.3 Quality of Life**

The gap between rural and urban lifestyles is widening, not only superficially in terms of income, but also in terms of overall quality of life. This includes access to essential medical treatment, education, equal rights to employment as well as other social rights which the government promotes. Reports focusing upon China’s progress in achieving the eight Millennium Development Goals suggest that for the most part it is on target to meet most goals by the 2015 deadline. Some targets such as the universal provision primary education have been reached 13 years ahead of schedule<sup>39</sup>, although other goals, including achieving gender equality in education, reducing under-five child mortality, and combating HIV/AIDS been identified as still behind schedule.

**3.3.1 Employment**

Since signing a Memorandum of Understanding with the International Labour Organisation (ILO) in 2001, China has pledged to abide by the Decent Work Agenda Principles, and has stressed the commonality between the principles and the development of Chinese labour laws and standards. The Decent Work Agenda focuses to support fair globalisation and sustainable development through the outlining of a global social floor of fundamental principles based upon employment, dialogue, rights and protection. Since the signing of the memorandum, improvements have been made in law governing working conditions for Chinese workers, resulting in the new Labour Contract Law which will come into effect on the 1st of January 2008 (see Box 3). The law further empowers labour unions and provides more basic rights to workers, including tighter rules on contract duration and informal employment. However, concerns remain over core labour issues including freedom of association, freedom to go on strike and exploitive labour practices (Box 4).

<sup>39</sup> 'China’s Progress towards the Millennium Development Goals' 2005, Ministry of Foreign Affairs of the People’s Republic of China and the United Nations System in China

#### Box 4: Reducing Unacceptable Work in China

##### Exploitation of Female Migrants

Between 2000 and 2002 the number of abduction cases with the intent of forced marriage in China dropped significantly, from 17,963 to 3,056. Despite progress in this area, recent estimates by the All-China Women's Federation (ACWF) and the International Labour Organisation (ILO) International Programme on the Elimination of Child Labour (IPEC) have concluded that the number of girls and young women who are trafficked for labour exploitation, particularly prostitution, is increasing. With 100 million migrants on the move annually since reform of the *hukou* system in 2001, prevention of exploitive labour practices remains difficult. Between 2001 and 2003 the Ministry of Public Security conducted 20,360 investigations into trafficking, with 22,018 arrests and 42,215 victims rescued. Despite visible enforcement campaigns, the Chinese government, ILO and ACWF have acknowledged that the problem remains largely unresolved. Anhui, Henan, Guangdong, and Jiangsu have been identified as provinces where trafficking practises are especially prevalent.

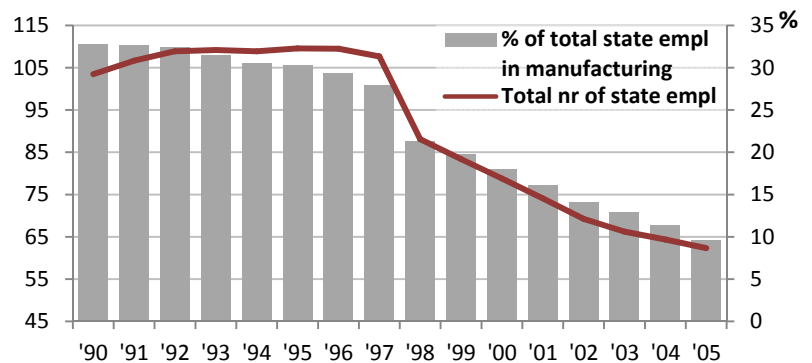
Sources: International Labour Organisation - Project to Prevent Trafficking in Girls and Young Women for Labour Exploitation in China (CP-TING)

These aspects stand out from the remainder of the Law which has been based largely on a European model.

According to the Chinese Ministry of Labour and Social Security, there will be 20 million jobseekers entering the labour market annually for at least the next five years. It is estimated that almost 24 million new job vacancies are needed due to continued lay-offs, particularly in the state sector. With an annual economic growth between eight and nine percent, it is estimated that this would only result in about 12 million job vacancies being created every year.<sup>40</sup>

Paradoxically, despite the general problem of rising unemployment, there are geographical and sectoral pockets of labour shortages. In the fast-growing Southern province of Guangdong, for example, wages have been rising steadily as local factories report a severe shortage of migrant workers.<sup>41</sup> This has resulted in the gradual rise of wages and labour standards in an effort by local companies to continue to attract migrant workers. Even more acute is the shortage of skilled blue-collar workers, doctors, lawyers, accountants and managerial talent. This mismatch will likely see substantial wage increases for certain workers, while in other sections of society the downward pressure on wages can be expected to continue for the foreseeable future. This will likely continue to aggravate inequalities in China.

Figure 16: Reduction in the number of state employees (mn)



Source: China Statistical Yearbook (2005, 2006)

Since the 1990s the state has drastically reduced employment numbers in State Owned-Enterprises (SOEs) by about 41 million.<sup>42</sup> Figure 16 shows the fall in state employment during the 1990s. The most important contributor to the reduction of employees has been cuts in those working in state owned manufacturing companies. From 1990 to 2005 the total number of state employees working in manufacturing reduced by over 23 percentage points or almost 28 million workers. A proportion of this reduction has been achieved by the privatisation of former SOEs, however, this has also resulted in a substantial number of redundancies. The social impact of these lay-offs has

<sup>40</sup> Chinanews (2007) [http://www.chinanews.cn/china\\_observer/2007-07-03/37221.html](http://www.chinanews.cn/china_observer/2007-07-03/37221.html)

<sup>41</sup> New York Times (2006) 'Labor Shortage in China May Lead to Trade Shift' Available at:

<http://www.nytimes.com/2006/04/03/business/03labor.html?ex=1301716800&en=49c0d472886e1f39&ei=5088&partner=rssnyt&emc=rss>

<sup>42</sup> China Human Development Report, 2005 UNDP

**Box 5: Safety issues in China's coal mining sector**

**Fatalities in the mining sector**

Despite extracting only 35% of the world's coal, China accounts for 80% of global mining fatalities. In 2006 there were 13 deaths per day in Chinese mines with a total of 4,746 deaths, compared with the United States', the world's second largest coal producer, 47 deaths. The total number represents a 26% reduction from the previous year, though much of the reduction is attributable to the closing of 12,000 small illegal mines in 2005, and not improvements in safety standards in large mines. Although safety standards are in place, they are often not enforced at a municipal level. China's growing thirst for energy as well as shortages in skilled workers and qualified supervisors continue to place constraints on reducing health hazards associated with the sector. A mining accident in August 2007 in Zhangzhuang which resulting in the death of the 172 miners trapped was blamed on mismanagement and the use of loopholes in health and safety legislation to avoid implementing a sound-based early-warning mechanism.

Sources: Xinhua News Agency, China Labour Bulletin

been concentrated in the North-Eastern 'rust-belt' area which also suffers from a low rate of new private sector job creation.<sup>43</sup>

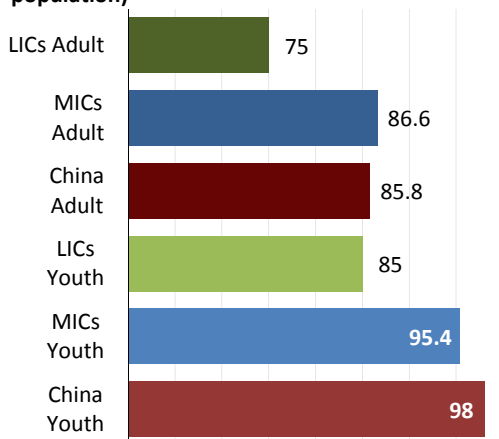
While the urban unemployment rate stood at 4.1 percent in March 2007,<sup>44</sup> this figure does not take into account the large number of migrant workers without jobs. Rural unemployment figures are generally unpublished, and are believed to be high (estimated at around 120 million).<sup>45</sup> Employment pressures were especially acute during the late 1990's when, as seen in **Figure 16**, drastic reductions of state employed workers took place. A large number of these workers did not receive social security to compensate for their job-loss, since the *hukou* system prevented migrant workers from getting certain jobs and local regulations gave preferential treatment to locals.

Official statistics indicate that private enterprises and self-employment accounted for over 11 million new jobs in 2005. The increasing number of workers employed in the private sector has brought with it a large number of economic benefits related to increases in efficiency. Increased private sector employment has also stripped away some of the protective labour practices employees of SOEs previously enjoyed. Whereas previously retired SOE employees would receive retirement packages amounting to as much as 60 percent of their previous salary and free accommodation, the lack of an adequate social security fund means an unsure future for state-layoffs.

The number of hours worked is one important indicator of a country's overall decent working conditions and quality of life.<sup>46</sup> The Chinese Academy of Social Sciences now makes the conservative estimate that about 1.4 percent of employees work 36 hours of overtime per week. Only 65 percent of employees who work overtime receive overtime payments. Most migrant workers and low wage earners never receive payments for overtime work and the eight percent that are compensated wait an average of 3.1 months. Recent ILO findings also show that younger workers work considerably longer hours than other age groups, especially in the catering services sector where one third of workers commonly worked on weekends.<sup>47</sup> In addition, 600 million rural labourers are estimated to work in sub-standard work environments, and due to lack of registration, are often not protected under labour laws.<sup>48</sup>

Health and Safety at work remains a key issue for manufacturing and extraction industries. Whilst improvements through investment in modern technology and review of safety standards have been carried out, the rate of industrial work related accidents and fatalities remains at a much higher level in China compared to the EU. **Box 5** illustrates China's ongoing struggle with safety in the mining sector.

**Figure 17: Comparative Literacy Rates (% of population)**



Source: UNDP (2005)

<sup>43</sup> The Machinery sector section of this report introduces the social importance of the North-Eastern provinces in more detail.

<sup>44</sup> 'China end-June urban registered unemployment rate 4.1 pct - labour ministry' AFX News, 20 July 2007 <http://www.abcmoney.co.uk/news/202007105868.htm>

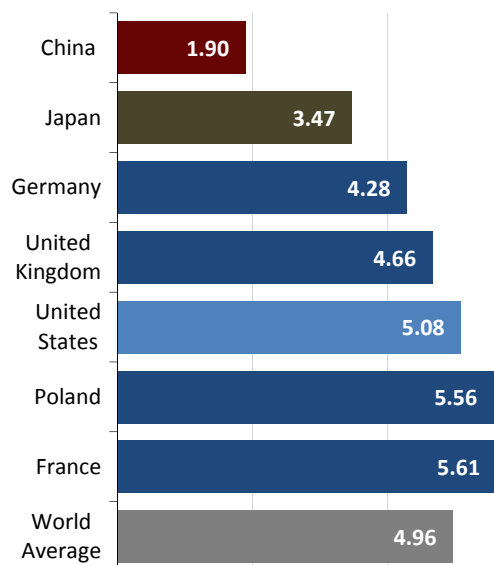
<sup>45</sup> Ibid

<sup>46</sup> ILO Director-General Juan Somavia. Available at : [http://www.ilo.org/global/About\\_the\\_ILO/Media\\_and\\_public\\_information/Press\\_releases/lang-en/WCMS\\_071326](http://www.ilo.org/global/About_the_ILO/Media_and_public_information/Press_releases/lang-en/WCMS_071326)

<sup>47</sup> ILO PRESS RELEASE <http://www.ilo.org/public/english/region/asro/beijing/download/press/0707ec.pdf>

<sup>48</sup> CASS statistics taken from 'China's employees' legal rights need more protection', People's Daily Newspaper, 3 July 2007 <http://english.peopledaily.com.cn/90001/90776/6204534.html>

**Figure 18: Government spending on education as % of GDP (2002)**



Source: OECD (2002)

**Box 6: Chinese Diet Improves**

**Rural malnutrition persists**

The diet of average Chinese has improved significantly since the early 1990s. Rural residents, traditionally at higher risk of malnutrition, enjoyed 14% growth in their protein consumption between 1992 and 2004, with average height of children under age 18 increasing by 3.3 centimetres. Country wide, the portion of children suffering from low body weight dropped from 65% in 1992 to 7.8% in 2004. Similarly, growth retardation affected 14.3% of children under five in 2004, down from 70% in 1992. Despite the remarkable progress which has been made, a large urban rural divide persists. In 2004 growth retardation affected 34.6% of children in poverty stricken areas, double the national average, while 14.4% of children were afflicted with low body weight. Furthermore, despite gains, average height of rural children remained 4.2-4.9 centimetres lower than urban children.

Source: Xinhua

**3.3.2 Inequality in Education Provision**

The most recent statistics indicate that China’s literacy rates were higher than the average for both low income countries (LIC) and middle income countries (MIC). **Figure 17** shows China’s literacy rates in an international comparative perspective. In general, the rates of school enrolment and continued attendance are very high, especially for primary school education.

Despite the comparatively high quality of education, the share of total government spending to education is well below that of OECD members as well as most comparable developing countries (**Figure 18**). As with healthcare provision (explored in more detail below), China’s large urban-rural disparity in education is very much a result of the decentralised fiscal system which until recently has required local governments to provide the bulk of financing for education. Thus in economically strong regions attendance levels are high and fees are comparatively low. In poor rural areas funding for education is low, and in some areas schools require students’ families to cover all costs. This has resulted in poor rural areas having low continuation rates, lower average years of education and disparities in education level by gender as parents prefer to keep boys in school rather than girls. Currently illiterate and semi-literate females outnumber males by a factor of 2.6:1.<sup>49</sup>

In recent years the government has aimed to mitigate educational inequality by abolishing rural education fees in poorer provinces. This plan is to be implemented nationwide this year, three years ahead of the plan announced in the 11<sup>th</sup> Five Year Plan approved in 2006. Total central government spending for 2007 is planned to rise to RMB 27 billion (almost US\$ 8 billion). The abolition of fees should improve education standards for the poorest segments of the rural population.

**3.3.3 Healthcare**

As seen by the high life expectancy figures discussed below, healthcare in China has improved greatly in recent years. China is largely free of relatively easy curable diseases, malnutrition and high infant mortalities associated with developing countries (see **Box 6**). In general, the health situation resembles that of a developed nation with 80-95 percent of deaths attributable to non-communicable diseases and injuries.<sup>50</sup> The most common causes of death are malignant tumours and cerebrovascular diseases. The leading causes of death from infectious disease are respiratory infection, liver cancer (largely caused by hepatitis B), and tuberculosis. Smoking is becoming an increasing and dominant cause of chronic disease in China, now home to a quarter of the world’s smokers. China is facing, and will continue to face, a high mortality rate and disease burden caused by tobacco use.

In 2005 estimates by the Chinese Ministry of Health, in cooperation with the United Nations Programme on HIV/AIDS, found that approximately 650,000 people in China are living with HIV, of which 75,000 suffer from AIDS. In 2005 alone there were 75,000 new HIV infections, and an estimated 25,000 AIDS deaths.<sup>51</sup> Increasingly HIV is shifting from high risk groups, such as drug

<sup>49</sup> China Human Development Report 2005 UNDP

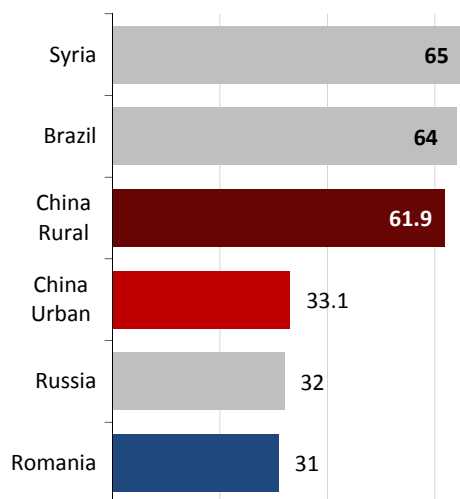
<sup>50</sup> WHO China Health profile

<sup>51</sup> [http://data.unaids.org/publications/External-Documents/RP\\_2005ChinaEstimation\\_25Jan06\\_en.pdf](http://data.unaids.org/publications/External-Documents/RP_2005ChinaEstimation_25Jan06_en.pdf)

abusers, to the general population, with the rate of clinical AIDS cases rising as well. These new trends have raised concerns that an HIV epidemic may escalate, with worst case scenarios estimating as many as 20 million HIV cases by 2010.<sup>52</sup>

In the first quarter of 2007 outbreaks of measles erupted in regions of China, with cases rising by 68% compared to 2006.<sup>53</sup> This follows trends since 1995, when China’s measles rate was as low as 5 per 100,000. By 2005 that figure had doubled to 10 in 100,000, with over 130,000 cases nationwide.<sup>54</sup> Notably, these outbreaks have occurred primarily in poor western provinces as well as provinces which receive high inflows of migrant labour. In response to recent outbreaks the Ministry of Health has assured enforcement of a nationwide, two-dose vaccination rate of 95%. Furthermore, the Ministry of Health has set a target date for measles eradication by 2012, with assistance from the World Health Organisation.

**Figure 19: Maternal Mortality Rates (deaths/100,000 liveborn child)**



Source: UNDP (2005)

The overall improvements made in health and the generally positive national averages mask regional variations. China’s rural, uneducated poor do not enjoy the same level of healthcare as their better educated, urban, richer compatriots. Recent government estimates show that while 94 percent of urban residents have access to safe water, only 73 percent do in rural areas. Sanitation levels also vary widely: while 90 percent of city dwellers have access to improved sanitation, only 49 percent of those do in rural areas.<sup>55</sup> Other indicators of poverty-related health issues and premature death also show disparities in China’s health. **Figure 19** shows an international comparison of China’s urban and rural populations in maternal mortality rates, a leading cause of death in developing countries. The figures clearly illustrate an urban-rural disparity. Urban areas record significantly less deaths associated with childbirth. The under-five mortality rate reflects the same trend: the death rate is two to three times higher in the poor western provinces than developed eastern areas.<sup>56</sup> The healthcare system in China is marked by high user fees which are a major contributor to growing inequities. The finance of healthcare is essentially one of public provisions, with private financing and some public contributions by way of employment based insurance schemes. Despite these insurance schemes, the last twenty years has seen a growing reliance on household payments to fund health care.

The Urban Employee Basic Medical Insurance System, established in 1998, covers over 100 million people. For rural areas, the Government has recently established the Rural Cooperative Medical System (RCMS) and the government is aiming for 80 percent coverage by 2007—three years ahead of target. The policy subsidises rural health insurance by RMB 40 per person (RMB 20 from central government, RMB 20 from local government). Overall central government spending on health in 2007 will increase to RMB 31 billion, up from RMB 16.5 billion in 2006.<sup>57</sup> Even with the increase in subsidies for

<sup>52</sup> <http://www.hivpolicy.org/Library/HPP000626.pdf>

<sup>53</sup> <http://china.org.cn/english/health/202560.htm>

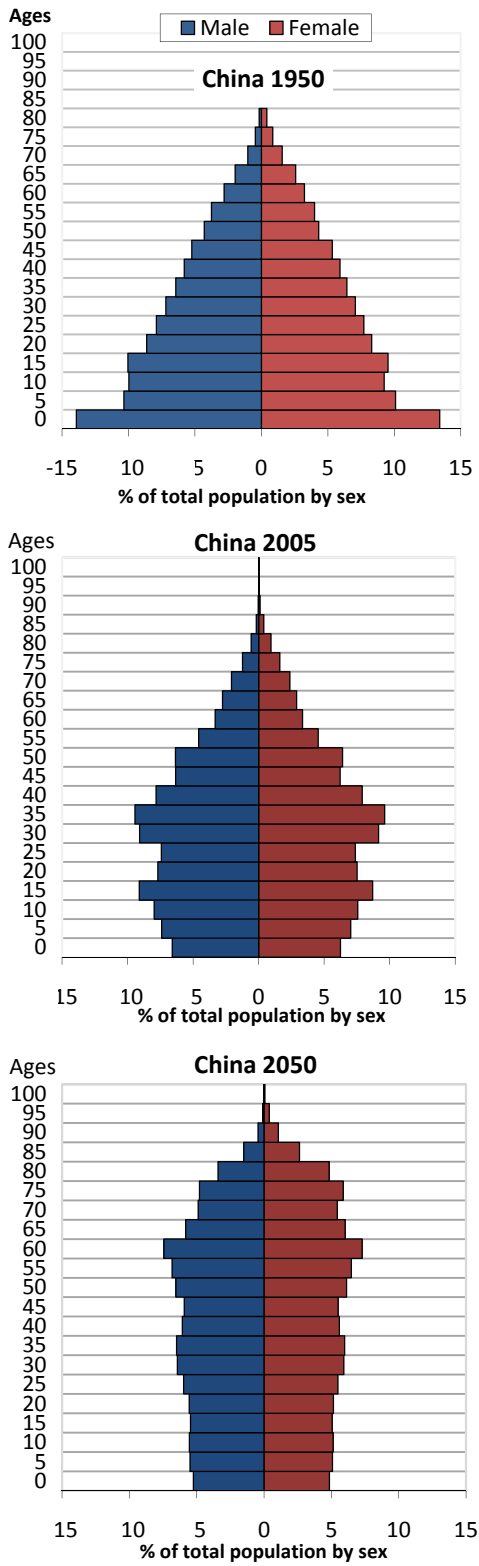
<sup>54</sup> [http://english.peopledaily.com.cn/200611/29/eng20061129\\_326513.html](http://english.peopledaily.com.cn/200611/29/eng20061129_326513.html)

<sup>55</sup> World Health Survey, WHS China 2002

<sup>56</sup> WHO Country Health Information Profile, China

<sup>57</sup> World Bank China Quarterly Update May 2007

**Figure 20: China Age distributions (1950, 2005 and 2050)**



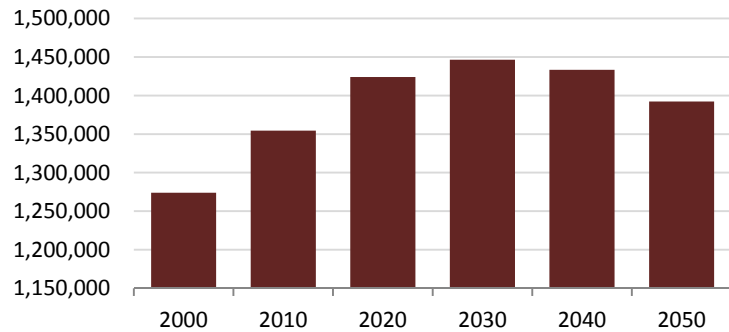
Source: Guilmoto & Van der Geest (2006)

rural areas, total spending on health will still lag behind urban level spending (public or private). The issue of inequitable healthcare treatment remains a current and future priority for government.

### 3.4 Population Changes

Due to China's national family planning scheme (albeit applied far less stringently in rural areas), the population is estimated to grow by as much as 91.9 million between 2010 and 2030, before finally declining (**Figure 21**). The average life expectancy at birth is 71.9 years;<sup>58</sup> however this is also marked by urban-rural differences. City dwellers had a life expectancy of 75.2 years, whereas the rural population was six years lower at 69.6 years.<sup>59</sup> Differences between urban and rural lifestyles, and unequal access to healthcare, have meant that the gap in life expectancy has grown during the mid-nineties and is likely to continue to expand. The traditional preference for male over female children has also been accentuated under the one child policy. Currently in China, 118 boys are born for every 100 girls at a national level. In some areas the gap is wider. Girls in parts of Guangdong are outnumbered by a factor of 130:100.<sup>60</sup>

**Figure 21: China Population, 2000-2050 (thousands)**



Source: World Population Prospects (2004) in Guilmoto & Van der Geest (2006)

Improved living conditions and the continued adherence to the one-child policy<sup>61</sup> have meant that China's population is aging and will relatively soon resemble a structure more similar to many developed countries (**Figure 20**). China arguably will become the first country in history to have to confront the situation of getting old before getting rich. According to a report by the National Population and Family Planning Commission of China (NPFPC), the population over 60 will triple from 143 million to 430 million by 2040, putting considerable strain on social security and healthcare services. China's implicit pension debt is 70-140 percent of one year's GDP, which at current levels is equal to US\$ 1.5-3 trillion.<sup>62</sup> This will no doubt represent China's foremost demographic challenge, as no effective national pension system currently exists.

<sup>58</sup> Human Development Index, United Nations, New York, 2006, Source [http://hdr.undp.org/hdr2006/statistics/countries/country\\_fact\\_sheets/cty\\_fs\\_CHN.html](http://hdr.undp.org/hdr2006/statistics/countries/country_fact_sheets/cty_fs_CHN.html)

<sup>59</sup> China Human Development Report 2005 UNDP

<sup>60</sup> "Rising sex-ratio imbalance 'a danger'", China Daily, 23 January 2007

<sup>61</sup> 'Official: Family Planning to Stay', National Population and Family Planning Commission of China <http://www.npfpc.gov.cn/en/en2007-07/news20070704.htm>

<sup>62</sup> 'China's tattered social safety net' Businessweek, January 2007

These trends will also likely reverse the current excess supply of labour towards a comparative shortage of labour. Estimates suggest that in 2013, the number of workers as a percentage of the population will peak at 72.1 percent with the absolute size of the working population peaking at 997 million in 2016<sup>63</sup>. Given China's still growing pool of labour and long-term unemployed, such a decline in the national labour supply is arguably beneficial in the short-term. In the longer term, however, this will mean that Chinese industry will have to rethink its current reliance on labour-intensive manufacturing and processing industries.

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<sup>63</sup> China Youth Daily (2006) Who will support China's development in 50 years? Available at: [http://english.people.com.cn/200608/23/eng20060823\\_296130.html](http://english.people.com.cn/200608/23/eng20060823_296130.html)

# SECTION 4

## ENVIRONMENTAL CONTEXT

### Summary

Globally, environmental degradation can be traced back thousands of years. However, it is during China's more recent history that rapid economic growth has led to an unprecedented demand for natural resources. The damage to the economy and public health due to environmental pollution are increasing. Statistics demonstrate that an estimated one-third of China's 1.3 billion people live in areas where the air is polluted, and around 700 million Chinese do not have access to drinking water that meets minimum purity standards.

The central government has become progressively aware of the problem and has promulgated a multitude of policies and regulations in an attempt to control the deteriorating situation. In 1998, the State Environmental Protection Administration (SEPA) was officially upgraded to a ministerial-level agency, and an increasing number of laws pertaining to environmental protection have been passed. The enforcement of these laws is being expanded but remains problematic.

Not all environmental initiatives by the central government have so far been whole-heartedly adopted by local governments. Many local authorities continue to place economic growth and job creation ahead of all other considerations. At the same time, low pricing policies for key commodities such as water and energy means production and consumption patterns remain wasteful. Although China is one of the most water-deficient countries in the world, low-pricing means that water is used inefficiently. Moreover, water pollution has contributed to China's water shortage worsening in recent years, although concern's about water supplies and efficient use are not unique to China. China's continued reliance on coal combined with a high energy intensity, almost four times the level for the EU25, means that harmful emissions have continued to increase. The scale of China's environmental problems has global consequences. China is set to become one of the world's largest contributors to global warming, while polluted water from its rivers has ended up in neighbouring countries. China is one of the world's twelve richest countries in terms of biodiversity, but also contains one of the world's highest number of threatened species.

There is considerable scope for cooperation between the EU and China on the environment and energy efficiency. China has already adopted a number of EU-inspired environmental standards. Bilateral technical cooperation between Europe and China is expected to further increase in the near future. European suppliers of environmental goods and technologies are already well established within the Chinese market. With the Kyoto Protocol's Clean Development Mechanism expected to gain momentum, business-level cooperation is expected to continue in the future.

### Box 7: Economic Costs of China's Air Pollution

- Losses of crops and forests due to acid rain are estimated to amount between US\$ 730 million and US\$ 3.63 billion per year.
- Air pollution due to premature mortality costs an estimated US\$ 19 billion annually.
- Pollution exacerbating water scarcity costs US\$ 17 billion per annum.
- Sandstorm damage costs about US\$ 540 million per year
- US \$6 billion 'cost' of the 'green wall' of trees being built to shield Beijing against sand and dust.

Source: World Bank (2007); Liu & Diamond (2005)

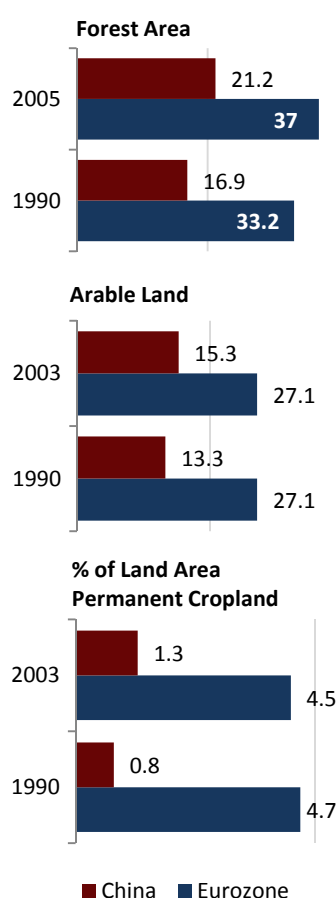
China's impressive economic record is expected to continue for the foreseeable future. Since the early 1990s some decoupling of pollution resulting from economic growth has occurred. However, the pollution that China continues to generate based on highly resource intensive economic growth is resulting in increasing environmental costs (Box 7). The World Bank puts its conservative estimate of the total economic cost of air and water pollution in China in 2003 at RMB 362 billion (€ 4.69 bn) or about 2.68 percent of GDP. Besides the economic impact of environmental degradation, the social impacts are increasing. Since 2002, the number of complaints to the environmental authorities has increased by 30 percent every year, reaching 600,000 in 2006; while the number of large-scale protests caused by environmental issues has grown by 29 percent every year.<sup>64</sup> In 2006, SEPA suspended 163 projects that would damage the environment with a total investment of RMB 770 billion (€ 75.3 bn). Many of these projects were high-polluting and energy inefficient, such as constructions of steel, chemical and power plants. The projects had not applied for government approval before beginning construction, and some local governments had reportedly provided cover for these highly-polluting enterprises.<sup>65</sup>

The importance of China's environmental challenges is increased by the fact that environmental issues in China often have a strong international dimension, reflecting regional and global environmental and economic interdependencies. The environmental pressures and demand for energy and other resources associated with China's rapid economic development dramatically underlines questions about the environmental sustainability of current production and consumption patterns globally<sup>66</sup>.

### 4.1 Land Use and Biodiversity Degradation

While about 20 percent of the world's population resides in China, the country covers just slightly over six percent of the world's land area. Much of China is covered by mountains and deserts, leaving only a small proportion which can be cultivated. China's land shortages are made worse by the fact that China is currently the world's largest producer of municipal solid waste producing around 190 million tonnes of waste in 2004. By 2030, China is expected to produce 480 million tons.<sup>67</sup> In 2005, 1.34 billion tons of industrial solid wastes were generated across the country, up by 12.0 percent against the previous year. The discharge of industrial solid wastes was 16.547 million tons, down by 6.1 percent compared with that of 2004. The amount of industrial solid wastes under integrated reuse totalled 770 million tons, resulting in an integrated utilisation rate of 56.1 percent, the same as the previous year. Of the industrial solid waste produced, it is estimated that 18 percent is treated, 3 to 4 percent is left untreated, and 38 percent is stored. Around 2.2 to 8.3 million tons of hazardous waste are produced in China per annum. Of that, around 1.5 to 3 million tons is disposed of into the environment without treatment.<sup>68</sup>

Figure 22: Land Use ('000 km<sup>2</sup>)



Note: World Bank Development Indicators only report 'Eurozone' statistics referring to those EU Member States which had joined the Euro at the time the data was collected (i.e. excluding Slovenia)

Source: World Bank (2006)

<sup>64</sup> Ma (2007)

<sup>65</sup> SEPA.gov.cn (2007) [http://english.sepa.gov.cn/zwxx/xwfb/200701/t20070112\\_99526.htm](http://english.sepa.gov.cn/zwxx/xwfb/200701/t20070112_99526.htm)

<sup>66</sup> OECD Working Party on Environmental Performance (2007) 'Environmental Performance Review of China: Conclusions and Recommendations (Final) [http://www.oecd.org/document/47/0,3343,en\\_2649\\_34307\\_37809647\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/47/0,3343,en_2649_34307_37809647_1_1_1_1,00.html)

<sup>67</sup> World Bank (2005)

<sup>68</sup> Millison (2005)

Soil quality and fertility have been declining due to acid rain, intensive use of fertiliser and pesticides, and untreated industrial and household waste. As a result, approximately 100,000 square km of cropland was made unusable. However, China has been able to increase arable land usage in other places, increasing usage from 13.3 percent in 1990 to 15.3 percent in 2003. China has also reforested 26,766 square kilometres per annum between 1990 and 2005, an increase in woodland of 1.7 percent per year. Despite these efforts, forest area and arable land usage rates still account for only half that of Eurozone member countries (Figure 22).

The World Conservation Union in 2002 identified China as one of the world's countries with the most threatened species. It is thought that a quarter of its species are threatened. At least 200 plant species have become extinct since the 1950s, and more than 61 percent of wildlife species have suffered habitat losses. Despite these losses, China today is still one of the world's twelve richest countries in terms of biodiversity (see Table 1). This varied biological diversity exists in part because of the disparate climate and size of the country. China's State Environmental Protection Agency put a direct use value of biodiversity in China at RMB 1,800 billion (€ 176 bn) and a total annual indirect use value of RMB 37,310 billion (€ 3,647 bn).<sup>69</sup> Despite the uncertainties inherent in such estimates, these values do clearly indicate the contribution biodiversity makes to China's socio-economic development.

**Table 1: Biodiversity Indicators (Number of threatened species, 2004)**

		China	USA	India	France
<b>Mammals</b>	Total Known	502	468	422	148
	Threatened	80	40	85	16
<b>Birds</b>	Total Known	1,221	888	1,180	517
	Threatened	82	71	79	15
<b>Higher Plants</b>	Total Known	32,200	19,473	18,664	4,630
	Threatened	443	240	246	2
<b>GEF benefits index<sup>(1)</sup></b>		430.4	599.1	291.3	26.1

Note: <sup>(1)</sup> GEF benefits index for biodiversity is a composite index of relative biodiversity potential for each country based on the species represented in each country, their threat status, and the diversity of habitat types in each country. Figures are for 2005.

Source: World Bank (2006)

## 4.2 Water Pollution

Taken as a whole, China is one of the most water-deficient countries in the world. The total volume of water resources in China is substantial, although water is unevenly distributed and scarce given the size of its population. The country can be divided into two distinct regions: the "dry North", referring to all areas north of the Yangtze River basin, and the "humid South", which includes the Yangtze River basin and the provinces south (see Table 2).<sup>70</sup>

The per capita volume of water resources at 2,170 cubic meters is small, equivalent to less than 28 percent of the world average. By the time China's population is expected to reach 1.6 billion by 2030, per-capita water resources

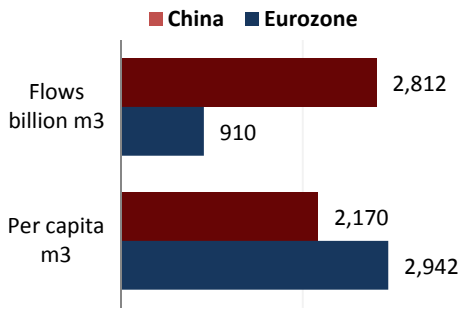
**Table 2: "Dry North" vs. "Humid South"**

	North	South
<b>Population</b>	550 m	770 m
<b>Cropland</b>	60%	30%
<b>Water Capacity</b>	25%	75%

<sup>69</sup> SEPA (2007) China's Biodiversity: A Country Study (Executive Summary) available at: [http://www.zhb.gov.cn/english/biodiv/state\\_imp\\_en/country\\_study.html](http://www.zhb.gov.cn/english/biodiv/state_imp_en/country_study.html)

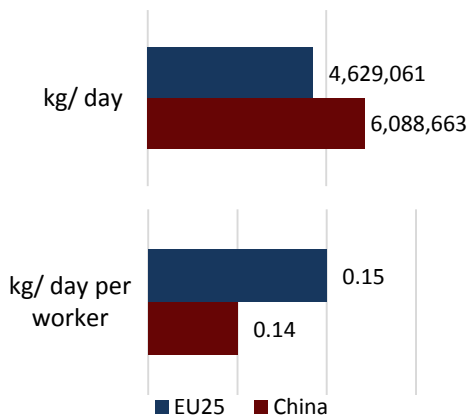
<sup>70</sup> If things proceeds as planned, this divide will be in part remedied by China's gigantic south-to-north water division project, which is expected to take 50 years to complete and cost US\$ 59 billion. The project, which started in 2002, involves building three canals running 1,300 kilometres across the eastern, middle and western parts of China, linking the country's four major rivers -- the Yangtze, Yellow, Huaihe and Haihe. <http://www.mwr.gov.cn/english1/20040827/39304.asp>

**Figure 23: Renewable Fresh Water Resources**



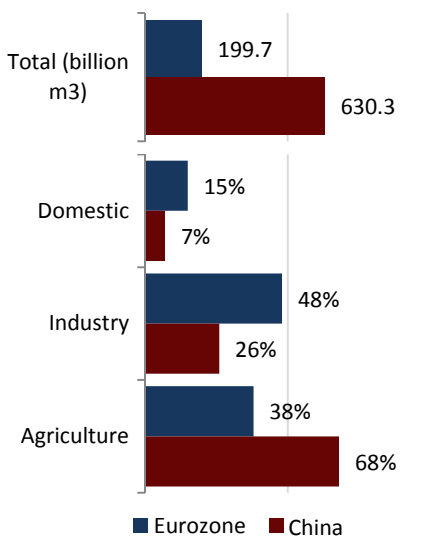
Source: World Bank (2006)

**Figure 24: Emissions of Organic Water Pollutants (2003)**



Source: World Bank (2006)

**Figure 25: Annual Freshwater Withdrawals (1987-2002)**



Source: World Bank (2006)

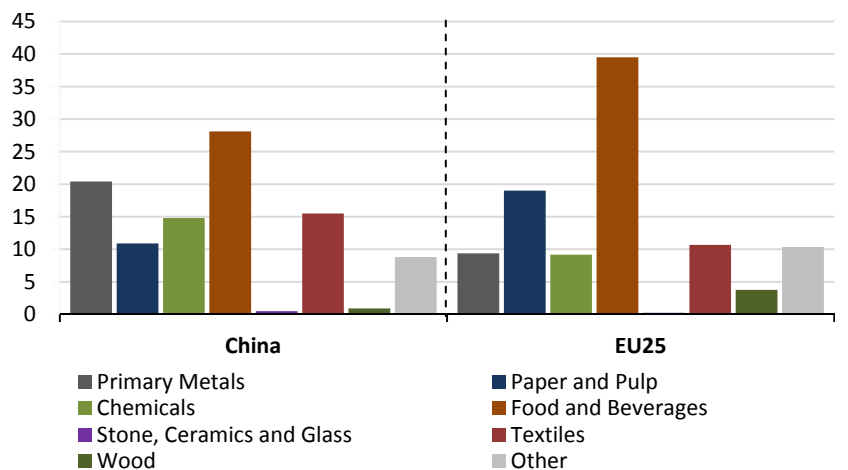
will drop to 1,760 cubic meters, close to the internationally recognised water-shortage benchmark of 1,700 cubic meters.<sup>71</sup> By comparison water resources per capita for the Euro zone stands at 2,942 cubic meters per capita (Figure 23). Water resources are much more equally distributed in the EU than in China, making water availability in Europe a less pressing concern.

Due to water pollution China’s water shortage is getting worse every year. In 2003, China registered organics water pollutants of over six million kilograms per day<sup>72</sup> (Figure 24). This has led to about 38 percent of China’s rivers and 75 percent of its lakes to be severely polluted, while only 20 percent of water waste is treated in China, compared to 80 percent in most developed countries. Around 700 million Chinese do not have access to drinking water that meets minimum purity standards; hence cholera and other waterborne diseases have a high prevalence rate. The result has been water shortages across most of northern China, estimated at 30 billion cubic meters.<sup>73</sup>

Agriculture is by far the most important use for water, accounting for over two-thirds of water used (Figure 25). Despite shortages, water is used wastefully in China. Water prices in China do not reflect the true scarcity of water and do not provide an incentive to curb water use. Increasing the price of water remains difficult due to the large amount of agricultural users, leading to issues of affordability and impacts on agricultural output. Water pollution in China is mainly a consequence of pollution from the agricultural sector such as agrochemicals and wastes from intensive livestock farming.

Within industry, just under 90 percent of organic water pollutants from industry originates from the food and beverages, primary metals, chemicals, textiles, and paper and pulp sectors (Figure 26).

**Figure 26: Industry shares of emissions of organic water pollutants (2003)**



Source: World Bank (2006)

A series of government measures are being planned to increase China’s water capacity including optimising current water resources, reforming the water

<sup>71</sup> People’s Daily (5 June 2002) ‘Water Resources Set to Reach Critical Levels’

<sup>72</sup> Emissions of organic water pollutants are measured in terms of biochemical oxygen demand, which refers to the amount of oxygen that bacteria in water will consume in breaking down waste (World Bank 2006).

<sup>73</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations – Study 10: Sustainable Technologies and Services

### Box 8: High Profile Incidents of Chemicals Pollution in China

In November 2005, 3.8 million residents of Harbin went without access to tap water for over a week following a spill of over 100 tons of benzene, nitrobenzene and aniline on the Songhua River. Furthermore, citizens of the Russian cities of Khabarovsk and Komsomolsk, which lie on the Songhua's Russian extension, the Amur River, were also affected. A United Nations disaster response team estimated that while aniline and nitrobenzene would dissipate or degrade within several days, benzene may remain at harmful levels in groundwater for several months.

In August 2006 ten tons of mixed toxic chemicals were dumped in a tributary to the Songhua, the Mangniu River, by truck drivers for Changbaishan Jingxi Chemical. Later in 2006 over 20,000 Hubei residents were evacuated following a leak of over 10 tons of ammonia, a chemical which aggravates asthma in low levels and may cause death in high concentrations.

In May 2007 in Jiangsu Province, a major centre for chemicals production, China's third largest freshwater lake suffered from a massive algae bloom which turned waters fluorescent green, killed fish, and endangered the drinking water of neighbouring Wuxi's 2.8 million residents. Prior to the incident, Lake Tai had over 2,800 chemical factories surrounding it, however increased scrutiny in the months following the incidents and new regulatory fees have reduced that number by 1,000. The central and Jiangsu governments are expected to spend of RMB 108.5 billion (€ 9.9 bn) in 2007 on cleanup efforts.

Source: UNEP (2005); Gov.cn; IHT (2007)

pricing system, and coordinating water administrations across regions. In 2006, China launched a giant water pollution control project involving billions of RMB, making it the country's largest environment-related scientific research project in terms of investment. The project will develop technologies to ensure drinking water security, limit environmental deterioration of river valleys, and control water pollution in cities.<sup>74</sup> The Chinese government plans to spend a further one trillion RMB (approx. € 96 billion) by 2010 to build waste-water treatment plants and upgrade water distribution systems around China.

## 4.3 Chemical Pollution

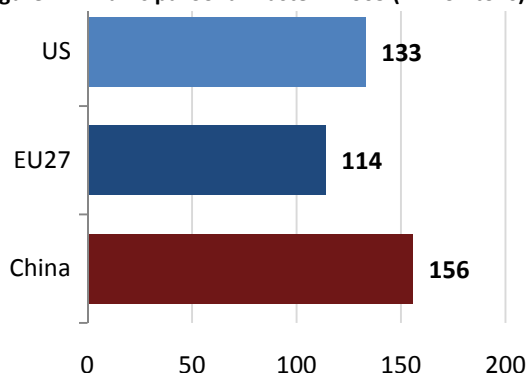
In recent years environmental damage due to domestic chemical production has received attention from both Chinese government and media (Box 8). A July 2006 SEPA report found that of 7,555 chemical factories nationwide, 1,354 were located along sources of water while 2,489 were located near major population centres. In all, some 45 percent posed a major environmental or public health risk in the event of a spill. Following the report, SEPA ordered 3,745 chemical and petro-chemical plants to improve their preventative safety measures, at a cost of over RMB 14.05 billion, or € 1.32 bn.<sup>75</sup>

<sup>74</sup> SEPA (2006)

<sup>75</sup> "Half of China's chemical plants endanger environment" [http://news.xinhuanet.com/english/2006-07/11/content\\_4818672.htm](http://news.xinhuanet.com/english/2006-07/11/content_4818672.htm)

## 4.4 Solid Waste

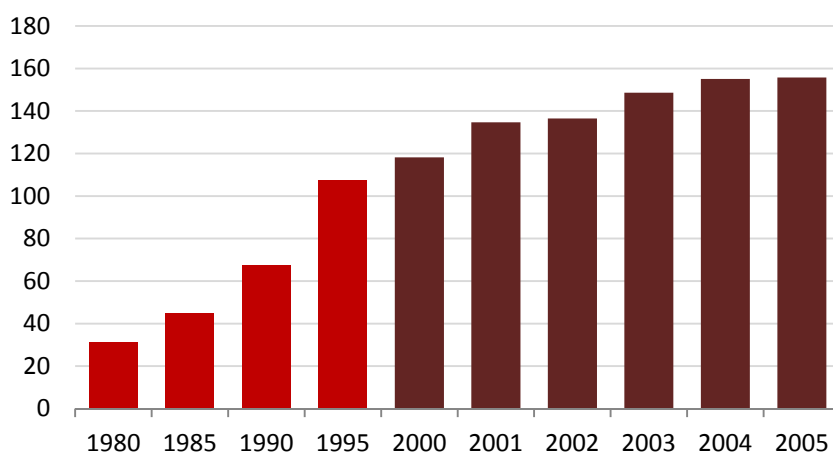
Figure 27: Municipal Solid Waste in 2005 (million tons)



Sources: US EPA; Eurostat; China Statistical Yearbook( 2006)

ite is typically described as intentionally discarded waste, originating from residential, industrial, commercial and institutional sectors, although excluding industrial and medical waste. In 2005 China produced over 155 million tons of waste, surpassing the US to become the world's largest producer of solid waste (see **Figure 27**). Urbanisation, urban population growth, and increasing affluence are seen as the key determinants of China's already significant growth in waste output, and will continue to contribute to future growth. By 2030, annual solid waste in China is expected to grow by 150 percent to 480 million tons, requiring at least 1,400 additional landfills to be developed in the coming two decades (see **Figure 28**).<sup>76</sup>

Figure 28: Municipal Solid Waste per annum (million tons)



Source: China Statistical Yearbook (2006)

Currently 80 percent of China's municipal solid waste (MSW) is disposed of in landfills, however, less than 10 percent meet international sanitary standards, with many operating at overcapacity and lacking feasible expansion options.<sup>77</sup> Increasingly incineration is expected to meet this capacity shortfall. The government's target for incineration's contribution to waste management is expected 30 percent before 2030 (up from 3% in 2006).<sup>78</sup>

Improving municipal solid waste management would not only benefit the local environment but also help global efforts to combat climate change. A recent study on Shanghai landfills found that a shift of 10% organic waste from landfills to composting yielded the equivalent of 7 million tonnes per year of CO<sub>2</sub> equivalent emissions reductions. Furthermore, with technical assistance a landfill gas project could be established to produce 370,000 megawatt hours per year for Shanghai.<sup>79</sup> Similar measures across China have the potential to achieve 200 million tonnes per year in CO<sub>2</sub> equivalent emission reductions, worth € 4.63 bn at current market prices.<sup>80</sup>

<sup>76</sup> World Bank "Waste Management in China: Issues and Recommendations". 2005

<sup>77</sup> US Department of Commerce "China: Solid Waste Treatment Industry" 2007

<sup>78</sup> OECD "Environmental Performance Review of China" 2007

<sup>79</sup> World Bank "Waste Management in China: Issues and Recommendations" 2005

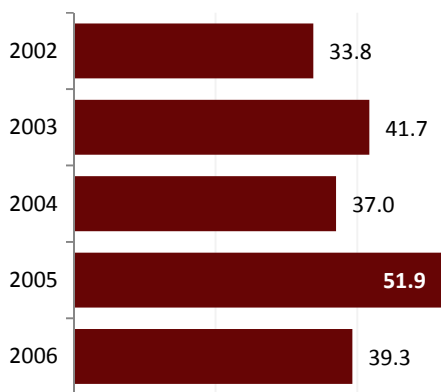
<sup>80</sup> Price per ton of carbon equivalent obtained from Point Carbon <http://www.pointcarbon.com/> on 29 Nov 2007

## E-waste

In 2005 the United Nations Environmental Programme found that up to 50 million tonnes of electronic waste, or e-waste, is now produced annually around the globe. Of this, 80 percent is exported to Asian countries, with China collecting 90 percent of Asia's share. This waste is composed of computers, monitors, and printer components, among other electronics. Within China, e-waste is rarely disposed of in a responsible manner from either an environmental or human health perspective. In a typical e-waste 'town', waste is burned by night and hand stripped by day with the use of hydrochloric acid in an attempt to collect the precious metals which are found in e-waste, such as gold and copper. Because this re-collection is done in such a crude manner workers are exposed to a variety of carcinogenic chemicals, such as lead, cadmium, phosphorus, polychlorinated biphenyls (PCBs), and polybrominated diphenyl ethers (PBDEs). These chemicals are capable of causing stomach disease, lung disease, miscarriages, birth deformities, and premature deaths.

Reports on e-waste towns, concentrated in Guangdong province, indicate that they operate on a massive scale, with up to 50,000 workers dedicated to sifting through electronics.<sup>81</sup> Since 1996 the Chinese government has worked to ban e-waste imports, but ambiguities in international classifications of hazardous waste, along with poor institutional capacity at entry points, have made enforcement difficult. In 2006 the Basel Convention, to which China is a party, met to form a consensus on e-waste management, however little progress was made. Following the European Union's example, in March 2007 the China National Development and Reform Commission began adopting policies similar to the EU's Restriction of Hazardous Substances Directive (RoHS), although falling short of the European Directive on Waste Electrical and Electronic Equipment (WEEE). The problem of e-waste remains significant in China, with domestic contributions rising: in 2005 approximately 2 million tons of e-waste was generated within China, with this figure expected to double by 2010.<sup>82</sup>

**Figure 29: Grade of Air Quality at or Better than Grade II (%)**



Note: Grade 2 - China's target for air quality standard in general residential areas (0.2 mg/m<sup>3</sup> terms of concentration of particulates and 0.06mg/m<sup>3</sup> SO<sub>2</sub>)

Source: SEPA SoE (multiple years)

## 4.5 Air Pollution

An estimated one-third of China's 1.3 billion people live in areas where the air quality does not meet international standards.<sup>83</sup> Air pollution also contributes to acid rain, which falls over approximately 30 percent of the country, making China one of the world's most severely affected countries.<sup>84</sup> The main reasons for China's air pollution are: coal combustion, vehicular pollution, industrial emissions and natural and anthropogenic fugitive dust sources. According to China's State Environmental Protection Agency, in 2006 the air quality in only 39.3 percent of cities was equal or above Grade II (China's target for air quality standard in general residential areas). This figure was over 11 percentage points lower than for 2005 (see **Figure 29**). More recent reports indicate that

<sup>81</sup> Greenpeace "Recycling of Electronic Wastes in China & India" 2005

<sup>82</sup> Zhou Guomei, SEPA [http://www.env.gov.cn/recycle/3r/en/asia/02\\_03-4/08.pdf](http://www.env.gov.cn/recycle/3r/en/asia/02_03-4/08.pdf) 2006

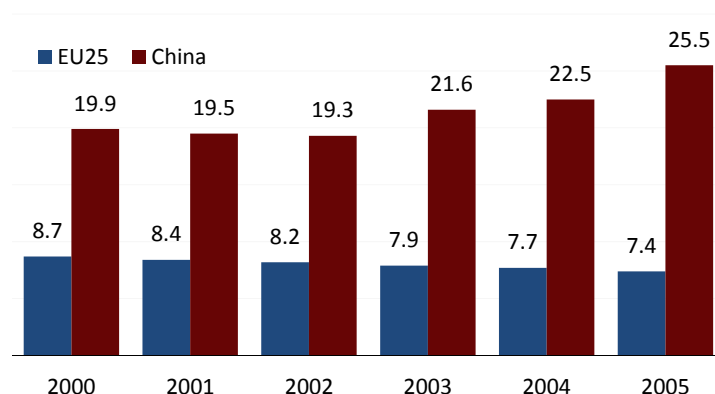
<sup>83</sup> ISSD, 2006 Liu & Diamond, 2005

<sup>84</sup> Liu & Diamond, 2005, Fengqi, 2001

a mere one percent of China's 560 million urban residents breathe air considered 'safe' by European Union standards.<sup>85</sup>

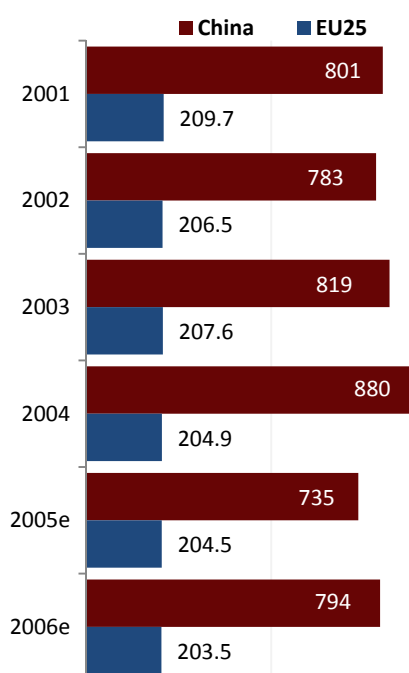
As can be seen from **Figure 31** SO<sub>2</sub> emissions in China have steadily increased. By comparison SO<sub>2</sub> emissions have dropped around 7 percent annually in the EU25 since the nineties. The EU's new member states also showed a strong drop in SO<sub>2</sub> emissions, amounting to a drop of 7.9 percent annually.<sup>86</sup> In 2005, SO<sub>2</sub> emissions in China were more than 25.5 million tons, approximately 3.5 times those of EU25, even though the size of the EU25 economy is by some measures more than five times larger than China's economy.

**Figure 31: SO<sub>2</sub> Emissions**



Source: Odyssee, SEPA (2007)

**Figure 30: Energy toe kg/1000 €**



Note: China figures were calculated using RMB to € conversion rate of 0.1162

Source: Odyssee, NDRC (2007)

## 4.6 Climate Change and Energy

China's high emissions of SO<sub>2</sub> can firstly be explained by its high energy intensity. Energy intensity of GDP in both the EU and China has steadily declined in the last ten years.<sup>87</sup> In China, however, this trend has been inconsistent since 2001 (**Figure 30**) due to growth in consumption outstripping GDP growth, causing wide-spread shortages of electricity and blackouts.<sup>88</sup> In 2006, China's energy intensity, at almost four times the level for the EU25, remains comparatively high<sup>89</sup> due to the continued importance of the manufacturing industry in China's economic structure (discussed in **Section 2**).

The second reason for China's high levels of SO<sub>2</sub> emissions is its reliance on coal as an energy source. Coal has a higher emission of SO<sub>2</sub> than any other fossil fuel. The rapid increase in power demand in the early 2000s caused a need to use coals of lower quality with a higher sulphur content and/or lower calorific value. Coal now still accounts for 67% of the primary energy input

<sup>85</sup> Kahn, J. And Yardley, J. (25 August 2005). 'As China rises, pollution soars'. The International Herald Tribune, Available at: <http://www.iht.com/articles/2007/08/25/asia/26china.php>

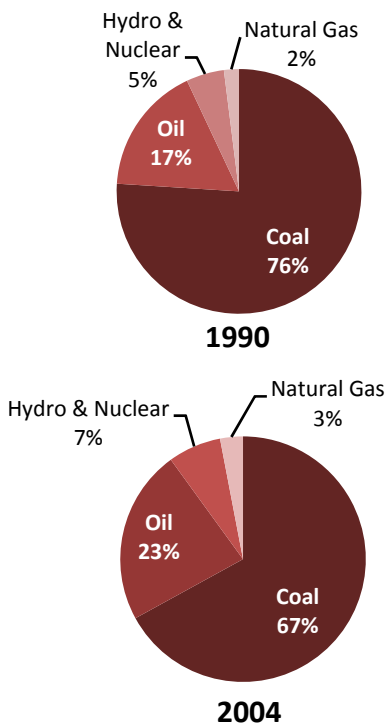
<sup>86</sup> EEA (2007)

<sup>87</sup> Between 1996 and 2006 energy intensity as estimated for the EU25 dropped 13.4% (down from 235 toe kg/1000€), while China is estimated to have reduced its energy intensity by 36.4% (down from 1,181 toe kg/1000€).

<sup>88</sup> According to Helio International in 2005 over 20 of China's 32 provinces, autonomous regions, and municipalities suffered from power shortages.

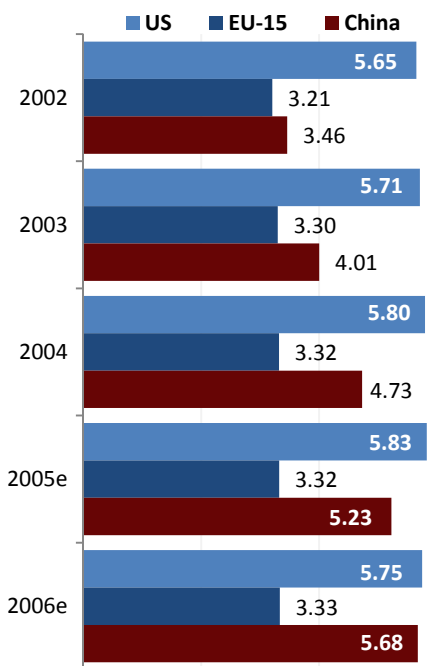
<sup>89</sup> Comparisons with regards to energy intensity have limitations. Energy intensity is calculated by taking the total consumption of energy divided by GDP. As seen in Section 2, China's GDP in PPP-terms is much higher than its GDP converted at market exchange rate. Accordingly, energy intensity for China is likely to be somewhat overestimated relative to that of the EU.

**Figure 32: Energy Consumption in China**



Source: China Statistical Yearbook

**Figure 33: CO<sub>2</sub> Emissions from Fossil Fuel Use ('000 megaton)**



Source: MNP (2007)

responsible for 90 percent of the SO<sub>2</sub> emissions in China<sup>90</sup> (see **Figure 32**). As a result China is the world's biggest emitter of SO<sub>2</sub> emissions.

The burning of coal is also responsible for 70 percent of total suspended particulates (TSP), 60 percent of nitrogen oxides (NO<sub>x</sub>) emissions, and 85 percent of carbon dioxide (CO<sub>2</sub>) emissions (**Table 3**). Left unchecked, China's CO<sub>2</sub> emissions are projected to grow by 65% from 2000 to 2020. This increase will be larger than the total global increase in CO<sub>2</sub> emissions between 1990 and 2001.<sup>91</sup> Unofficial estimates from the Netherlands Environmental Assessment Agency (MNP) for 2005 and 2006 suggest that China is rapidly overtaking the United States as the world's largest emitter of CO<sub>2</sub> (**Figure 33**). However, it must be noted that the estimated per capita of US CO<sub>2</sub> emissions is 4.5 times higher than that of China. The EU15 still emits more than double the amount of CO<sub>2</sub> emissions than China per capita.

**Table 3: Comparison of Selected Cities in Europe and China**

	Population ('000)	TSP (µgrms/m <sup>3</sup> )	SO <sub>2</sub> (µgrms/m <sup>3</sup> )	NO <sub>2</sub> (µgrms/m <sup>3</sup> )
Paris	9,854	12	14	57
Tianjin	9,346	139	82	50
London	7,615	23	25	77
Wuhan	6,003	88	40	43
Berlin	3,328	25	18	26
Chengdu	3,478	95	77	74

Source: World Bank (2006)

In China's major cities the main source of air pollution comes from vehicles. In 2002 and 2003, sales of passenger cars have increased by 50 percent and 75 percent respectively. This has resulted in China now overtaking Japan as the world's second-largest new car market. The United States, which has less than five percent of the world's population, now consumes about 25 percent of global oil production, and most of this oil is consumed by private passenger cars. Should China achieve the present per capita energy consumption of the United States, it will need to consume all the oil now produced throughout the world.<sup>92</sup> China is slowly moving to adopt European emission standards. While some cities such as Beijing, with over 2.2 million cars, have already deployed Euro III, most of China is still using Euro II.<sup>93</sup>

To some extent car pollution is the result of high density development not yet matched by improvements in infrastructure, particularly public transport. This has meant that China, despite its rapidly increasing urbanisation, has not yet been able to reap the full benefits of the lower resource, energy, transportation, and environmental costs typically associated with higher density development.<sup>94</sup>

<sup>90</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations – Study 10: Sustainable Technologies and Services

<sup>91</sup> ISSD, 2005 Liu & Diamond, 2005

<sup>92</sup> Newsweek (9 May 2005)

<sup>93</sup> EURO II: emission standard for cars introduced in the EU in 1995 that limits car emissions to 7 g/kWh of NO<sub>x</sub> and 0.15 g/kWh of PM (Particle Matter). EURO III: introduced in 1999 limiting car emissions to 5 g/kWh of NO<sub>x</sub> and 0.10 g/kWh of PM (Particle Matter).

<sup>94</sup> Lovelock, J. (2007); Owen, D. (2004) 'Green Manhattan'

The Chinese government has taken increasing steps to reduce air pollution and improve energy efficiency. In the run-up to the 2007 G8 summit in Germany, China announced its first national plan to tackle climate change. The plan fell short of a quantifiable goal for greenhouse gas emission reductions and most of the plan restates existing targets, including a 20 percent improvement in energy efficiency by 2010 and doubling of the use of renewable energy by 2020.<sup>95</sup> However, the plan, which was welcomed by the United Nations Environment Programme as an important step forward, also pledged more research into energy-saving technology, improvements in water resource management, and public education campaigns to raise awareness of the issue.

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<sup>95</sup> See also **Sector Case Study E. Environmental Goods and Services** which describes in more detail China's Renewable Energy Law.

## Section 5: Priority Issues in the Context of the PCA

### Box 9: EU-China Sectoral Dialogues

1. Agricultural dialogue
2. Civil aviation
3. Competition policy
4. Consumer product safety
5. Customs cooperation
6. Education and culture
7. Employment and social affairs
8. Energy – including nuclear energy
9. Environment
10. Food safety - Sanitary and phytosanitary (SPS) issues
11. Global satellite navigation services
12. Information society
13. Intellectual property rights (IPR)
14. Macro-economic policy and the regulation of financial markets
15. Maritime transport
16. Regional Policy
17. Regulatory and Industrial Policy
18. Science and technology (S&T)
19. Space cooperation
20. Trade policy dialogue
21. Textile trade dialogue
22. Transport (in general)

Source: DG Relex (2007)

The increasing intensity of contemporary EU-China relations is reflected by over twenty sectoral dialogues under the EU-China relationship. **Box 9** shows the range of dialogues under discussion, covering a wide range of economic, environmental, social, scientific, educational and cultural cooperation areas. Although the PCA will complement rather than replace existing sectoral agreements, many of these policy dialogues will have a bearing on PCA negotiations. With regards to the trade-related aspects of the PCA, over half of the ongoing dialogues, ranging from food safety to competition policy, will be impacted. As **Section 2** highlighted, economic relations between the EU and China have been growing rapidly, with bilateral trade growing at well over 20 percent annually in recent years. Following the EU's 2004 enlargement, the EU-China trading relationship is now the largest in the world. The launch of negotiations on a new PCA, which will include an upgrade of the 1985 Trade and Economic Cooperation Agreement, reflects a desire on both sides to broaden and deepen the relationship. Numerous studies have shown that there are substantial benefits to be reaped by deepening bilateral trade and that a number of complementarities between the two economies can be exploited<sup>96</sup>. The opportunities presented by increased bilateral economic ties are substantial, but have not come about without important new challenges emerging.

These challenges have in the past few years progressively come to the forefront of EU-China trade relations. The challenges are most visibly embodied by China's growing trade surplus with the EU. There is a rising perception among many European business representatives that progress on the reduction of market access obstacles to the Chinese market has been slowing. A range of policy instruments still exist to place foreign operators at a disadvantage, varying from selective public procurement, state sanctioned dissemination of unlicensed foreign intellectual property, restrictive investment rules, local content requirements, complex technical standards, subsidies and other forms of financial incentives for Chinese companies. A recently released study commissioned by DG Trade quantified the cost of these non-tariff barriers to European exporters at over € 21.4 billion<sup>97</sup>.

Nonetheless, there remains a common pledge to continued openness and constructive engagement in recent communications from both sides. Compared to US-China trade relations, which tend to be more confrontational and prone to unilateral offensive actions,<sup>98</sup> EU-China trade negotiations continue to take a more cooperative approach. To some extent, however, this

<sup>96</sup> DG Trade (2007) Study on the Future Opportunities and Challenges in EU-China Trade and Investment Relations 2006-2010

<sup>97</sup> *ibid*

<sup>98</sup> Two US Senate committees have already approved legislation that aims to equip the US Treasury with new tools to pressure China into letting the RMB rise faster in value. A stronger bill is currently being debated in Congress that would allow US companies to seek countervailing duties against China's undervalued exchange rate.

is due to objective reasons such as that the EU's trade deficit with China is far smaller than that of the US.<sup>99</sup>

In addition to economic challenges, the deepening of the EU-China trade relationship is bringing to the forefront long-held fears in Europe that social standards will suffer under a new trade agreement. The concerns voiced by stakeholders range from the perceived threat of lowering labour standards<sup>100</sup> to increased gender inequality.<sup>101</sup> There are particular concerns attached to the perceived lack of workers' rights in China, the low level of wages and the increasing number of industrial accidents and product safety recalls due to enforcement of health and safety requirements, despite a increasingly stringent regulatory regime.<sup>102</sup> There is a larger ongoing debate about whether the increasing integration of emerging economies such as China and India into the world economy, which is a social imperative for these countries, can be sustained and made compatible with the desired labour market outcomes in the world's more advanced economies.<sup>103</sup>

There are also concerns amongst European civil society groups regarding the environmental impact of China's further integration into the world economy based on the continuation of resource-intensive development.<sup>104</sup> These worries focus on the high levels of pollution caused by China's industries and the growing consumption of natural resources derived from unsustainable sources, including coal and oil, as well as wood derived from rainforests.<sup>105</sup>

Alongside concerns in Europe, China is experiencing its own domestic debates of the merits of further reforms and the opening up of its economy of what has been a widely perceived as a set of tough reform measures implemented to ensure China fulfils its WTO accession obligation.<sup>106</sup> Some commentators have even described China as 'trapped in transition' and that a certain degree of reform fatigue has set in, particularly in the lower levels of government.<sup>107</sup> Chinese policymakers point out, however, that an increasing number of new initiatives are being undertaken to address international as well as increasing domestic concerns. At the 22<sup>nd</sup> EC-China Joint Committee held on 12 June 2007, the two parties agreed for the first time that the current trend of the trade imbalance between China and the EU is unsustainable. On the domestic front new measures have been taken to reduce the social and environmental impact of economic reforms. On the social front, China has taken steps to improve standards, exemplified by the adoption on 29 June 2007 of the Labour

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<sup>99</sup> According to DG Ecfm, the euro area enjoys a trade surplus (+ US\$ 15.9 bn), while the EU 27 as a whole has a trade deficit mainly due to the UK (- US\$ 155.8 bn) far below that of the US (US\$ - 823.4 billion). In addition, the current account deficit of the EU as a whole is in far better shape than that of the US.

<sup>100</sup> Response to the public consultation of the European Commission by the European Trade Union Federation (ETUC) available at:

[http://www.etuc.org/IMG/pdf/China\\_Consultation\\_150606rev.pdf](http://www.etuc.org/IMG/pdf/China_Consultation_150606rev.pdf)

<sup>101</sup> WIDE Network (2007) Fair and Unfair Competition: The EU-China Trade Race and its Gender Implications, available at: <http://www.igtn.org/pdfs/EU-China07.pdf>

<sup>102</sup> According to Chinese Statistics, in 2006 alone, industrial injuries disabled nearly 700,000 people, mostly migrant rural workers.

WHO chief praises China's efforts on food safety. AFP, 31 October 2007

<sup>103</sup> For a comprehensive overview of this debate see Singh (2007). The central issue of discussion is Freeman's (2005) contention that the "doubling" of the global labour force resulting from China and India's recent integration with the international economy, may have profoundly unfavourable repercussions for workers in advanced economies. The relevance to this important discussion to the PCA will be returned to in the following stages of this Trade SIA.

<sup>104</sup> WWF (2007) Re-think China's Outwards Investment Flows [http://assets.panda.org/downloads/wwf\\_re\\_think\\_chinese\\_outward\\_investment.pdf](http://assets.panda.org/downloads/wwf_re_think_chinese_outward_investment.pdf)

<sup>105</sup> DG Trade (2006) 'Consultation of civil society on the forthcoming communication on China'

[http://trade.ec.europa.eu/doclib/docs/2006/october/tradoc\\_129853.pdf](http://trade.ec.europa.eu/doclib/docs/2006/october/tradoc_129853.pdf)

<sup>106</sup> Naughton (2005) 'Waves of Criticism: Debates over Bank Sales to Foreigners and Neo-Liberal Economic Policy' *China Leadership Monitor*

<sup>107</sup> Pei (2007) 'Is China's Transition Trapped and What Should the West do about it?' available at: [http://www.flis.org/images/Pei\\_pb1.pdf](http://www.flis.org/images/Pei_pb1.pdf)

## Box 10: China's Key Environmental

### Targets for 2010 (11<sup>th</sup> FYP)\*

- Increase resource productivity per tonne of energy, iron and other resources by 25%.
- Decrease energy consumption per unit of GDP by 18%.
- Improve average water use efficiency for agricultural irrigation by up to 50%.
- Raise reuse rate of industrial solid waste above 60%.
- Increase recycle and reuse rate for major renewable resources by 65%.
- Reduce total discharge of major pollutants by 10% in 5 years.

### Target 2020 (Renewable Energy Law)

- Renewable energy consumption to account for 10% of total energy consumption.

Source: China State Council (2005)

\*targets use 2003 figures indicators as baseline

Contract Law which was duly welcomed by European trade unions and other stakeholders.<sup>108</sup> Domestically, China's new emphasis on a 'harmonious society' seeks to re-direct the economic growth focus towards overall societal balance. In particular, addressing the income inequalities between urban and rural areas which have emerged alongside rapid economic reforms. Simultaneously, China has taken a substantial number of steps to increase environmental protection. The 11<sup>th</sup> Five Year Programme and a host of supporting laws and regulations<sup>109</sup>, such as China's new Renewable Energy Law, contain important policy guidelines to reduce waste and enhance energy efficiency. These steps highlight the enormous potential of China's leadership role in addressing global environmental challenges (see **Box 10**).

Within this context, Trade Commissioner Mandelson on several occasions highlighted the importance of 'getting China right' and has more recently described the EU-China relationship as being at a 'cross-roads'<sup>110</sup>. The broad scope of the PCA provides a unique opportunity to integrate trade policy goals with wider cooperation objectives in the areas of sustainability, such as energy efficiency, the preservation of biodiversity and natural resources, as well as social issues. The following sections will provide more detailed overview of each of the economic and trade issues which are likely to be discussed at the PCA negotiations. These sections will examine these issues in light of sustainability concerns that will be highlighted further in the proceeding stages of the Trade SIA.

## 5.1 Trade in Services

As discussed in previous sections, one of the great structural imbalances in China's economy is the underdevelopment of China's services sector. China enjoys little comparative advantage in the services sectors, where knowledge of local markets, management skills and innovation play a more important role than in labour-intensive manufacturing. This is exemplified by China's trade in services which can be contrasted with China's trade in goods in two ways: First, where China has a surplus in traded goods, it is running a deficit in trade in services. Secondly, where trade in goods is substantial, trade in services is slight<sup>111</sup>. While China accounts for 6.7 percent of the world's imported goods, it only accounts for 3.25 percent of the world's services imports (**Table 4**). This is a reflection of China's undeveloped service industry and also illustrates that China's integration in the world economy is primarily based on trade in goods while China's service sector remains largely closed.

By contrast, the EU is the biggest global player of trade in services, accounting for 28.3 percent of global exports and 24.7 percent of imports.<sup>112</sup> Europe's trade surplus in services with China stands at € 7.5 billion in 2005, down from € 7.8 billion in 2004.<sup>113</sup> Although the value of EU's services surplus is small in

**Table 4: Trade in Goods and Services Compared (World & China, 2004, %)**

	Goods		Services	
	World	China	World	China
Exports	80	90	20	10
Imports	80	88	20	12
<b>% of World Total</b>				
Exports	100	7.9	100	2.79
Imports	100	6.7	100	3.25

Source: IMF (2006) in OECD (2006); UN Comtrade Database

<sup>108</sup> ETUC (2007) ETUC welcomes new Chinese Labour Contract Law <http://www.etuc.org/a/3792>

<sup>109</sup> The draft of new environmental regulations and their increasingly strict application is discussed further in the overview of the Environmental Goods and Services industry in Section 6.

<sup>110</sup> Speech by Peter Mandelson (Strasbourg, 10 July 2007) [http://trade.ec.europa.eu/doclib/docs/2007/july/tradoc\\_135226.pdf](http://trade.ec.europa.eu/doclib/docs/2007/july/tradoc_135226.pdf)

<sup>111</sup> OECD (2006) 'China's Trade and Growth: Impact on selected OECD countries'

<sup>112</sup> IMF (2006) Balance of payment statistics

<sup>113</sup> *Ibid*

comparison to its traded goods deficit (less than 7% in 2005), growth in the Chinese services sector is expected to outstrip other areas of the economy and expected to expand with 14 percent average annual growth the next five years.<sup>114</sup> Given Europe's comparative advantage in services, natural complementarities should exist. However, persistent obstacles exist for European companies to provide services within the Chinese market. In areas such as telecoms, construction, insurance and financial services, EU companies are still blocked by discriminatory licensing systems, caps on inward investment and local ownership, enforced joint partnerships and discriminatory regulation - often in seeming contravention of China's WTO obligations.

Ultimately, it is Chinese consumers who suffer from poor services provision and high prices. The OECD estimates that the full implementation of China's WTO commitments are likely to generate economic benefits of almost US\$ 3 billion (€ 2.2 bn), while the complete liberalisation of China's service sectors would more than triple these gains.<sup>115</sup> The inefficiency of the Chinese services sector has been exacerbated by the dominance of state-owned monopolies and the fact that many services such as housing, medical, education and transportation are still provided by local SOEs. There remains concern among Chinese policymakers about the crowding out effects of the participation of foreign entities in the services sector. The opening up of trade and FDI in manufacturing sectors has spurred the emergence of a largely private sector. This is in sharp contrast with the high level of public ownership and important regulatory barriers that continue to dominate the services sector.

Encouragingly, in the 11<sup>th</sup> Five Year Programme, the Chinese government recognises the need to develop its services sector. By nature, the services sector is less export-oriented than manufacturing. Thus, the rising importance of the services sector will reinforce the shift of the sources of growth from external to domestic demand and production. As part of this rebalancing agenda, the State Council released a document in March 2007 with guidelines to stimulate China's service sector.<sup>116</sup> In this document, the government set measurable indicators, including an increase in the share of GDP of the services sector of 3 percentage points from 2005 to 2010 and a level of 50 percent by 2020. The document also calls for reforms leading to an increase in competition in services, levelling of the playing field for domestic and foreign private participation in some services, and tax and regulatory benefits for services development.<sup>117</sup> Apart from the economic benefits, the liberalisation of the services sector would facilitate the creation of new higher value-added jobs. A shift towards services would also make an important contribution to the further reduction of the Chinese economy's energy intensity<sup>118</sup>.

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<sup>114</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

<sup>115</sup> OECD (2006) China's Trade and Growth: Impact on selected OECD countries

<sup>116</sup> World Bank (2007) Quarterly Update: May 2007

<sup>117</sup> *Ibid*

<sup>118</sup> A recent study by the World Bank shows that structural economic change away from manufacturing in China has made an important contribution to reducing energy intensity. See, Hofman, B. and Labar, K. (2007) 'Structural Change and Energy Use:' <http://ie.cass.cn/download.asp?id=158&tn=science>

## 5.2 Non-Tariff Barriers

In the last fifty years, the traditional method of protecting domestic industries through tariffs has been substantially reduced through successive rounds of global trade negotiations so that today tariffs are rarely cited as a major concern for exporters. Despite this achievement, Non-Tariff Barriers (NTBs) have emerged to take the place of tariffs. NTBs take on a variety of different forms including discriminatory regulations, lack of IPR protection, government procurement practices, competition policy, investment policies, and standards and so on.

China is a good illustration of this trend. While the weighted average tariff rate for traded goods has dropped from 8.9% in 2001 to 3.6% in 2006, tariff barriers are estimated to have remained at 7.8% (Table 5)<sup>119</sup>.

Table 5: China Tariffs and Non-Tariff Barriers by Sector

	2001 Tariffs	2006 Tariffs	Non-tariff Barriers
Crop agriculture	43.5%	9.3%	14.2%
Animal agriculture	4.1%	11.8%	15.0%
Coal	0.9%	1.1%	83.7%
Oil and gas	0.0%	0.0%	0.0%
Other minerals	0.6%	0.3%	20.3%
Meat products	8.5%	3.3%	0.1%
Other foods	10.5%	7.9%	16.4%
Textiles	15.0%	5.1%	14.8%
Wearing apparel	3.9%	1.6%	0.5%
Wood and paper products	6.9%	1.7%	17.5%
Petroleum and coal products	6.2%	3.9%	8.8%
Chemicals, rubber and plastics	11.0%	5.8%	6.8%
Basic metal and mineral products	6.3%	3.1%	26.8%
Motor vehicles and parts	11.0%	14.1%	4.3%
Other transport equipment	30.2%	2.1%	0.3%
Electronic equipment	4.7%	0.3%	3.3%
Machinery and equipment	7.3%	4.6%	3.8%
Other manufacturing	8.7%	3.3%	1.0%
Utilities	0.0%	0.0%	0.0%
Construction	0.0%	0.0%	0.0%
Trade and transport	0.0%	0.0%	0.0%
Business services	0.0%	0.0%	0.0%
Other services	0.0%	0.0%	0.0%
Total all	7.5%	3.0%	6.5%
Total excluding services	8.9%	3.6%	7.8%

Source: GTAP (2001); UNCTAD TRAINS (2006); World Bank (2004)

<sup>119</sup> 2001 tariffs data: Global Trade Analysis Project (GTAP); 2006 tariffs data: UNCTAD TRAINS (Trade Analysis and Information System) database; Non-tariff-barriers data: Kee, H.L. et al (2004), *Ad valorem Equivalents of Non Tariff Barriers*, mimeo, World Bank

### 5.3 Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) Measures

Tariff rates have become an increasingly less important concern for exporters as global tariff regimes have gradually declined.<sup>120</sup> Today, most exporters and investors are more concerned about the rapid expansion in usage and types of non-tariff barriers to trade as obstacles to investment. Among European exporters and investors, there is an increasing sentiment that a range of policy instruments in China are placing them at a disadvantage, while Chinese exporters have always considered European standards to be overly stringent.

There are concerns among European operators that China is experimenting with home-grown technological standards which diverge from internationally-accepted standards, as a way to limit competition from foreign goods, and facilitate technology transfer. SPS controls in China tend to be lengthy and burdensome. They do not recognise the validity of approvals by the exporting country, and moreover, China has a tendency to impose draconian measures on third country exports in the event of outbreaks. The food safety system in China is fragmented and lacks a single authority, making for widespread inconsistency in the application of control.

TBT and SPS measures are also an important concern for Chinese companies exporting to Europe. Chinese exporters have expressed concerns on a wide range of technical and safety standards in Europe ranging from RoHS (the Restriction of Hazardous Substances), REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals), to Europe's Energy Label, and the forthcoming EUP (Energy-Utilising Products) directive.<sup>121</sup> China's Ministry of Commerce also argues that Chinese exporters of foodstuffs and agricultural products are disproportionately disadvantaged by SPS measures. China claims that about 90 percent of its exports are affected, causing exporters to suffer losses of up to US\$ 9 billion (€ 6.5 billion) a year.<sup>122</sup>

A number of case studies of exporters in developing countries have shown that while adapting to stringent standards in developed countries raises production costs in the short run, the producers that meet these standards are placed at a considerable competitive advantage through their ability to build reputation and meet consumers demand in the long-run.<sup>123</sup> The need to raise standards has been brought to the forefront by the current global safety crisis of Chinese products that has witnessed millions of goods ranging from children's toys to toothpaste, being recalled around the world in recent months. The environmental and social impacts of low standards have resulted in international and domestic demands for higher food and product safety

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<sup>120</sup> In addition, the PCA is not a preferential agreement and tariffs will therefore not be discussed at the negotiations.

<sup>121</sup> Authors' correspondence with the China Chamber of Commerce for Import and Export of Machinery and Electronic Products (CCCME); China's Policy Research Centre for Environment and Economy (PRCEE); the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ); and the EU-China Trade Project (EUCTP).

<sup>122</sup> See sector overview for Agriculture included in this report.

<sup>123</sup> e.g. UNCTAD (2007)

standards.<sup>124</sup> The Chinese government has responded by appointing a top-level leadership group led by Chinese Vice-Premier, Wu Yi, to address these issues.

Engagement through the PCA negotiations and subsequent further homologation of standards between the two trading partners has substantial potential to contribute economically in terms of trade facilitation and environmental and social issues. EU regulatory standards that are sometimes initially characterised as overly stringent, often later serve as a model emulated by regulators in third countries, notably developing ones. China has previously adopted or is adopting European standards. Notable examples include the Euro vehicle emissions standards and the electronics standard RoHS. The “Delaware effect” involves a race to the bottom in standards between jurisdictions competing for investment. A potential key accomplishment for the PCA is achieving a “California effect” where manufacturers in China exceed national safety standards in order to comply with standards in overseas markets, particularly the EU.

#### 5.4 Intellectual Property Rights (IPR) Protection

China remains the main source of counterfeit goods. Chinese goods comprised about 58 percent of all articles seized at EU borders in 2007.<sup>125</sup> The lack of enforcement of IPR is a growing concern and is rapidly reaching an impasse. In many sectors, European industry complains that poor enforcement and non-payment of royalties is causing the erosion of the value-added created by their R&D investments from which they derive competitiveness. This worry is exacerbated by China’s rapidly increasing competitiveness in key segments of the value chain, and its increasing propensity to produce goods that are typical of those from countries whose per capita incomes are much higher<sup>126</sup>. Observers have noted that in addition to unlicensed technologies being used in the domestic market, foreign operators are finding that their technologies are being sold by Chinese firms in other developing country markets. The result is not only the eroding of the value of foreign firms’ intellectual property but also their legitimate markets.<sup>127</sup>

China has on many occasions reiterated its determination to crack down on IPR infringement pointing out that it has an inherent interest to foster an environment in which investment in domestic innovation can take place.<sup>128</sup> However, enforcement in practice has made very limited progress. The situation is exacerbated by overlapping and conflicting institutional legal frameworks, as the courts share similar functions to administrative bodies.

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<sup>124</sup> The China Toy Association, which represents manufacturers and suppliers, was recently quoted as saying that its members had “paid a heavy price for its errors”. The Association stated many workers would lose their jobs as a result of recent product safety incidents with “[m]ost of the employees [having to] leave factories they have been working at for many years and are facing losing their jobs and re-employment problems.” (Financial Times, 17 August 2007)

<sup>125</sup> Statistics recorded at the external borders of the EU at:

[http://ec.europa.eu/taxation\\_customs/customs/customs\\_controls/counterfeit\\_piracy/statistics/index\\_en.htm](http://ec.europa.eu/taxation_customs/customs/customs_controls/counterfeit_piracy/statistics/index_en.htm)

<sup>126</sup> Song & Ee (2005) ‘China’s Changing Economic Structures and Its Implications for Regional Patterns of Trade Production and Integration’ Paper No. 23-2005

[https://mercury.smu.edu.sg/rsrchpubupload/5946/China\\_regionalcooperation.pdf](https://mercury.smu.edu.sg/rsrchpubupload/5946/China_regionalcooperation.pdf)

<sup>127</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

<sup>128</sup> In 2005, China had 2,452 patent applications under the PCT (OECD, 2007)

There are overly burdensome requirements concerning the legal status of court documents, several interpretations exist for the valuations of infringements, and relatively light sentences for infringements make for weak deterrents. On 10 April 2007, these apparent shortcomings led the United States to file a WTO complaint against China, charging that despite China being a signatory to the TRIPS (Trade Related aspects of Intellectual Property) Agreement, it is tolerating the continuation of IPR violations. The European Communities joined the consultation process and panel as a third party and has not ruled out taking its own action under the auspices of the WTO.

In the context of sustainable growth, the IPR issue is a complex one. Clearly, non-enforcement of IPR is unsustainable in the long run as technological progress is crucial to long term economic growth. Some studies on IPR in developing economies argue that a stringent enforcement regime can be harmful to economies with low innovative capacity and can actually result in stifling innovation.<sup>129</sup> Moreover, in countries where infringement is as rampant as in China, the infringing industry can be a large source of employment. As a country currently with medium innovative capacity, China falls in between, and the question facing the leadership is not whether to get serious about IPR, but rather when. Currently, China ranks 24<sup>th</sup> in the world in terms of patent filings per capita and ninth in the world in terms of patent filings per unit of GDP. However, seen as a whole, China is increasingly emerging as a global player in innovation. It now ranks third in the world in terms of total patents granted and has the highest patent filing growth rate in the world (+32.9%).<sup>130</sup> Many Chinese businesses are also complaining of being forced to pay a premium on purchases because supplying companies price-in the likelihood of counterfeits of their products appearing after the sale. Stronger trademark protection will undoubtedly also build brands which consumers trust. Economic concerns aside, rampant counterfeiting of food and drugs leads to an untold number of deaths each year. Faulty counterfeit components in everything from cars to DVD players have resulted in a number of accidents.

Technology transfer of environmental technologies is a key aspect of promoting sustainable development in developing countries, as envisaged by Agenda 21<sup>131</sup> and the Clean Development Mechanism (CDM) under the Kyoto Protocol. Under the current situation where the dissemination of transferred intellectual property cannot occur in a controlled fashion, this reduces the scope for cooperation in this area. The EU will therefore be looking for new commitments by China in this area to ensure that environmental technologies can be transferred in an orderly fashion.

## 5.5 Competition

China's Anti-Monopoly Law (AML) was adopted on August 30<sup>th</sup> 2007. The law will take effect on August 1st in 2008, after which the monumental task of

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<sup>129</sup> World Bank (1990) Strengthening Protection of Intellectual Property in Developing Countries: A Survey of the Literature [http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2000/01/06/000178830\\_98101903544215/Rendered/PDF/multi\\_page.pdf](http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2000/01/06/000178830_98101903544215/Rendered/PDF/multi_page.pdf)

<sup>130</sup> [http://www.wipo.int/ipstats/en/statistics/patents/patent\\_report\\_2007.html](http://www.wipo.int/ipstats/en/statistics/patents/patent_report_2007.html) p. 12

<sup>131</sup> Article 34.7 of the Agenda 21 states: "The availability of scientific and technological information and access to and transfer of environmentally sound technology are essential requirements for sustainable development."

implementation will begin. The law is likely to put many aspects of China's economy into the spotlight, not in the least, the continued role of the state in economic planning and the existence of state-owned monopolies. The EU has been closely involved in the drafting process of the AML. Indeed, China has chosen to adopt many elements of European Commission and member state, notably Germany's, competition legislation. Ongoing cooperation in the form of providing legislative advice already exists. Cooperation in the area of enforcement will be an important part of ensuring free competition in bilateral trade. For instance, in tackling export cartels, information will have to be shared and authorities will have to work closely together.

There are some fears among the foreign business community that the AML will be used as a tool to fight foreign companies in China, since SOEs have all but been excluded from the scope of the law. Additionally, it is also feared that foreign intellectual property holders will become the subject of extensive investigations as the law contains a broadly-worded prohibition on the abuse of IPR. The establishment of a competition authority also remains an unresolved issue. Currently, it is envisaged that the law will have at least three enforcement authorities, however, the boundaries of their jurisdiction has yet to be determined. The current draft states that sectoral regulations will prevail over the AML, calling into question which areas of the AML will be applicable and where it will not. While it remains to be seen how consistently the law is implemented, it can at least be expected that the passage of the AML will be conducive to a healthy and introspective debate on the fundamental nature of China "socialist market economy".

Competition policy is a crucial issue in the context of China's efforts to restructure its economy. China's large economy needs a sound competition regime. The fragmented domestic Chinese market needs improved regulation to create a level playing field for market operators and to accompany the reform of the large, inefficient state-owned enterprises. In the medium-term, improved regulation should also alleviate the current risks of trade dumping and economic instability emanating from China. With this in mind, in May 2004 China and the EU agreed upon a permanent mechanism for consultation in this area. The dialogue will enhance the EU's technical and capacity building assistance to China in the area of competition policy. The aim of the dialogue is to develop a proper Chinese competition regime which is shaped in the right way to fit Chinese business reality. The process is enhanced and facilitated by the fact that the emerging Chinese competition regime adopts elements of the European model.

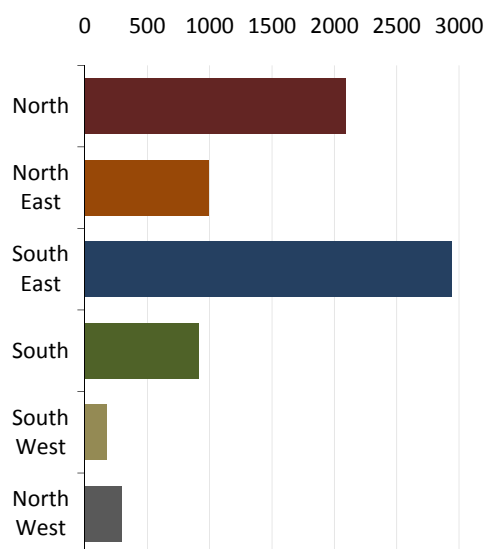
## **5.6 Public Procurement**

Compared to competition law, the regulation of procurement practices has so far not been a policy priority for China's leadership. One only needs to look at the conflicting objectives of the country's fragmented legal framework for confirmation. On the one hand, procurement laws emphasise the need for economic efficiencies in procurement. On the other hand, preference for domestic suppliers is an important element of the legal framework. Moreover, the scope and coverage of the two procurement laws is unclear and overall

policy is governed by two distinct regulators.<sup>132</sup> Discriminatory and opaque procurement practices create difficulties for foreign entities operating in China. Corruption is a common theme running through foreign operators' complaints of unfair procurement, as is poor planning and the lack of capacity in technical aspects. When foreign companies do win large bids, it is usually because they have agreed to provide training and technology transfers to local companies.

While some Chinese officials have argued that opening up the procurement contracts to foreign competition may have a detrimental effect on infant industries and jobs, the WTO Government Procurement Accession (GPA) allows for developing countries to reserve certain privileges for vulnerable sectors. In addition, overall transitional privileges are also available. Competitive and transparent public procurement increases value for money for governments and taxpayers. A lack of competition, or even corruption, results in the use of second-rate materials and inadequate designs which are not environmental or economically efficient and sometimes dangerous.<sup>133</sup> The Chinese government is increasingly recognising this issue and has encouragingly committed to launch Government Procurement Accession (GPA) negotiations by the end of 2007. While it may take years between the launch of the negotiations and the conclusion of an agreement, GPA accession will undoubtedly be a positive step forward in procurement reform for China on economic, social and environment grounds.

**Figure 34: China's Foreign Direct Investment per Capita (2005, US\$)**



**North:** Beijing; Tianjin; Hebei; Shanxi; Inner Mongolia.  
**North East:** Liaoning; Jilin; Heilongjiang.  
**South East:** Shanghai; Jiangsu; Zhejiang; Anhui; Fujian; Jiangxi; Shandong.  
**South:** Henan; Hubei; Hunan; Guangdong; Guangxi; Hainan.  
**South West:** Chongqing; Sichuan; Guizhou; Yunnan; Tibet.  
**North West:** Shaanxi; Gansu; Qinghai; Ningxia; Xinjiang.

Source: China Statistical Yearbook (2006)

## 5.7 Investment

Nearly all sectors in which China is export competitive today are sectors which were opened to foreign investment at a relatively early stage of China's economic reforms. Policies such as the transfer of foreign technology or the manufacture of certain key components locally, act as an important risk factor for investment in China. The fears of foreign investors include a lack of transparent practices of JV partners, as well as intellectual property theft. The recent passage of legislation to harmonise the income tax regime for foreign investment enterprises (FIEs) and domestic enterprises is an indication that foreign investors will no longer receive the same preferential treatment in terms of fiscal benefits. The exception is for hi-tech sectors and investment in less-developed regions where foreign technologies and capital are still highly sought. These new policies, exemplified by the Western Development Initiative launched in 2000, attempt to reduce the large regional disparities in foreign investment inflows outlined in **Figure 34**.

The nature of FDI has also seen significant changes since the legal framework concerning cross-border acquisitions of domestic enterprises has become clearer in recent years. Merger and Acquisition (M&A) activity is now booming in China as investors abandon so-called 'Greenfield' projects in favour of acquire existing assets. The surge in foreign acquisitions of domestic companies and the restructuring it implies, notably at former SOEs, has led to

<sup>132</sup> While the Ministry of Finance (MOF) governs the Government Procurement Law, the National Development and Reform Commission (NDRC) governs the Bidding Law.

<sup>133</sup> A bridge collapse in China's Hunan Province on 14 August 2007 which killed over 30 people illustrates the dangers and has again raised questions about substandard building practices and possible corruption between the officials and contractors. China Daily (15 August 2007) available at: [http://www.chinadaily.com.cn/china/2007-08/15/content\\_6028404.htm](http://www.chinadaily.com.cn/china/2007-08/15/content_6028404.htm)

a rise in protectionist sentiment. Over the past year the government has outlined a number of so-called 'strategic sectors' in which foreign investment will be scrutinised.

While FIE exports account for over a third of GDP, only 3.2 percent of workers (24 million workers out of a total workforce of 750 million) are employed by FIEs. Hence the role of FDI in providing employment in China is still miniscule compared to its impact on output. The impact of further investment in China is therefore something which will be felt to a greater extent by European stakeholders. While Europe's advanced economies such as Germany and Finland's comparative advantage is well matched to the emergence of Chinese economy, other member states, notably those in Southern and Central Europe are relatively worse placed and at a higher risk of seeing a delocalisation of jobs as a result of low-cost Chinese imports.<sup>134</sup>

The EU has already taken a number of measures to facilitate the adaptation to such adjustments, notably through the creation of the European Globalisation Adjustment Fund (EGF). At the December 2005 European Council, European heads of state asked the Commission to work out the modalities and criteria of this new support mechanism. The EGF entered into force on January 2007 and will have a limited annual budget of € 500 million. Member States will be able to claim financial assistance for retraining or job search allowances for laid-off workers in case of major structural changes in world trade patterns. It is expected that China will be a major cause of such adjustments, as illustrated by the case of textiles where in 2005 a voluntary agreement with China was reached to limit exports in order to give European industry an extra period of two-and-a-half years to restructure and adapt. Although such specific agreements are beyond the scope of the PCA such impacts will be considered by the parties involved in negotiating the PCA.<sup>135</sup>

## 5.8 Capital Movements

In July 2005, in line with the Chinese government's overall philosophy of 'gradual reform', China moved from its pegged currency regime to a managed float. The reform involved re-pegging the Yuan (RMB) to a basket of currencies and introducing a daily trading bandwidth. Since then, the RMB has appreciated against the US\$ by about 10 percent to date. The issue of the valuation of the RMB is one with global consequences and the impact of a fully convertible RMB on the global monetary landscape is difficult to predict. Depending on the methodology used, economists are divided over the true value of the RMB and estimates vary between an undervaluation of 40 percent<sup>136</sup> to no undervaluation at all.<sup>137</sup> Whatever the extent of the undervaluation of the RMB, the impact of a revaluation will be limited by the

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<sup>134</sup> In a study by Goldman Sachs (2006), the correlation between the imports of Brazil, Russia, India and China (BRIC) were compared with the comparative advantage of 25 countries. Germany's comparative advantage (revealed in the structure of its exports) was bettered only by those of America and Finland. However Southern and Central European members of the EU were worst placed.

<sup>135</sup> This EU-China Trade SIA is therefore a relative first in that the impact of trade liberalisation on European Member States will be given far more prominence than in other recent Trade SIAs which mainly dealt with the impact of trade agreements with less developed (or less competitive) trading partners than China. See <http://www.sia-trade.org/> or <http://www.sia-acp.org/> for other examples of recently conducted Trade SIAs.

<sup>136</sup> 40-percent under-valuation of the RMB claimed by groups like the China Currency Coalition, an alliance of manufacturing, service, agricultural and labour groups led by the US National Association of Manufacturers

<sup>137</sup> IMF (2003)

high import content of China's exports. This will cause the increase in export prices caused by a revaluation to be partly offset by the decrease in import prices.

The biggest impact of full capital account liberalisation will be felt largely at home. By prioritising their fixed currency regime, the People's Bank of China limits access to alternative tools for managing monetary policy. Thus far, China has been able to sterilise the large inflow of US dollars by issuing vast amounts of bonds, soaking up much of the excess liquidity. Such an approach can only be maintained as long as inflationary pressures are low. Should inflationary pressures rise, the consequences of the current exchange rate regime will be more acutely felt.

The risks of full liberalisation are high. 'Hot' speculative capital, mainly in the form of real estate investment, has poured into China and applied upward pressure on the RMB. However, one of the central government's main fears is that any substantial revaluation could trigger a massive outflow of capital, thereby leading to liquidity shortages. In view of the current overcapacity in sectors such as steel, cement and aluminium, liquidity shortages could lead to a much-feared 'hard landing'. Moreover, the risk of speculative attacks remains, such as the one which triggered the 1997 Asian Financial crisis. China escaped largely unharmed from the 1997 crisis because of its closed capital account, and even though China today boasts over a trillion US dollars in reserves to intervene if necessary, the crisis remains firmly embedded in policymakers' minds. The PCA negotiations will likely touch on this issue by seeking agreement on which economic agents are authorised to receive and make payments in foreign currency and hold foreign currency deposits. A liberal approach is likely to be good for trade but could also enable speculative buying and selling of the RMB against the US\$. Hence the PBOC would wish to limit holdings and control holdings tightly.

## **5.9 Customs and Trade Facilitation**

With foreign trade growing at over 30 percent a year, China's customs houses have had to upgrade their facilities at a breakneck speed. Some of China's ports, notably Shanghai (now the world's largest), are among the world's most modern. Beyond technological and volume capacity, the challenge now is one of human capacity and the maintaining of uniformity across customs houses nationwide. Average clearance times at different ports of entry vary between two and 22 days. Importers complain about being charged different tariffs at different ports for identical products, and documentation requirements vary significantly. A survey of 80 large import/export companies conducted by the EU-China Trade Project in 2005 revealed that the majority of respondents felt that coordination between customs houses was the most important issue to be tackled. Documentation requirements were the second largest problem according to the survey. Documents from at least six different agencies for approval of shipments are required. Hence the establishment of a 'single window' to handle customs documentation came as a key priority for trading companies.

In the field of customs cooperation, current bilateral exchanges under the framework of the EU-China Customs Cooperation Agreement, among other activities, prescribes exchanges of information and personnel. Joint activities to tackle the smuggling of counterfeit goods are also envisaged. Additionally, European customs authorities have launched a project with China customs on establishing “secure lanes” and an authorised operator system. In a recent modernisation plan, China customs stated that the implementation of proper risk management procedures was the biggest priority over the coming years. The effective use of risk assessment techniques promises to reduce clearance times and play an important role in the fight against smuggling of goods such as illegal drugs, endangered species and illegal timber.

## 5.10 Sustainable Trade and Natural Resources

Trade as well as financing of development (e.g. official development assistance, foreign direct investment) have important environmental dimensions. China has therefore a shared interest with the EU and third countries to address related challenges, and has significantly enhanced its engagement in international co-operation in recent years.<sup>138</sup>

Of the international treaties to which China is a signatory, 73 are particular to environmental protection, 50 are multilateral and 23 bilateral. The list of international treaties includes major treaties such as the Rio Declaration<sup>139</sup> and the United Nations Framework Convention on Climate Change (UNFCCC)<sup>140</sup>. China also became a signatory to the Kyoto protocol on 29 May 1998, and the protocol was later approved on 3 September 2002. One of China's main priorities as it enters the 21<sup>st</sup> century is developing and utilising technologies to solve the major environmental challenges it faces now and into the future. These efforts are focused on technologies that will increase energy efficiency, treat wastewater, prevent air pollution and improve environmental monitoring systems.

The EU and China have been collaborating on sustainability issues for many years and continue to develop their aligned interests, most notably in energy efficiency and related environmental issues. Five EU-China Energy Conferences have been held in recent years, with topics on the agenda including the security of energy supply, environmental and climate change considerations, energy efficiency, nuclear energy, renewable energy, and energy market reforms. The conferences have also discussed market access for European companies in the Chinese energy sector. At the EU-China summit held in 2005 the parties signed the EU-China Strategic Partnership on Climate Change. The focus of the Partnership is on concrete action, including the development and deployment of clean energy technology. There are already a number of technical cooperation programmes running between the EU and China, notably the EU-China Energy Environment Programme (EEP) which was

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138 See OECD Working Party on Environmental Performance (2007) ‘Environmental Performance Review of China: Conclusions and Recommendations (Final) [http://www.oecd.org/document/47/0,3343,en\\_2649\\_34307\\_37809647\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/47/0,3343,en_2649_34307_37809647_1_1_1_1,00.html)

139 The Rio Declaration on Environment and Development, often shortened to Rio Declaration, was agreed at the 1992 United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit. The Rio Declaration consists of 27 principles intended to guide future sustainable development around the world.

140 UNFCCC is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro in 1992. The treaty aimed at reducing emissions of greenhouse gas in order to combat global warming.

initiated to further strengthen co-operation. The programme, with a total budget of € 42.9 million, focuses on the dissemination of Clean Coal Technologies (CCT), natural gas, energy efficiency and renewable energies. Further cooperation on environmental technologies and services, particularly in energy, has been recognised by both sides as an important area for future partnership and presents significant opportunities for EU-China relations on a policy and commercial level.

As mentioned in **Section 2**, China already imports large amounts of technology from the EU, with a substantial amount being environmental goods and services. This trend is likely to increase in the short-term due to technology transfer associated with increased bilateral technical cooperation within the framework of the Kyoto Protocol's Clean Development Mechanism (CDM). However, overall investment restrictions remain constrained by IPR and ownership restrictions.<sup>141</sup> The benefits of trade would be greatly enhanced if IPRs were protected, guaranteeing the party transferring the technology better control of where the technology ends-up. In addition, if national environmental standards could be implemented by all provinces effectively, this would minimise transition to reduce industry relocation and environment-related distortions to competitiveness and trade within China.

Investment liberalisation, as well as improvement to the IPR regime and agreement on common standards, goes to the heart of reaching an environmentally sustainable trade agreement under the PCA. This would yield significant benefits in terms of increasing the stock of available technology for climate change and other environmentally beneficial projects. The potential result is a win-win situation with the EU exporting energy-efficient and clean technology that facilitates China's access to advanced technologies. China is expected to become one of the world's largest environmental goods and services markets. However, a prerequisite for this is for regulators, especially at the local level, to conscientiously enforce the country's environmental regulations and standards.

Due to the global importance of EU-China trade, the PCA will also likely touch on wider sustainability trade issues such as triangular trade flows and the impact of bilateral trade liberalisation on third countries. There will likely be particular focus regarding the unsustainable exploitation of natural resources. An example would be the impact of illegal logging of wood in countries such as Indonesia, which eventually ends up in furniture exports from China to the EU. Better labelling tools to determine the origin of materials in products might be discussed, but it has been typically difficult to make progress on this issue and China's position on such labelling tools remains unresolved.<sup>142</sup>

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<sup>141</sup> See also **Case Study e.** on Environmental Goods and Services

<sup>142</sup> DG Trade (2006) 'Consultation of civil society on the forthcoming communication on China' [http://trade.ec.europa.eu/doclib/docs/2006/october/tradoc\\_129853.pdf](http://trade.ec.europa.eu/doclib/docs/2006/october/tradoc_129853.pdf)

# SECTION 6

## SECTOR-SPECIFIC BACKGROUNDS

This section highlights, in an introductory overview, five sectors which are suggested to be particularly representative in terms of their expected sustainability impact. These sectors were chosen for their relative importance from an economic, social, and environmental perspective, as well as their expected priority-status during the PCA negotiations.

The tables below show the respective rankings for selected sectors along these four themes, while the sectoral priority scale (Figure 35) is used to select sectors for in-depth analysis. The sectoral priority scale compares the economic, social and environmental importance of given sectors with their relevance to the potential PCA.

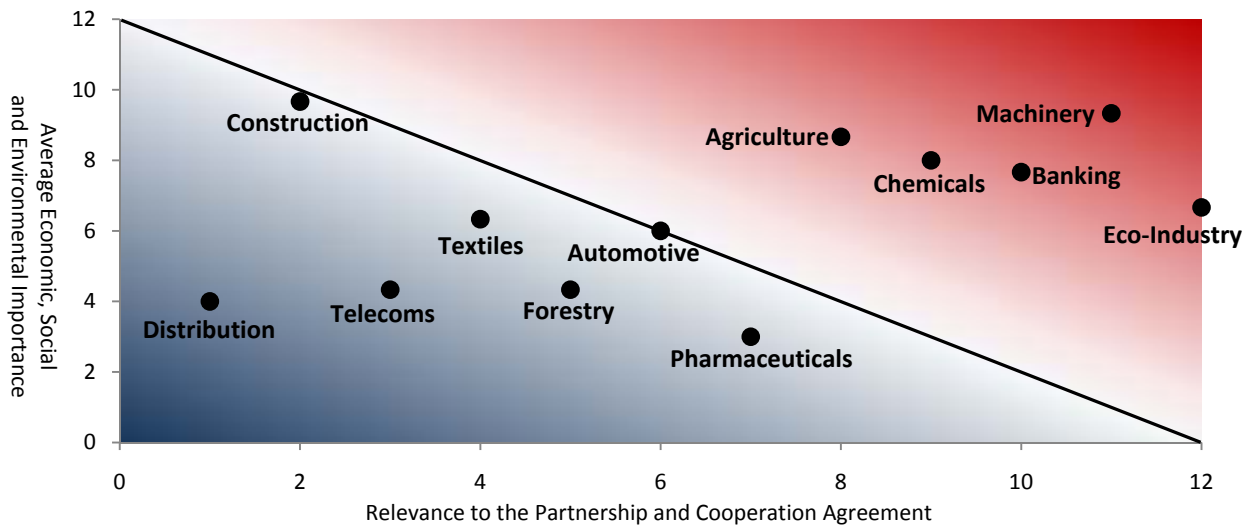
Economic Ranking	
1.	Machinery
2.	Banking Serv.
3.	Chemicals
4.	Construction
5.	Telecoms
6.	Automotive
7.	Distribution
8.	Agriculture
9.	Textiles
10.	Pharmaceuticals
11.	Eco-Industry
12.	Forestry

Social Ranking	
1.	Agriculture
2.	Banking Serv.
3.	Textiles
4.	Construction
5.	Machinery
6.	Chemicals
7.	Eco-Industry
8.	Automotive
9.	Pharmaceuticals
10.	Distribution
11.	Forestry
12.	Telecoms

Environmental Ranking	
1.	Eco-Industry
2.	Construction
3.	Forestry
4.	Agriculture
5.	Machinery
6.	Chemicals
7.	Automotive
8.	Textiles
9.	Telecoms
10.	Distribution
11.	Pharmaceuticals
12.	Banking Serv.

PCA Ranking	
1.	Eco-Industry
2.	Machinery
3.	Banking Serv.
4.	Chemicals
5.	Agriculture
6.	Pharmaceuticals
7.	Automotive
8.	Forestry
9.	Textiles
10.	Telecoms
11.	Construction
12.	Distribution

Figure 35: Sectoral Priority Scale

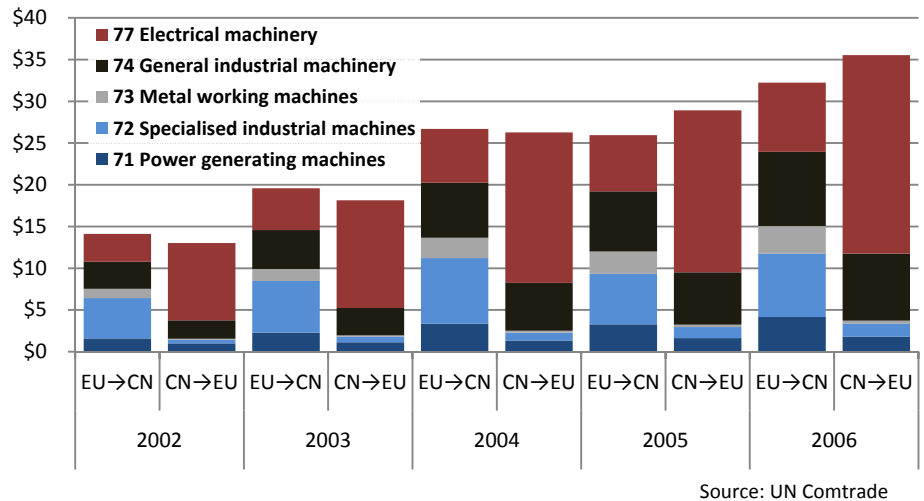


Note: The full methodology for the Sectoral Priority Scale and a summarised rationale of the sector choices for all sectors is provided in Technical Annex I. An introductory overview which considers all sectors was given in the Inception Report.

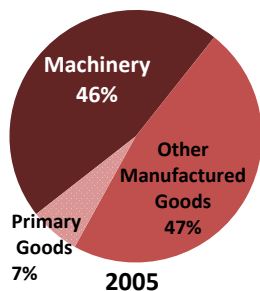
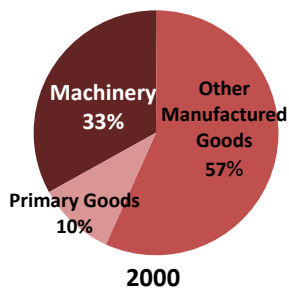
## Sector-Specific Background: A. Machinery Industry

The machinery industry is broad and comprises several sub-sectors, including power generating equipment, non-electrical machinery (sometimes also called mechanical engineering) and electrical machinery.<sup>143</sup> The EU is the world's largest importer and exporter of machinery, with 34 percent of the global market share. The machinery sector, with total trade-flows amounting to over US\$ 68 billion (€ 50 billion), also accounts for the largest share of trade in goods between Europe and China. Europe has traditionally enjoyed a comparative advantage in producing and exporting non-electrical machinery and power generating machinery.<sup>144</sup> China enjoys a comparative advantage in electrical machinery which accounts for the majority of Chinese machinery exports to the EU (Figure 36).

**Figure 36: EU-China Trade Flows (US\$ billions)**



**Figure 37: Chinese Exports Value Breakdown**



Source: China Statistical Yearbook

The machinery sector is highly strategic due to its cross-industry application. The sector is an important enabler for other industries, often supplying key inputs for production processes. The industry's EU-25 turnover in 2005 was €360 billion and it is estimated that 65 percent of innovations in Europe within the industrial manufacturing sector emanate from innovations within the machinery and equipment sector.<sup>145</sup> In China, the machinery sector is likewise defined by the government as a "pillar industry" and, after textiles, is the second largest source of profits accounting for 6 percent (US\$ 22.5 billion) of total industrial profits in 2004.<sup>146</sup> It has also become an increasingly important part of foreign trade, accounting for 46 percent of all export value in 2005, up from only 33 percent in 2000 (see Figure 37).<sup>147</sup> Whilst China's competitive strength has arguably been based on its large pool of cheap labour, it is possibly the capital investment in machinery leading to the

<sup>143</sup> This case study defines the machinery sector using the SITC (Standard International Trade Classification Rev 3) as consisting of Electrical Machinery (SITC 77), Non-electrical machinery (SITC 72-74) and Power Generating Equipment (SITC 71)

<sup>144</sup> The revealed comparative advantage for the EU25 in non-electrical machinery is 1.72, second only to pharmaceuticals which scores 2.01

<sup>145</sup> DG Enterprise (2004), 'Competitive Analysis of EU Mechanical Engineering'. Available at:

[http://ec.europa.eu/enterprise/mechan\\_equipment/companalysis-eu-mechengin.pdf](http://ec.europa.eu/enterprise/mechan_equipment/companalysis-eu-mechengin.pdf)

<sup>146</sup> China Annual Industry Yearbook

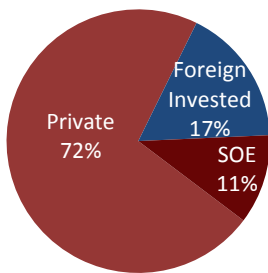
<sup>147</sup> China Statistical Yearbook (2006) - figures given in the yearbook includes transport equipment.

mechanisation of China’s manufacturing industry which is the most important contributing factor behind China’s explosion in productivity growth since economic reforms began.<sup>148</sup>

### Power Generation Equipment

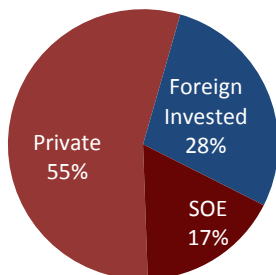
**Figure 36** above showed a growing European surplus in the power generating sector. This reflects Europe’s strengths in this field and China’s current reliance upon high-standard imports to reduce inefficiency. As China’s industrial base has grown more pressure has been placed upon power sources. Whilst there is investment in alternative sources of energy, many provinces are still reliant on coal for the bulk of their energy needs. The lack of energy has serious ramifications on productivity: 24 out of 30 provinces lack a constant supply of power and grid restrictions mean many factories have to work at under-capacity levels.<sup>149</sup> In order to counterbalance energy shortages, the government has invested heavily in increasing capacity of smaller plants. Recent developments in power plant technology have made it possible for smaller plants to meet or exceed the efficiency of larger plants. However, increasing the capacity of older plants, while it may provide a temporary solution, often sacrifices efficiency. Inefficiency in power consumption in China is substantially higher than in other parts of the world. In 2002, it was as much as 3 times the world’s average per unit of GDP.<sup>150</sup> In light of this, efficiency targets have been set under the 11<sup>th</sup> 5 year Programme providing impetus to invest in better performing power equipment. Products categorized under power generating equipment include steam boilers, turbines, non-electrical motors and engines to rotating electric plants – the latter accounts for 27 percent of Chinese imports and 38 percent of global exports.

**Figure 38: Ownership Structure of Chinese Non-Electric Machinery**



Source: China General Machinery Association Database (2007)

**Figure 39: Total sales of Chinese Non-Electric Machinery Industry**



Source: China General Machinery Association Database (2007)

### Non-Electrical Machinery

The non-electrical machinery sector is highly diverse in its nature. It produces goods ranging from heating and cooling equipment to food-processing and agricultural machinery with products serving a range of industries. Producers in China are mainly small, private companies in comparison to the large public-private groups that characterise the power-generating machinery sector. Foreign investors also play a more important role in the sector, accounting for 17 percent of ownership and 28 percent of total sales in the Chinese non-electrical machinery industry (**Figure 38** & **Figure 39**). Similar to the power generating equipment sector, Europe enjoys a favourable trade balance in the non-electrical machinery sector (see **Figure 36** SITC codes 72-74). However, Chinese export gains in the general industrial machinery sector demonstrate China gaining ground in this sector.

The growth rates within the sector are strong. Large projects like the Beijing 2008 Olympics and the Shanghai 2010 Expo have driven construction of new buildings and infrastructure, much of which is state-of-the-art, and demanding large amounts of investment in machinery. Sales in construction machinery were valued at \$6 billion in 2004, and have since grown at approximately

<sup>148</sup> Krugman (1994) The Myth of Asia’s Miracle’ available at: <http://web.mit.edu/krugman/www/myth.html>

<sup>149</sup> PWC (2005) ‘Machinery and Equipment Market in China’

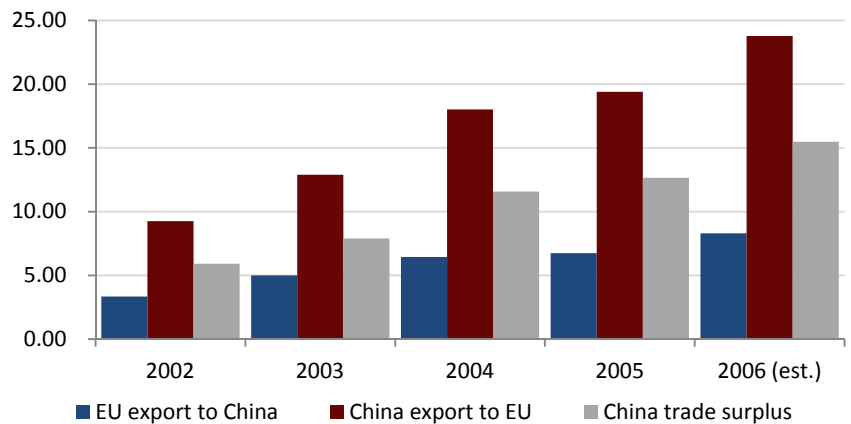
<sup>150</sup> Xinhua online, 27 April 2006

35% p.a.<sup>151</sup> In the machine tool sector demand from automobile, agriculture and particularly large engineering infrastructure sectors has contributed to making China the largest global market. Sales in 2004 reached US\$ 9.2 billion, dwarfing second place Japan's US\$ 5.8 billion. In production, China now ranks fourth amongst machine tool manufacturers and has started to expand overseas with companies entering markets in Europe, Japan and the USA.<sup>152</sup> However, domestic supply is still unable to make up for domestic demand, and over half of China's machine tools' value constitutes imported goods.

### Electrical Machinery

The electrical machinery sector represents the second largest machinery sub-sector in China after general industrial machines. Moreover, it is an area in which China has a comparative advantage and in which it has a substantial trade surplus with Europe valued at US\$ 12.6 billion in 2005 (Figure 40). The sector, which includes such products as white goods, electric circuit boards, insulated wire and cables, benefits from China's economies of scale and low-cost manufacturing advantages. There are areas, however, in which Europe still has a strong foothold including medical and optical apparatus which require high levels of R&D and higher production costs.

**Figure 40: EU-China Trade in Electrical Machinery**



Source: UN Comtrade Database

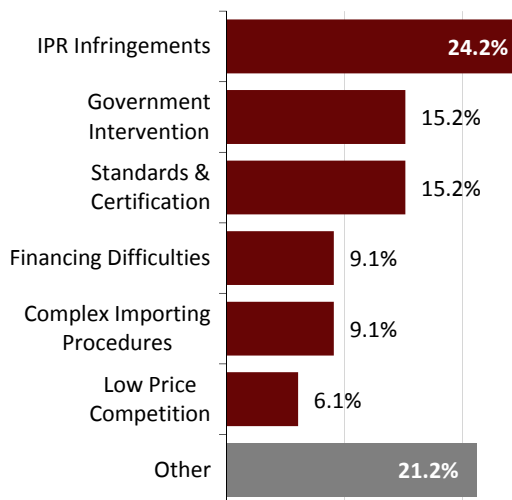
### Foreign Participation and Market Access Issues

Foreign Invested Enterprises (FIEs) account for US\$ 85.5 billion of the total US\$ 300 billion sales in the Chinese non-electrical machinery market and retain substantial advantages over their Chinese counterparts. On the other hand, Chinese companies are attempting to advance their technical quality through a combination of R&D, technology transfers and copying of foreign innovations. European operators have indicated that coupled with market access obstacles, they are worried that this could compromise their competitive position in years to come. Some have even argued that this could result in them leaving the market.

<sup>151</sup> Research and Markets (2007) <http://www.researchandmarkets.com/reports/451455/>

<sup>152</sup> PWC (2005) 'Machinery and Equipment Market in China'

**Figure 41: Most Important Market Obstacles to the Chinese Market (EU Industry Survey Results)**



Source: DG Trade (2007)

**Figure 41** lists the results of a survey conducted for DG Trade, asking European machinery industry practitioners in China what they regarded as the most important market obstacle to the Chinese market. Despite China being a signatory to the WTO’s Trade-Related Aspects of Intellectual Property Rights Agreement (TRIPS), IPR infringement was the most mentioned. Practitioners pointed out that although some progress has been made, China is still confronted with significant shortcomings in the protection and enforcement of IPRs. The lack of enforcement causes harm to virtually all industries. It does particular damage to higher value market segments in which European companies operate that rely on strong intangible assets such as innovation, branding and patented technologies.

Government intervention, and in particular state subsidies, was another major concern for industry operators. These subsidies take different forms, such as the transfer of ownership including cash grants, debt-for-equity swaps, interest subsidies, debt forgiveness and deliberate extension of non-performing loans and currency management. Although China is a signatory of the WTO’s Agreement on Subsidies and Countervailing Measures, implicit and explicit measures to ward off foreign competition such as local content rules in key domestic industries continue to exist.<sup>153</sup> In 2004, official statistics put direct government procurement at only 1.3 percent of China’s GDP. However, the same statistics put public spending on non-salaries at approximately 15 percent of GDP. This leaves a substantial proportion of public spending which is not allocated in a transparent fashion, and possibly extended exclusively to local bidders.

Standards and certification are a further concern for European companies. Application of the China Compulsory Certification (CCC) regime has led to uncertainty and disadvantages for foreign companies. They report a lack of transparency, inconsistent interpretations, and little coordination among Chinese authorities. The CCC affects foreign companies disproportionately by imposing unnecessary high costs on covering the fees of Chinese inspectors to inspect production in the country of origin. This is especially expensive for SMEs and bears the risk of unintentional know-how transfer.

**Figure 42: China’s Three North-Eastern “Rust-Belt” Provinces**



Source: Emerging Markets Group (2007)

## Sustainability Context

China’s machinery sector employs over 8.1 million people or 13.4 percent of the manufacturing workforce; two-thirds of which are employed in non-electrical manufacturing sector. The majority of the industry is located in the three provinces of China’s Northeast (see **Figure 42**), which has undergone rejuvenation efforts in recent years after a sustained period of decline in the 1990s. Whereas in 1980 the aggregate economic volume of the southern Guangdong Province was only one half of that of Northeast Liaoning, by 2001 the figure for the north-eastern ‘rust-belt’ provinces was only 62 percent of that of Guangdong. Restructuring has had a mixed effect on employment,

<sup>153</sup> According to the study, for bids available to FIEs the Chinese government actively encourages foreign manufacturers to comply with some of the formerly mandated practices in biddings for government projects. For example, a 70 percent local content rule is enforced in government procurement projects for imported machinery and equipment such as wind generators. Apparently some SOEs as customers of FIEs in China demand 70 percent local content of purchased equipment as well (DG Trade, 2007).

although there has been an overall increase in total employment. While there has been an overall increase in employment in the Northeast, there has been a 40 percent drop in employment in SOEs where productivity levels are the lowest. Workers in these enterprises traditionally enjoyed high levels of social security through company provision of pensions and social packages. These programmes have been cut under restructuring, leaving the unemployed more vulnerable. The safety net provided by the state still does not provide comprehensive welfare coverage, though there is some indication that parts of the National Social Security Fund, established in 2000, are allocated to help provinces which cannot provide welfare.<sup>154</sup>

China's current environmental outcome is also intricately linked to the machinery sector. Much of China's air pollution is caused by the inefficient burning of coal, the consumption of which is still rising<sup>155</sup>. Although the problem is partly a result of the fuel source (heavily polluting, low-purity brown coal is widely used), technical improvements brought about by efficient power-generating equipment in power plants are critical to reducing wastage. Similarly, the construction of new larger plants utilising cleaner energy sources able to take advantage of economies of scale, are also heavily reliant on state-of-the-art machinery and power generation equipment. New environmental legislation in China means energy intensive sectors, including construction and manufacturing, are increasingly required to phase out inefficient machinery replacing them with more environmentally friendly machines.<sup>156</sup>

China's machinery industry also has significant indirect environmental impacts, specifically its rapidly increasing demand for raw materials, such as iron, copper, aluminum and high-quality special steel materials. This demand has been accelerated by the Chinese government's 2002 reduction (by 40%) of the resource tax on iron ore for those corporations involved in both mining and metallurgical processing. The process of mining these resources (particularly domestic exploitation) is rapidly having a notable environmental impact, becoming more pronounced as demand soars.<sup>157</sup> The machinery industry, with 26% of all Chinese industrial output, is a key driver in this soaring demand.

## Baseline Trends

Domestic Chinese demand for machinery is expected to grow at an annual 20-25 percent. Further power-generating projects in particular are required – albeit not on a scale as in the past 5 years. As Chinese companies upgrade technologically and gain improved access to energy and other resource inputs, domestic output is likely to increase rapidly in the future. The expansion of local production value is expected to outstrip demand growth, increasing on average by 35 percent per year between 2007 and 2010. Although machinery imports are expected to grow by 15 percent from 2006 to 2010 (down from 25 percent in recent years), this means local production will increasingly replace the need for imported technology (**Figure 43**). This is especially apparent in

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<sup>154</sup> Stuart Leckie, Stirling Finance, China Economic Review, Jan 2007

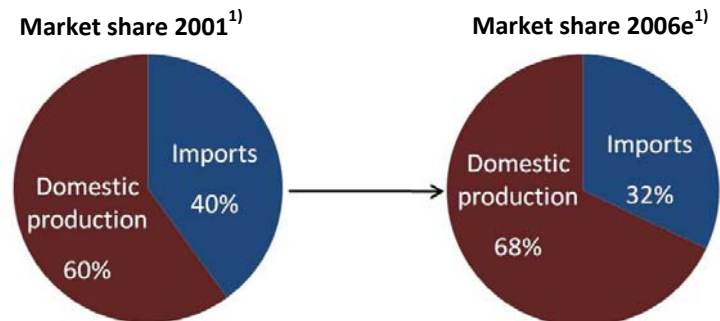
<sup>155</sup> At the beginning of 2007 China was building 550 more coal-fuelled power stations.

<sup>156</sup> Recognising China's high energy inefficiency, the Chinese government stated in the 11<sup>th</sup> FYP in 2006 that its energy consumption per unit of GDP must drop by 20 percent from its current level by 2011.

<sup>157</sup> <http://www.mbandi.co.za/indy/ming/iron/as/cj/p0005.htm>

sectors in which production chains are comparatively simple and mass-production is easily attained.

**Figure 43: Import Substitution: Market Share of Locally Made and Imported**



1) Defined as share of imported machinery in Chinese domestic consumption of non-electric machines and power generating equipment

Source: UN COMTRADE database, China General Machinery Association database

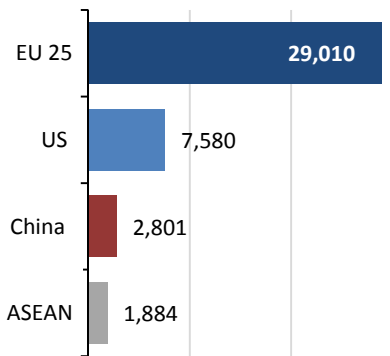
Regardless of these import substitution trends, the domestic market will still require high value-added equipment from abroad in selected market segments. For domestic companies to move up the value chain they will have to overcome substantial challenges associated with a lack of advanced innovation, shortage of intangible assets such as branding and knowledge of customer service, as well as distance to sophisticated demand conditions. R&D in China is currently on average below one percent of turnover<sup>158</sup> and although R&D expenditure is likely to grow in importance in the future, the development of indigenous innovation will be slowed down due to continued IPR infringement. In a global environment of rising energy prices and stricter environmental regulations, and where the business costs associated with using older, less innovative machines is rapidly rising, this could reduce the competitiveness of domestic companies using second-hand technologies.

Paradoxically, the competitive dynamics of the Chinese machinery industry in the short-term do not necessarily support increasing indigenous innovation. The current investment-led growth in capacity in an already overcrowded domestic market for lower-end machines is leading to an increase in export volumes by Chinese operators. There is a consequent opportunity for greater margins for exporters. As competitive pressures increase in traditional export markets such as South East Asia, Chinese companies will attempt to open up more advanced markets. In China, this is likely to result in increased short-term pressures on Chinese companies to further exploit foreign-owned IPRs.

<sup>158</sup> Impuls Foundation of the German VDMA. 2004-2005.

## Sector-Specific Background: B. Banking Services

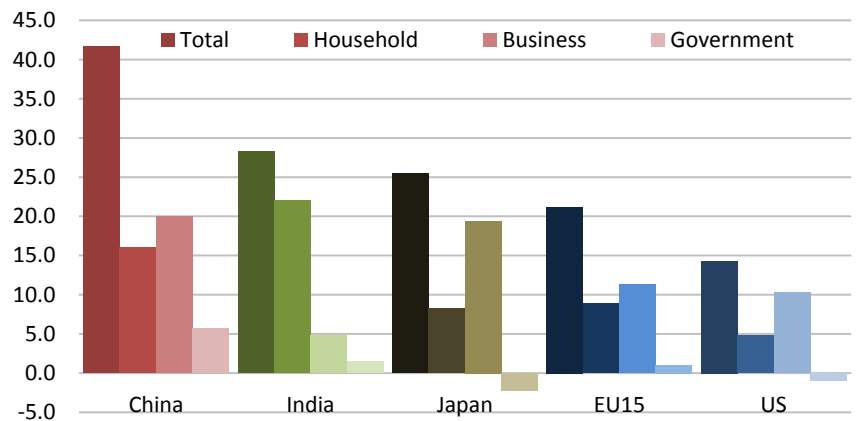
**Figure 44: Total Banking Assets (Dec 2004, trn €)**



Source: DG Trade (2007)

When comparing China's total banking sector assets with that of Europe or the United States, the Chinese banking sector seems relatively small (**Figure 44**). However, China's banking sector has greater growth potential than any other region in the world, making it an important sector to consider in greater detail. As seen in **Section 2** (Economic Context), China's economy is growing rapidly and expected to continue to outpace other major economies for the foreseeable future. Rising disposable income increase the need for financial services as consumers buy cars and homes. There are already over 300,000 US dollar millionaires in China who are estimated to be collectively worth over US\$ 530 billion in assets. The Chinese Academy of Social Sciences estimates that by 2020 the middle class will make up 40 per cent of the total population in China<sup>159</sup>. A still underdeveloped social security system for households, as well as an emerging private sector which is largely reliant on self-financing from retained profits, has contributed to one of the highest saving rates in the world (see **Figure 45**). These trends will create relatively greater opportunities for banking over other types of financial mediation<sup>160</sup>.

**Figure 45: Savings Rate (Percentage of GDP, 2005)**



Source: ADB; IMF (2006)

Since China's WTO accession in 2001, the Chinese banking sector has seen substantial reforms in banking supervision. Notable actions include reinforcing the role of the China Banking and Regulatory Commission (CBRC) and clarifying that of the China Securities Regulatory Commission (CSRC); the creation of Asset Management Companies (AMCs) to dispose of China's large stock of non-performing loans (NPLs) while at the same time taking steps to strengthen governance to address NPLs issued by state banks; and gradually liberalising interest rates while permitting more diverse financial instruments to meet the emerging needs of savers.

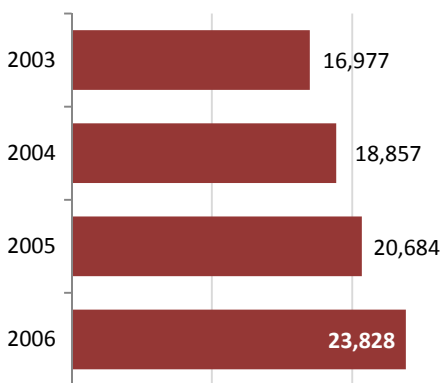
<sup>159</sup>Zhigang, Xin, Chinadaily, 2004, Dissecting China's 'middle class,' Source, [http://www.chinadaily.com.cn/english/doc/2004-10/27/content\\_386060.htm](http://www.chinadaily.com.cn/english/doc/2004-10/27/content_386060.htm) Families with assets valued between 150,000 (US\$ 18,137) to 300,000 Yuan (US\$ 36,275) are classified as being in the middle class.

<sup>160</sup>The Boston Consulting Group estimates that for the period between 2004 and 2010, China will account for approximately US\$ 130 billion in annual global banking revenues, more than one-quarter of the increase.

Despite steps taken by the government, the Chinese banking sector has still not become truly commercially oriented. The Chinese banking sector remains dominated by the four large state-owned commercial banks (SCBs)<sup>161</sup> and one joint stock commercial bank<sup>162</sup> which together account for a share of 54 percent in total banking sector assets and over 60 percent of total loans outstanding. The state directly or indirectly controls 95 percent of the assets of most other banks through shares held by local authorities and state-owned enterprises outside the banking sector. True private banks, albeit many are officially defined as such, are rare<sup>163</sup>.

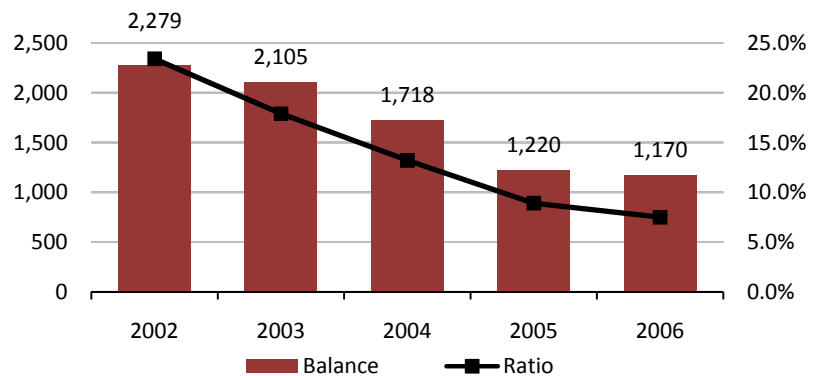
Traditionally, the big four SCBs have lent the vast majority of loans to state-owned enterprises (SOEs), the source of China's historical legacy of NPLs. Even today, SOEs account for less than 25 per cent of GDP, but still receive 65 percent of loans. Smaller private enterprises now account for over 45 percent of GDP but account for only 20 percent of loans. In response to the NPL problem, the government has already transferred over € 230 billion of bad loans to asset management companies that specialise in NPL resolution. The government has also injected € 80 billion of new capital into the four SCBs to boost their capital adequacy ratio.

**Figure 47: Total Value of Bank Loans (RMB bn)**



Source: CBRC (2007)

**Figure 46: NPLs at Major Chinese Commercial Banks (RMB bn)**



Source: CBRC (2007)

**Figure 46** outlines the trend in NPLs at major commercial Chinese banks. The figure shows that the number of NPLs and the ratio of bad loans have progressively fallen over the last five years. Official statistics now give NPLs in China a total value of RMB 1.25 trillion (€ 120 billion) with an NPL ratio of 7.1 percent at year-end 2006<sup>164</sup>. Despite government measures implemented in recent years to cool the economy, the total amount of loans has continued to increase (**Figure 47**). There is some cause for concern that many of these new

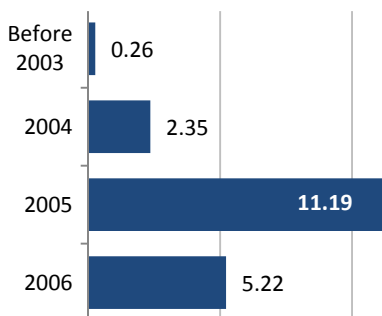
<sup>161</sup> Industrial and Commercial Bank of China (ICBC) is focused on the industrial and urban sectors; China Construction Bank Corporation (CCB) is focused on offering long-term loans to construction and infrastructure projects; Agricultural Bank of China (ABC) specialises in agricultural and rural loans and deposits; and Bank of China Ltd. (BOC) focuses on foreign exchange and international transactions.

<sup>162</sup> Bank of Communications (BOCOM)

<sup>163</sup> An exception to this is China Minsheng Bank which is majority (60% of shares) owned by private companies and Shenzhen Development Bank and Guangdong Development Bank in which US investors have obtained a de facto controlling stake.

<sup>164</sup> CBRC (2007)

**Figure 48: Foreign Investment into the Chinese Financial Sector (US\$ bn)**



Source: CBRC (2007)

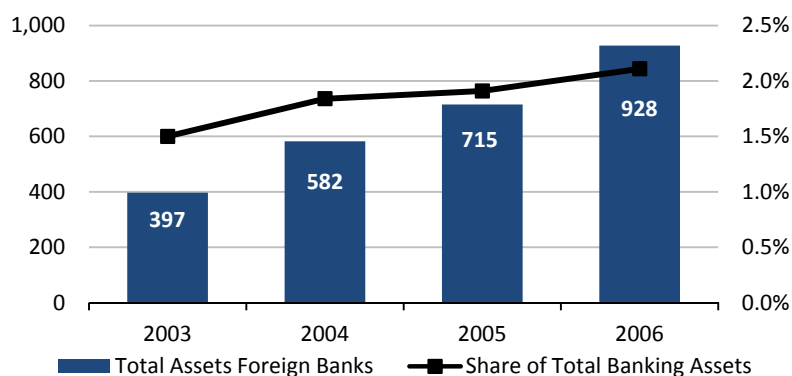
loans could result in an increased number of NPLs in the future, particularly should the economy slow down.<sup>165</sup>

### Foreign Participation and Market Access Issues

Until recently, foreign banks in China were restricted to certain cities and to dealing only with foreign-currency transactions by foreign companies in China. In fulfilling its WTO commitments, China lifted restrictions on foreign institutions to engage in domestic RMB business at the end of 2006. In anticipation of the opening up of the Chinese banking sector, foreign banks invested over US\$ 11 billion in 2005 (Figure 48).

Stringent licensing requirements and regulatory discrimination remain, making it costly for foreign institutions to open new branches. Foreign banks must also incorporate locally to enjoy full access to the market, while all branches of foreign banks in China are treated as if they were separate legal entities and not part of a consolidated network. This increases the associated costs of opening more branches in China and is costly in terms of the capital requirements for each branch, complexity of balance sheets and general management. This is the main reason behind the market presence of foreign banks in China still being only 2.1 percent of total bank assets (Figure 49).

**Figure 49: Market Presence of Foreign Banks in China (RMB bn)**



Source: CBRC (2007)

Depending on what services a branch intends to offer, capital requirements of between RMB 100 million (€ 12.3 million) and RMB 600 million (€ 73.8 million) are placed on each branch requesting to be licensed. These capital requirements are now higher than prior to China's accession to the WTO and compares unfavourably with the € 5 million capital requirement for a bank to operate in Europe. Foreign banks also have to hold a ratio of capital to risk-weighted assets of a minimum eight percent, both for RMB and foreign currency loans, in accordance with international standards (Basel I). However, this ratio must be calculated for branches separately and fulfilled individually by each branch. Therefore, foreign banks with a branch network will in reality need a much higher minimum capital adequacy ratio than eight percent, since some branches will always have higher ratios than the eight percent minimum. In contrast, Chinese banks on average have a capital adequacy well below

<sup>165</sup> Firm-level data for listed enterprises suggest that Chinese enterprises cannot generate enough cash flow to pay interest on about 20 to 30% of their total debt. A moderate rise in interest rates or a moderate drop in sales could cause 40-60% of the debts of all firms to become unserviceable, a risk for which Chinese banks have made little provision.

eight per cent. By the end of 2004, only 30 Chinese banks representing 48 percent of total banking sector assets met the eight percent requirement. The total shortfall of Chinese banks' capital was estimated at around € 100 billion<sup>166</sup>. Besides the economic disincentives that exist due to the high capital requirements described above, the rule that foreign banks may only open one new branch and two sub-branches per year further limits the branch expansion of foreign banks in China. This is of particular importance when considered in the context that a "competitive" nationwide network would presumably consist of around 25,000 branches, similar to the amount of a typical large Chinese state-owned bank.

**Table 6: Selected High-Profile Investments Made by Foreign Financial Institutions**

Chinese Bank	Foreign Financial Institution	Equity %age	Inv US\$
Bank of Shanghai	IFC (international)	7	60 mn
	HSBC (Europe)	8	63 mn
Bank of Communications	HSBC (Europe)	19.9	1.18 bn
Shanghai Pudong Development Bank	Citigroup (USA)	19.9	290 mn
China Construction Bank	Temasek (Singapore government)	5.10	1.46 bn
	Bank of America (USA)	9.10	2.5 bn
Bank of Beijing	ING (Europe)	19.9	215 mn
	IFC (international)	5	53 mn
Bank of China	Royal Bank of Scotland (Europe)	10	3.1 bn
	Merrill Lynch, Li Ka-Shing (USA)	5	1.5 bn
	Temasek Holdings (Singapore)	5	1.5 bn
	UBS (Europe)	1.60	500 mn
	Asian Development Bank (Int)	0.24	75 mn
Bohai Bank	Standard Chartered Bank (Europe)	20	123 mn
Huaxia Bank	Deutsche Bank / Sal Oppenheim (Europe)	14	327 mn
Nanjing City Commercial	BNP (Europe)	20	36 mn
	IFC (international) <sup>167</sup>	5	9 mn
Mingsheng Bank	IFC	1.60	23 mn
	Temasek Holdings	4.6	110 mn
Shenzhen Development Bank	Newbridge Capital	17.98	145 mn
Nanchong City Commercial Bank	KfW (Europe)	10	5 mn
Ping An Bank	HSBC	27	n.a.
Guangdong Development Bank	Citigroup	20	3.06bn <sup>(1)</sup>
	IBM	5	
Industrial and Commercial Bank (ICBC)	Goldman Sachs (USA)	6	1.8bn
	American Express (USA)	0.7	0.2 bn
	Dresdner Bank (Europe)	3.3	1 bn

Note: (1) Total offer as part of a consortium involving a mix of foreign and domestic institutions. Source: DG Trade (2007); updated from various sources by EMG

<sup>166</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

### Box 11: Chinese Insurance Sector

The Chinese insurance sector, comprised of about 80 institutions, is small but developing quickly. An annual growth rate at around 12% as measured by premiums, shows that this sector will become a significant market within the next few years - if regulation allows for it. China has adopted a protective regulatory regime in insurance, under which limits are placed on product and price competition.

Due to the need of the former SOE-based social security system to be substituted by private social security, foreign institutions see future opportunities in the Chinese insurance sector. Foreign institutions hope to raise their market share from their current 2% to 10%, with growth mainly coming from the life insurance sector. The market proportions of life and non-life have changed, but at the same time, both markets have grown rapidly. Between 1999 and 2004, the life insurance sector grew from US\$ 10.7 billion to US\$ 38.8 million annual premium income. The non-life sector grew from US\$ 6.3 billion to US\$ 13.2 billion.

Source: DG Trade (2007)

One way foreign financial institutions have tried to circumvent their limited branch networks is by obtaining an ownership stake of an existing Chinese bank, as witnessed by such high-profile investments as those made by Citigroup, HSBC, Deutsche Bank, or Royal Bank of Scotland (**Table 6**). However, these investments are restricted due to a foreign ownership cap of 25 percent, with a maximum 20 percent ownership cap for a single foreign investor, rarely allowing any form of management control. The aim of these investments has been to engage in long-term strategic partnerships allowing distribution to the domestic bank's existing client base of financial products such as credit cards, mortgage loans, insurance (see **Box 11**) and other wealth management products, and at the same time benefitting from the size and growth prospects of the Chinese market.

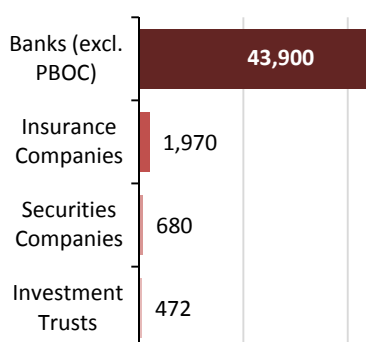
In an attempt to encourage foreign investment in the less prosperous parts of the country, the CBRC recently rolled out a so-called "Green Passage", easing review and approval procedures for foreign bank branch applications in China's western and north-eastern areas and relaxing regulatory requirements for conducting local currency business.<sup>168</sup> Under these relaxed requirements, instead of assessing the profitability of each individual branch when considering the application, the CBRC takes into account the profitability of all Chinese branches of the foreign bank. Some foreign banks have already taken advantage of these provisions. HSBC for example, last year opened a new branch in Xi'an, becoming the first foreign bank to expand its presence in Western China. HSBC has also recently opened a branch in Shenyang in North-east China. In effect, this new "Green Passage" as well as the market access obstacles that remain in place in the rest of the country are illustrative of the importance that China places on its banking sector as a strategic driver for its development.

### Sustainability Context

In recent years, banking sector reforms have been central to China's economic reform policy. As can be seen in **Figure 50**, the banking sector is easily the major component of the financial system. Liberalising the banking sector would therefore have tremendous economic and social impacts<sup>169</sup>. There is substantial scope for equity investment by foreign financial institutions to accelerate the commercialisation of financial institutions. Chinese banks can benefit from investors' financial resources and expertise in risk management and corporate governance. However, enthusiasm for this is not shared equally among all elements of the Chinese government. There have been debates within China about the merits of financial liberalisation and the degree to which the participation of foreign investors is beneficial to the Chinese economy<sup>170</sup>.

The major difficulty in reforming the Chinese banking sector is that domestic banks are confronted with an unenviable legacy of financing. An estimated

**Figure 50: Assets of China's Financial Institutions 2006 (RMB bn)**



Source: Business Wire (2007); CBRC (2007)

<sup>168</sup> CBRC (2005).

<sup>169</sup> As China's largest service sector, the further development of banking is a key driver for rebalancing the Chinese economy away from manufacturing and towards services. The more general environmentally positive impact of a shift away from manufacturing to services issues was explored in more detail in **Section 5**.

<sup>170</sup> Naughton (2005)

170,000 economically inefficient, but politically important, SOEs resulted in considerable over-investment in certain sectors with insufficient returns on capital. Traditionally, SOEs offered a generous package of wages and social protection, pensions, heavily subsidised housing, medical coverage, childcare, food, and recreational facilities. An estimated third of the total labour workforce (almost 205 million workers) still work at Chinese SOEs or state controlled enterprises. An increased commercially-oriented banking sector would mean that subsidies to SOEs in the form of soft loans will likely diminish. Taking away the role of SOEs in providing social security, particularly important in urban areas, will increase pressures for the creation of a viable national social security system – a key economic and social challenge. Until a viable social safety net is established<sup>171</sup>, the incentive for Chinese consumers to save for a “rainy day” is large. There are still only a limited amount of alternative saving instruments available to low-interest deposits such as private insurance. Increasingly consumers have poured their excess saving into a rapidly overheating domestic stockmarket.

**Table 7: Productivity in Banking Sector (Assets/Employee, 2005)**

	European Banks	Chinese Banks
EU15	11.1%	n/a
China	8.37%	0.75%

Source: EMG Analysis (2006)

Apart from these macro-challenges associated with liberalising the banking sector, Chinese banks, in particularly the SCBs, are challenged by an additional legacy of overstaffing and relatively low levels of staff productivity. **Table 7** compares the ratio of assets per employee as an indicator of the productivity at Chinese and European Banks. Chinese banks have some way to go in terms of general modernisation and automatisisation processes and moving away from a paper based system to electronic systems. This will inevitably lead to the closure of a large number of unprofitable branches and the downsizing of current staff levels.

Despite these significant challenges the potential of reforming the Chinese banking sector is enormous. The McKinsey Global Institute estimates that reforming the Chinese banking sector could raise China’s GDP by 17 percent, or US\$ 320 billion per year, mainly as a result of channelling more funds to private companies which would yield a significantly higher return for the same amount of investment.<sup>172</sup> It is further likely that the boost to private companies, which already account for 79 percent of newly created jobs, will go a long way in compensating for the initial job-losses resulting from the restructuring of the Chinese banking sector. The increase in more sustainable economic growth resulting from a more efficient allocation of capital is estimated to raise the government’s tax revenues by as much as 13 percent.<sup>173</sup> These extra funds could make a significant contribution to setting up a comprehensive social security system.

## Baseline Trends

Assuming that the gradual process in reforming the banking sector continues, a number of growth fundamentals will continue to cause the banking sector to expand significantly in the forthcoming years. The historical imbalance of

<sup>171</sup> The establishment of a comprehensive social security system is a key priority for the Chinese government. In June 2007 the State Council and the Ministry of Civil Affairs released new guidelines on a basic national social security system that for the first time covered the neglected rural areas, an important step to setting up a viable national system.

<sup>172</sup> MGI (2006)

<sup>173</sup> Ibid

private enterprises and the limited availability of alternative financing options beyond bank loans<sup>174</sup>, has created a large amount of pent-up demand by private enterprises and households for certain banking services.

Over 70 percent of the SME market is estimated to remain untapped and as much as 15 percent of the annual growth projected for the next five years is expected due to the growing financing requirements of these largely private enterprises<sup>175</sup>. As personal incomes rise, and consumers demand more sophisticated financial products, growth in the retail banking sector is expected to grow over 20 per cent per year for general consumer and special loans such as car credit and mortgages. Residential mortgages, for example, already represent 90 percent of the RMB 242 billion in outstanding consumer loans and hundreds of millions of Chinese will become home-owners for the first time in the next 10 years.<sup>176</sup> In certain sub-sectors, notably the credit card business, high growth rates of around 50 percent are expected annually.

It is expected that domestic banks, able to leverage their extensive branch network, will focus on mass-market retail banking for future growth. Although China is a vast and populous country, banking revenues are expected to remain highly concentrated. As seen in the social context section of this paper, the wealthiest 0.4 percent of households own more than half of the country's total personal wealth. Furthermore, over the next five years more than half of the banking revenue in China is expected to be generated in only 6 of the country's 31 provinces. More than 80 percent of the revenue is expected to be generated by the four lines of business that have been opened to full participation in December 2006. The majority of foreign banks, constrained by smaller branch networks, are expected to remain more focused by targeting wealthy customers concentrated in selected major cities.

Smaller banks that have weak financial profiles or lack a niche market are likely to be subject to take over by their stronger peers. The central government and local authorities are likely to encourage consolidation of weaker or smaller banks to increase their chances of survival. These weaker banks, particularly those with a relatively large presence in major cities, will likely provide the best opportunities for foreign investors who can provide the capital and skills to increase financial viability. This trend is likely to receive some tacit support by the Chinese government as witnessed by the controlling stake obtained by US investors in the Shenzhen Development Bank, and more recently, the Guangdong Development Bank.

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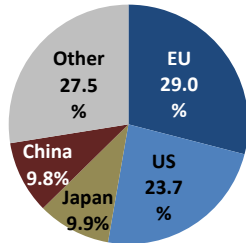
<sup>174</sup> Almost all companies listed on Chinese stock exchanges are SOEs.

<sup>175</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

<sup>176</sup> BusinessWeek, In China, To Get Rich Is Glorious, 2006, Source: [http://www.businessweek.com/magazine/content/06\\_06/b3970072.htm](http://www.businessweek.com/magazine/content/06_06/b3970072.htm)

## Sector-Specific Background: C. Chemicals Industry

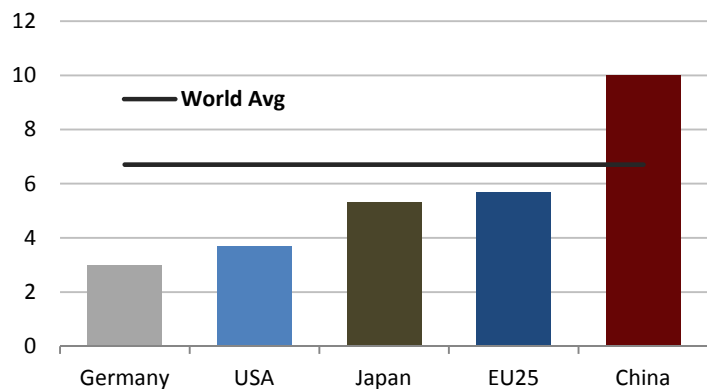
**Figure 51: Global Demand of Chemicals (2004, including Pharmaceuticals)**



Source: VCI (2006)

The chemicals sector covers a wide variety of products designated either for reuse within industries further down the value chain or sold as commodities to consumers. Since virtually every manufacturing industry requires chemicals as inputs, the largest segment of the chemicals sector is the production of intermediary goods. The chemicals sector virtually enables all other sectors of the economy and is a key determinant of the competitiveness of downstream industries. Globally, the sector was valued at over € 1.7 trillion in 2004 with the largest players being the EU 25, the US and Japan (Figure 51). The EU is the leading chemicals producing region in the world (accounting for 28 percent of global production) with a € 360 billion annual turnover. The chemical industry's contribution to the EU's GDP amounts to 2.4 percent.

**Figure 52: Growth of Global Chemicals Industry in 2005 (% , selected countries)**



Source: DG Trade (2007)

China's rise in the global chemicals market is, however, already precipitating major changes and restructuring of the industry. Currently ranked 4<sup>th</sup> in the world with a turnover of € 147 billion, China's role as a global market and supplier of chemicals is continuing to grow at an average of 10 percent per annum. Figure 52 shows China's growth in comparison to other major chemicals markets in 2005. The chemicals sector makes up roughly 10 percent of the economy in China and outstrips both GDP and other sector growth. It is the third largest industry sector following machinery and textiles, having been spurred on by government efforts under the 10<sup>th</sup> 5 year plan (2002-2007), during which market size grew by 30 percent.<sup>177</sup>

Strong growth in the Chinese chemicals market is driven by the close linkage between the sector and China's booming major manufacturing industries such as automotives, electronics, and textiles. All of these industries require large inputs from the chemical sector. This demand is so great that the development of the domestic chemicals sector has been unable to keep up with growth in manufacturing demand for chemicals. This has resulted in China becoming increasingly reliant on foreign imports to supplement local production. The capacity shortfall in chemicals production is not expected to change for the

<sup>177</sup> Deutsche Bank (2005)

**Table 8: China's Top 10 Companies  
Petrochemical and Chemical Industry**

Company	Sales [RMB bn]
Sinopec	624.37 <sup>(1)</sup>
Petrochina	560.36 <sup>(1)</sup>
Sinochem	162.00 <sup>(1)</sup>
CNOOC	70.08 <sup>(1)</sup>
Shanghai Huayi Group	25.75
Tianjin Bohai Chemical	16.20
Shandong Haihua Group	10.72
Shandong Binhua Group	10.40
GITI Tire Investment Co.	8.62
Xianglu Petrochemical Xiamen	5.67

(1) Includes non-chemical sales

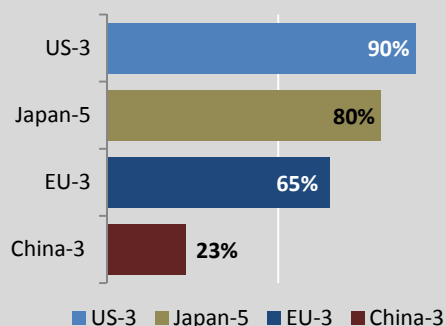
Sources: Chemicals Weekly, SRI Consulting (2005)

foreseeable future. Domestic capacity shortfalls in chemicals products have made China reliant on trade with Europe in the specialty and fine chemical sectors. European companies have also invested in the basic chemicals sector in China.

Structurally, the Chinese chemical industry is dominated by state held groups, namely Sinopec, China National Petrochemical Corporation (CNPC), and China National Offshore Oil Corporation (CNOOC). All groups operate in the petroleum and chemicals sector. **Table 8** shows the relative size of the top Chinese companies in terms of sales. Producing 60 percent of China's total ethylene output, Sinopec is by far the largest player in the domestic bulk chemical sector, although CNOOC leads in the offshore oil sector. In 2004 a new group, the China National Chemical Corporation, was established. This corporation includes China BlueStar, a private company with high corporate governance standards, and marked the creation of a new breed of competitive SOE. Aside from the chemical giants, the industry is greatly fragmented, consisting of 14,000 different enterprises. Both these and the top 10 companies' subsidiaries have been restrained by an unaccountably high number of inefficient, small-scale, out-dated plants mainly run by local government authorities. This contrasts sharply with the European chemicals sector. Whilst the European market is similarly dominated by a few very large companies (the 6% of enterprises bigger than 250 employees make up 75% of sales) labour productivity figures in the sector reveal a substantial European advantage: the EU-15's productivity per employee was valued at € 95,194 – 14 times higher than China's € 6,828.<sup>178</sup>

### Box 12: Pharmaceuticals Focus

While the exact size of the market is difficult to measure – figures range from US\$ 8 bn to US\$ 20 bn – most estimates expect the market to grow by at least 10 percent per annum over the next five years. In production terms, Chinese companies represent only 13.1 percent of the global total (by comparison Europe accounts for 44%). Within the Chinese market, Western companies have made strong headway and captured 80 percent of the market, and 50 percent of volume. A large amount of local companies have their main operations in Traditional Chinese Medicine, much of which is in the hands of state-run enterprises despite the liberalization of the market in the late 1990s. Like the fine and specialty chemical sectors, the Chinese pharmaceutical industry remains very fragmented with the top three companies (China National Pharmaceutical Group, Shanghai Pharmaceutical and Jointown Group), accounting for only 23 percent domestic market share. The figure below shows Chinese companies' share of the domestic market in an international context.



### Basic Chemicals

The basic chemical sector (sometimes more narrowly referred to as the petrochemicals sector) is marked by relatively low production costs, low levels of R&D and a high volume output relying on economies of scale for competitive advantage. They are generic in nature and the main customers are industrial users. Products include organic and inorganic feed-stocks such as ethylene, propylene, benzene and ammonia. Also referred to as bulk chemicals, they can be used for multiple purposes and require little input from customers or servicing. Presently this sector is the core of the Chinese chemical sector and is likely to continue as such for the near future. It accounts for 58 percent of overall demand.

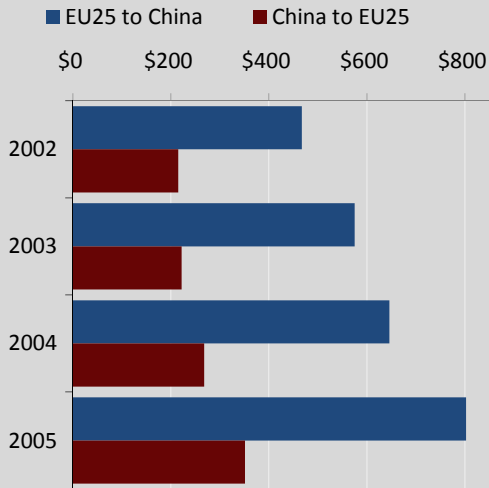
### Specialty and Fine Chemicals

Specialty chemicals are tailored for a specific use, mainly within the textile, manufacturing, food, pharmaceutical and feedstock industries. These include synthetics, adhesives, flavours, scents, dyes and tans. Produced in lower volume than bulk chemicals and further downstream, their production requires close communication with client industries and a high diversity of production technology and research (**Box 12**). Accounting for 11 percent of current production in China, this sector is set to grow rapidly in the future to catch up with strong demand, most notably from the wider Asian textile industry.

<sup>178</sup> DG Enterprise (2004) 'Competitiveness and benchmarking' European Competitiveness Report 2004, Pg. 266

### Pharmaceuticals Focus (cont.)

The Chinese market has historically been important for European pharmaceutical companies in both production and trade, with companies such as Bayer doing business in China as early as the late-19<sup>th</sup> Century. The figure below shows (in € mn) the EU's strong surplus in pharmaceuticals trade with China:



Despite the comparative advantages that Europe still offers as a production location, an increasing number of European companies are transferring production facilities and outsourcing many facilities to China due to lower costs. Many companies are also investing in new R&D facilities to tap into high human capital and lower wages: a new drug costs an estimated US\$ 120 million to develop in China compared to US\$ 800 million in the USA and Europe. However, companies still face significant market obstacles in China due to a weak IPR environment and strict licensing and registration requirements.

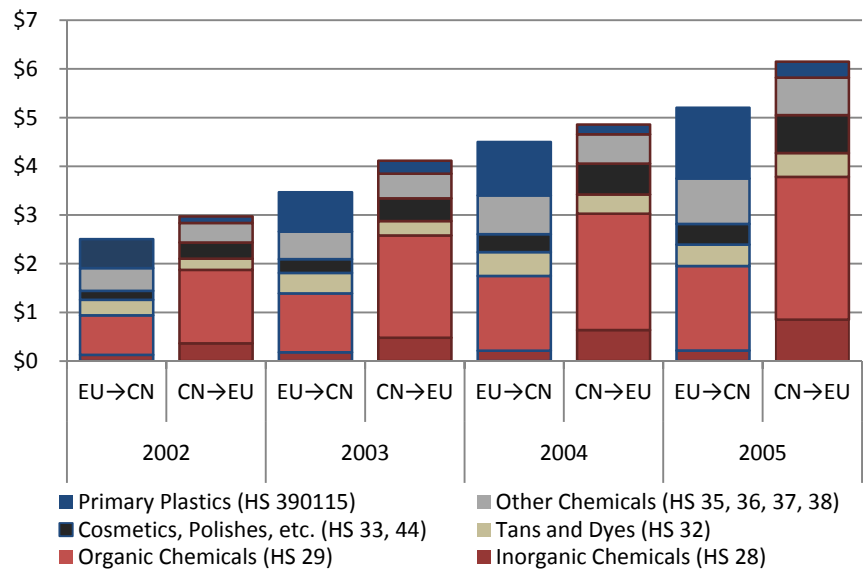
Source: Authors' update of DG Trade (2007)

Typically produced furthest downstream, fine chemicals are sold by performance characteristics and have a high level of purity. They include chemicals for personal hygiene, life sciences, medical purposes, or water treatment. China currently produces more than 30,000 types of fine chemicals and is a world leader in several key sectors such as inks for PC printers and pesticides. Requiring high investment and customer-servicing elements, the fine chemicals sector currently makes up only 15 percent of the Chinese chemicals sector and is hindered by out-of-date structures and production lines.

### EU-China Trade in Chemicals

Since the mid-1990s, European chemical trade with China has grown at double-digit rates. **Figure 53** shows EU-China trade figures broken down by product type (excluding pharmaceuticals) in the chemicals sector since 2002. Whilst China has a comparative advantage in producing basic chemicals, Europe has advantages in producing specialty and fine chemicals such as advanced plastics, active pharmaceutical ingredients, modified starches, proteins and enzymes.

Figure 53: Chemicals Trade Profile EU 27 and China (US\$ bn, excluding pharmaceuticals)



Source: UN Comtrade Database

### Foreign Direct Investment

Due to the regional character of the chemicals industry, it is characterised by high transport costs creating a necessity to locate close to client industries. The construction of local facilities is a competitive requirement for international companies. Exporting chemicals from Europe to the Asian market is expensive due to the high costs for transport and storage. China is also an attractive base from which to expand Asian operations. In addition, comparatively low construction and labour costs provide an important incentive for companies to relocate to China. Employment costs in the Chinese

chemical industry average € 1 per hour: 5 times lower than those in Poland, and 20 times lower than in Germany.<sup>179</sup>

Currently the three European petrochemical giants – BASF, BP and Shell have all invested in plants in China. Three of these companies' so-called "cracker plants" alone added a combined 2.3 million m.t./year of ethylene capacity, increasing China's total by 37 percent, to 8.5 million m.t./year<sup>180</sup>. Despite the construction of 17 new crackers nationwide, which will go online from 2009 onwards, China will still have to rely on direct investment by European producers in ethylene and polythene facilities to make up for supply shortfalls. Industry predictions show that even with this new capacity, China will in 2010 still only be 53 percent self sufficient in terms of ethylene production.<sup>181</sup>

Investments made by European companies in the fine and specialty chemicals sub-sector have also been important. These investments have filled market gaps left by generally more bulk-orientated Chinese companies. In the past, China has been heavily reliant upon external partners to provide technical equipment and know-how in order to modernise the fine and specialty chemical sub-sectors. In some production lines technical equipment is up to 20 years out of date. However, the Chinese government has declared its intention to increase the ratio of fine and speciality chemicals to 45 percent of total production in China<sup>182</sup> under the aims of the 11<sup>th</sup> 5 year programme. China places a strong emphasis on self-sufficiency in certain key areas and the implications for foreign partners is that they will likely need to bring more to Chinese projects than just capital. Increasing demands for technology transfer pressures are likely.

A new and important trend is Chinese companies seeking to obtain access to new technologies and markets by investing abroad. Although the total amount invested in Europe is still relatively small, a number of high profile investments have already taken place. In 2006 China BlueStar became the largest Chinese investor in Europe after its acquisition of France-based specialty chemicals producer Rhodia's € 5 billion organic silicon business. Earlier, BlueStar had also bought France-based Adisseo Group, the world's second largest producer of methionine, a supplement in animal feed. The purchase in 2006 of Australia's leading ethylene producer Qenos by ChemChina and substantial deals in India and Iran are further evidence of a new era for China's overseas operations.<sup>183</sup>

## Foreign Participation and Market Access Issues

The size of plants currently being developed in Asia, and in China in particular, has serious ramifications for future trade balances between the two regions. With many plants' capacity exceeding the size of existing plants in Europe, chemicals exports to China are expected to fall as soon as local plants come into operation. Furthermore, due to the unparalleled opportunities of these new giant plants to exploit economics of scale, once demand in Asia has been

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<sup>179</sup> DB Research (2005)

<sup>180</sup> Chemicals Weekly (06-Jan-2004)

<sup>181</sup> DG Trade (2007) Study on the Future Opportunities and Challenges of EU-China Trade and Investment Relations (Study 2: Chemicals)

<sup>182</sup> PWC (2005) Bulk and Speciality Chemicals in China: China Risks and Rewards

<sup>183</sup> DG Trade (2007) Study on the Future Opportunities and Challenges of EU-China Trade and Investment Relations (Study 2: Chemicals)

fulfilled, exports to Europe are expected to increase substantially.<sup>184</sup> The trade balance is also affected by market access obstacles. Since Chinese accession to the WTO in 2001, tariffs on chemical imports have been reduced significantly from 15 percent to between 2 and 7 percent, however, there are still substantial tariffs that remain high on selected chemicals.<sup>185</sup> In addition there exist a host of non-tariff trade related barriers which are estimated to cost the European chemical industry US\$ 379 million every year in lost business opportunities.<sup>186</sup>

The most notable market access obstacles are regulations concerning the registration of chemicals. European companies have described the *Provision on the Environmental Administration of New Chemical Substances*, in place since October 2003, as onerous and unaccountably stringent in comparison to international regulations. Eco-toxicity testing conducted in a Chinese facility is required of all new chemicals, regardless of the volume of the chemical being manufactured or tested, and even if previous tests have been conducted elsewhere. Regulations governing toxic chemicals introduced in 2006 are likewise excessively broad in jurisdiction and depart substantially from international norms. Reporting on the outcome of testing is among the longest in the world, creating bottlenecks and delays in foreign companies' processes and decision-making. Every listed chemical incurs a US\$ 10,000 registration fee which expires after two years, thus presenting importers with a very high barrier to trade. In addition, whilst environmental and labour standards are very strictly applied to foreign invested enterprises, provincial and local governments tend to be more lenient to local producers.

When investing in China, the enforcement of IPR in particular remains a concern for European chemical companies. Since chemical plants are to a large extent tailored to the specifications of the product they are manufacturing, theft of not only formulae but also manufacturing processes constitute serious and expensive infringements.<sup>187</sup> Despite legislation introduced in late 2004, designed to simplify and speed up the approval process for investments by foreign and Chinese companies, it remains unclear how effective this legislation will be and how it will be implemented. Whilst approval deadlines and procedures have been clarified since 2004, existing regulations which allocate approval of components of an integrated European chemical project to different administrative bodies at a regional and national level, and subjects them to different ownership structures, makes the approval process a complicated affair.

For European importers of Chemicals products, export controls on critical raw materials which are scarce outside of China, such as rare earth metals, phosphorous and fluorspar, means that European industry cannot obtain sufficient quantities of export licences. Europe-based chemicals producers

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<sup>184</sup> 'Sector Futures: the Chemical Sector' European Foundation for the Improvement of Living and Working Conditions, 2005

<sup>185</sup> DG Trade (2007) Study on the Future Opportunities and Challenges of EU-China Trade and Investment Relations (Study 2: Chemicals)

<sup>186</sup> Ibid

<sup>187</sup> 'Public Comments Concerning China's Compliance with WTO Commitments' American Chemistry Council Comments on China's WTO Compliance, September 2005

### Box 13: The Xiditou Cancer Village case

The example of the Xiditou village shows the institutional challenges still remaining in China in regulating the sector. Located in Tianjin province, 120 km away from Beijing, Xiditou is an industrial hub of the Northeast, and home to a number of paints, varnishes, hydrogen peroxide and sulfuric acid chemical plants. Despite early observations about the mysterious rise in cancer rates, factories continued to pump highly toxic untreated waste into the local Feng Chan River, which has over the years seeped into the ground water supply. Although gaining sympathy from environmental officials who ordered local government to act, complaints were repeatedly ignored at a regional level due to fears of economic loss resulting from closing down offending factories. Eventually, factories were either forced to implement waste processing measures or close down. Cancer rates have remained 15-30 times the national average across all age groups. Poorer farmers, who don't have the economic means to move away or can't afford bottled water as an alternative, were particularly affected.

Source: China Daily (29 May 2006) &  
China Digital Times (May 2007)

have difficulties in obtaining important inputs, giving Chinese competitors with an easy access to these raw materials an unfair competitive advantage.

## Sustainability Context

The chemical industry is one of seven industrial sectors that contribute the most to China's pollution.<sup>188</sup> The chemicals industry in China has the potential to substantially improve energy efficiency and to minimise greenhouse gas emissions. Volumes of CO<sub>2</sub> can be reduced through adoption of sustained energy-efficiency improvements, switching to less carbon-intensive fuels and the installation of high efficiency cogeneration facilities.

The largest challenges to the sustainable development of the chemical industry are the directly associated pollution and health risks. The pollution and by-products of chemicals production are a leading cause of the rising cases of cancer, respiratory and skin diseases. According to World Bank statistics, there are 460,000 cases of premature death each year from ailments related to water and air pollution and an additional 300,000 die from indoor toxins.<sup>189</sup> This makes cancer the leading cause of death in China. Jiangsu province, for example, home to a high number of chemical plants, accounts for less than 6 percent of China's population but cancer rates account for 12 percent of China's total.

The chemicals industry is an also important contributor to the deteriorating state of China's waterways, which are amongst the most polluted in the world. In the six months following a chemicals spill in the Songhua River in 2005 (in which a chemical factory exploded leaking 100 tonnes of benzene and nitrobenzene into the river), there were at least 76 further cases of serious water pollution accidents.<sup>190</sup> Following the chemical spill, China's State Environmental Protection Administration (SEPA) investigated 7,555 chemical factories nationwide and found that approximately 81 percent were situated on either bodies of water or near densely populated areas. Of those, 4 percent were sited within 10 km of officially protected sources of drinking water, and 45 percent posed a major risk.<sup>191</sup>

Whilst regulations do exist, the enforcement of them at a provincial and municipal level is a difficult task. Local government officials tend to focus solely upon economic growth and see the implementation of stricter regulations as a handicap to local producers (see also **Box 13** on Xiditou Village). Although the government has made an effort to curb chemical pollution by refusing to give loans and state-funding to companies that pollute excessively, as of May 2007 commercial banks still had over RMB 1.5 trillion (€ 176 bn), in medium and long-term loans outstanding to energy-intensive and polluting sectors, 21.8 percent higher than the previous year.<sup>192</sup>

<sup>188</sup> US Department of Commerce, 2002

<sup>189</sup> China Daily (31 July 2007)

<sup>190</sup> <http://www.enn.com/today.html?id=10210>

<sup>191</sup> Miller (2006)

<sup>192</sup> China Daily (31 July 2007)

**Box 14: BASF in China**

German chemicals giant BASF has been involved in the establishment of the China Business Council on Sustainable Development, together with local giant Sinopec. BASF is developing chemical facilities that minimise transportation and infrastructure costs, thereby reducing waste and pollution. BASF also sees some of its products as potential contributors to sustainable development in China – for example, home insulation products could help reduce the amount of fuel and heat currently wasted (99% of Chinese households currently have no insulation).

Source: PWC (2005)

European chemicals companies have substantial experience in operating according to high environmental standards and are global leaders in terms of energy efficiency, environmental management and the development of renewable materials. Many have participated in environmentally responsible programmes such as the China Business Council on Sustainable Development and China’s Cleaner Production programme (see **Box 14**).

The Chinese chemical industry is a major employer, constituting 10 percent of the total manufacturing sector (excluding pharmaceuticals). Trade-related restructuring of the industry has been high, as illustrated by job cuts at China’s three Chemicals giants. Following WTO accession, Sinopec cut 150,000 jobs, with PetroChina making similar adjustments.<sup>193</sup> Whilst restructuring in the large companies is now mostly complete, smaller companies can still be expected to reduce in size in order to become more competitive. The growth of the chemical sector has mainly taken place in coastal regions near manufacturing hubs which are well served by domestic transport links and deep sea ports. Barring a few exceptions, this option has so far remained unattractive for foreign companies. Comparatively strong and stable logistics and power supplies in the chemical parks around Shanghai, Nanjing and Guangdong still off-set the relatively less important tax breaks and labour cost savings that can be found in inland provinces.

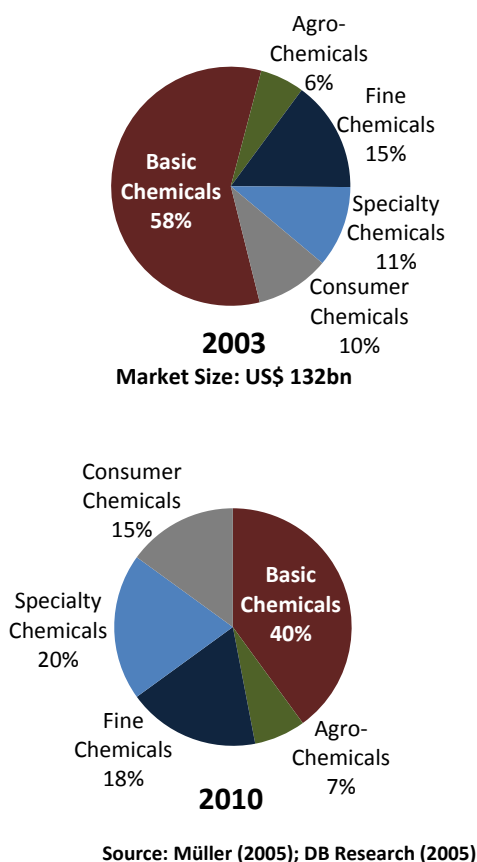
**Baseline Trends**

If further economic reforms continue to support market growth in key customer industries (manufacturing, construction and farming), the chemicals industry could grow as much as 10 percent per year. Although all chemicals sub-sectors are expected to grow, strongest growth is expected in the fine, specialty and consumer chemicals in which the European chemicals sector has a comparative advantage (**Figure 54**). The specialty chemical section is marked for particularly strong growth as the government hopes to raise its share of overall production from 30 to 45 percent in coming years. This would make China the world’s second largest specialty chemical producer.

Provided current obstacles to trade and investment can be reduced, European commodity chemicals producers in upstream segments should be able to be in a position to leverage their financial strengths and invest in China. Speciality and fine chemicals producers from Europe could seek further export opportunities capitalising on the strength of their customer relationship and management expertise to provide customer specific R&D and servicing.

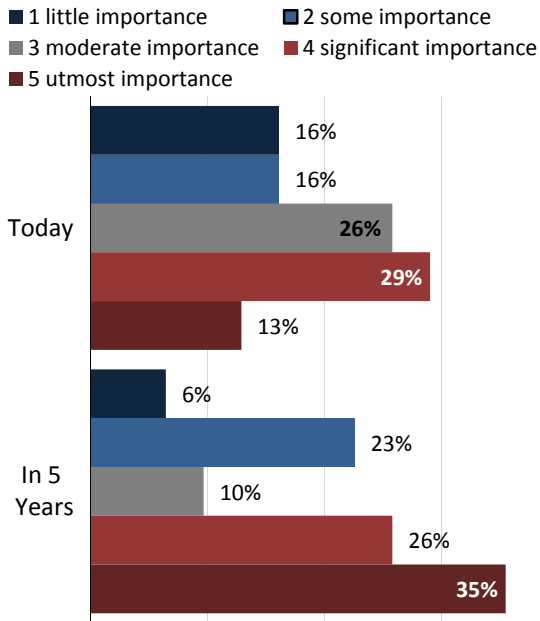
In the coming years the restructuring of Chinese industry is likely to proceed apace. Inefficient producers are facing increasing regulatory and financial pressures with many smaller companies likely to be bought and incorporated into larger ones. Successful private companies are also increasingly being encouraged to expand and buy out SOEs. This will have an impact on domestic competition and in third markets, particularly the ASEAN market. According to an industry survey conducted in 2006 by the consortium implementing this Trade SIA, the majority (61%) of European chemicals industry practitioners

**Figure 54: Segmentation Chinese Chemicals Market (2003 and 2010)**



<sup>193</sup> Chemicals Weekly (April 2004)

**Figure 55: Competitiveness of Chinese Enterprises Operating the ASEAN Chemicals Market (% of responses, EU industry representatives)**



Source: DG Trade (2007)

expected competition from Chinese producers in the ASEAN market to be of significant importance within the next five years (Figure 55).

With China fast becoming the largest market in chemicals and a regional base for the Asian market, opportunities for new growth and expansion are set to continue, albeit in a consolidating and increasingly competitive environment. Despite large investment in new facilities and the establishment of stronger Chinese competitors with greater production capacity, China will still experience capacity short-falls in key chemicals sub-sectors and thus continue to rely upon European imports to some degree. The extent in China of restructuring and the injection of modern technical processes to become globally competitive, is also likely to necessitate continued cooperation with European chemical companies.

## Sector-Specific Background: D. Agricultural Sector

**Figure 56: EU25 -China Agricultural Trade (US\$ bn)**



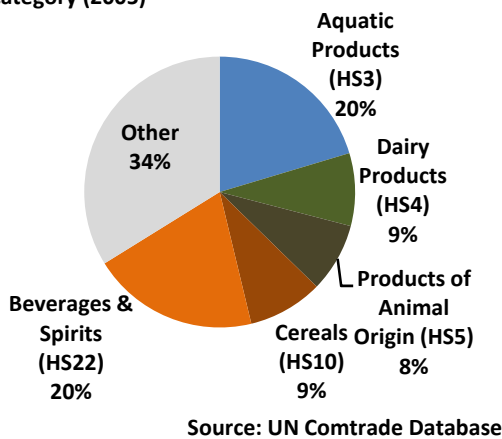
Changes in Chinese consumption habits make China one of the world's most dynamic and important demand-drivers in world agricultural markets<sup>194</sup>. Overall, food consumption in China is rising and a marked change in diet composition is occurring. The sheer size of its population means China's demand patterns have a noticeable impact on world food prices<sup>195</sup>. There has been a strong trend away from more traditional diets of starch staples that characterise low income developing countries, towards more varied diets which incorporate increasing quantities of animal products, fruits and vegetables (see **Table 9**).

**Table 9: Food Consumption Type per Person in Urban Households in China (1990-2004)**

Item	1990	1995	1999	2000	2003	2005
Grain (kg)	130.72	97.00	84.91	82.31	79.52	78.98
Fresh Vegetables (kg)	138.70	116.47	114.94	114.74	118.34	118.58
Edible Vegetable Oil (kg)	6.40	7.11	7.78	8.16	9.20	9.25
Pork (kg)	18.46	17.24	16.91	16.73	20.43	20.15
Beef and Mutton (kg)	3.28	2.44	3.09	3.33	3.31	3.71
Poultry (kg)	3.42	3.97	4.92	5.44	9.20	8.97
Fresh Eggs (kg)	7.25	9.74	10.92	11.21	11.19	10.40
Aquatic Products (kg)	7.69	9.20	10.34	11.74	13.35	12.55
Milk (kg)	4.63	4.62	7.88	9.94	18.62	17.92
Fresh Fruits (kg)	41.11	44.96	54.21	57.48	57.79	56.69

Source: China Statistical Yearbook, 2006

**Figure 57: EU25 Agricultural Exports to China by Category (2005)**

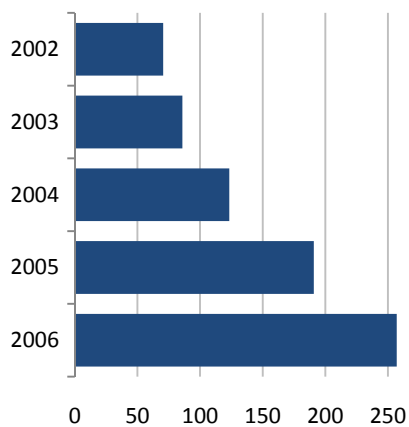


Following China's accession to the WTO in 2001, China's agricultural trade with the rest of the world has rapidly increased. Since 2002, EU exports to China in the agricultural sector have almost doubled from US\$ 557 million to US\$ 1.1 billion in 2005. Similarly, Chinese agricultural exports to the EU have grown from US\$ 1.9 billion in 2002 to US\$ 3.7 billion in 2005 (**Figure 56**), a compound annual growth rate (CAGR) of 24 percent. In 2005, the product categories which made the most significant contributions to EU agricultural exports to China were products such as beverages including wines and spirits, aquatic products (fish, molluscs, and aquatic invertebrates), dairy products, edible animal products, and cereals (**Figure 57**). The Chinese agricultural market is expected to turn increasingly to imports as demand for many of these agricultural goods will outpace local supply. Changing consumer tastes means increasing demand for imports of higher value products such as wine and cheese which are traditionally not made locally. In addition, changes in the distribution of food in China are having an impact on trade flows, as supermarkets integrated into global supply chains are able to sell a higher number of imports than traditional shops and markets.

<sup>194</sup> For the purposes of this report, the term "agricultural sector" does not only cover basic agricultural commodities such as wheat, milk and live animals, but also the primary-processed products derived from them such as flour, butter and meat, as well as all secondary-processed products which include ready-to-eat meals, bread, sausages, chocolate, wines, spirits etc.

<sup>195</sup> The global impact of China's demand has been most noticeable in products such as soybeans (China is the world's largest importer) and has already noticeably influenced world prices for grain prices and pork meat in which China is becoming a significant importer.

**Figure 58: EU Exports to China for Beverages, Spirits and Vinegar (HS 22, € mn)**



Source: Eurostat Comext

### Beverages, Spirits and Vinegar

Over the period 2002 – 2006, EU exports to China in the beverages, spirits and vinegar category have grown at a consistently higher rate (CAGR of over 38%) than any other agricultural sub-sector exports to China. The value of EU exports to China in this category increased from € 70.6 million in 2002 to over € 257 million in 2006 (Figure 58). This sub-sector is therefore becoming increasingly significant in terms of its contribution to total EU exports to China: in 2005, beverages, spirits and vinegar contributed almost 20 percent of all agricultural exports to China (up from just 12% in 2002). Although the market is growing rapidly, this sub-sector is highly competitive for EU exporters operating in the Chinese market, with other major production locations (Australia, United States and Chile) in relatively favourable geographical production locales. This means European producers have to rely on their reputation to sell their products, a situation which is made more difficult due to IPR infringement (discussed in more detail below).

### Fish, Molluscs and Aquatic Invertebrates

This sub-sector is a relatively important for Europe and China, both being large players in the international fisheries market. Fish, molluscs and aquatic invertebrates make up 20 percent of EU exports to China and over 25 percent of Chinese exports to the EU. The key products exported out of the EU are shrimp and tuna, with Denmark and Spain being the largest contributors. The fisheries export market, growing at a CAGR of 31 percent since 2002, is likely to continue to be attractive for both sides in the future. Economic fundamentals are likely to eventually shift much production away from the EU where labour costs are higher relative to developing countries such as China.

### Wheat and Cereals

Cereal exports made up 10 percent of total European agricultural exports in 2005. There are signs that the Chinese import market for wheat and cereal will expand in the future. In terms of land use for cereals and wheat, cultivated areas for these crops in China have been decreasing steadily since the 1990s as land use is diverted to competing crops (fruit and vegetables for example), pasture or tree plantations. It has also been observed that yields for the main crops have not increased significantly for a number of years – most likely due to the lack of water available and the pressures on soil quality. It is possible that unless substantial improvements can be made in water and land management, China could be dependent on large imports of wheat and cereals in the future. It is likely, however, that this demand could vary significantly year to year, as was witnessed by last year’s drastic reduction in European grain exports which fell from € 80.8 million in 2005 to € 1.1 million in 2006.

### Meat and Dairy

China is facing a huge increase in demand for meat and dairy, and this is likely to have a significant impact on agricultural imports. Despite growth of 150 percent in milk production capacity over the period 1996-2003, supply still lags behind demand growth, which had to be met with imports of milk products (usually milk powder). As has been the trend elsewhere in Asia, the increase in

the domestic production of meat and dairy is expected to result in the need to import more stock feeds. This trend has already been witnessed in China, where there have been vast increases in soybean imports that have produced increased volumes of high protein feed meals. It is likely that imports of feed grain will follow suit.

*Despite increasing trade barriers, European exporters face an increasing number of formal and informal non-tariff barriers when exporting to China.*

## Foreign Participation and Market Access Issues

Despite decreasing tariffs, European exporters face an increasing number of formal and informal non-tariff barriers when exporting to China. These are typically in the form of product certification, labelling standards, import approval requirements, customs clearance delays and IPR infringement. The application of laws is often not uniform and regional variations in customs procedures have a negative impact on trade. This results in high compliance costs and extended delays for business, impacting on their ability to sell in the China market and affecting small and medium enterprises in particular.

Since the 1980s, China has promulgated and amended several laws and regulations for IPR protection. Based on these laws, a comprehensive IPR legal framework has been established, though implementation and enforcement remains weak and ineffective. The IPRs that are distinctively relevant to the agricultural sector are patents and plant breeder rights. Geographical Indications are another form of intellectual property relevant to the sector that is mostly applied to agricultural products. IPR infringement in the agriculture sector most seriously pertains to spirits and wines. The International Federation of Spirits Producers (IFSP) estimated the worldwide loss through counterfeiting of spirit drinks to between € 600 and € 900 million per annum.<sup>196</sup> Furthermore, two-thirds of foreign labelled wines in the Chinese market were counterfeited, the majority claiming to be French wines.<sup>197</sup> This problem relates to brand items as much as to Geographical Indications (GIs) on wines and spirits. Since wines and spirits account for 80 percent of EU exports of products with GIs, protection of IPRs is of crucial concern for the sector. Counterfeiting is also a problem for other value-added products carrying GI's, such as cheese and other dairy products.

*There has been widespread concern among European agricultural exporters regarding Chinese customs and quarantine practices and in particular the implementation of sanitary and phytosanitary standards (SPS).*

There has been widespread concern among European agricultural exporters regarding Chinese customs and quarantine practices, particularly the implementation of sanitary and phytosanitary standards (SPS). Regulations require importers to obtain an import and inspection or quarantine permit as a prerequisite for entry of many agricultural goods, including livestock, poultry, grains, oilseeds, planting seeds, horticultural products, and hides and skins. China also operates a zero tolerance policy for pathogens in imported raw poultry and meat, although China does not apply the same zero tolerance standard to domestic raw poultry and meat. Another example of regulatory standards affecting European exports to China is a Chinese standard dating from 1981 limiting the total concentration of naturally occurring substances in spirits known as higher alcohols ('fusel oils'). Although various international bodies have established that such higher alcohols are safe for human consumption. If implemented rigorously these regulations would limit certain

<sup>196</sup> The European Spirits Organisation 2005

<sup>197</sup> Findlay et al., 2004

EU spirit products, notably some whiskies and cognacs (as fusel oils are part of their flavour profile) from entering the Chinese market.<sup>198</sup>

Phytosanitary standard (SPS) measures are also at the forefront of Chinese exporters' concerns. A recent investigation by China's Ministry of Commerce claims that about 90 percent of China's exporters of foodstuffs and agricultural products were affected by foreign technical trade barriers. Chinese exporters estimated a combined loss totalling US\$ 9 billion a year. Part of the difficulty for Chinese exporters' relates to excessive pesticide residues, low food hygiene, unsafe use of additives, contamination with heavy metals and other contaminants and the misuse of veterinary drugs. In the short-term, it will be difficult to implement widespread change in an agricultural industry still characterised by small family operations where there has traditionally been a lack of understanding of proper fertiliser and pesticide application procedures. Recent initiatives in China to promote the use of GIs and quality labels are the most viable strategy to improve agricultural produce standards. A greater food safety record, and the ability to build a reputation for quality, will likely impact positively on trade patterns opening up export markets for agricultural products (in particular horticultural and aquaculture products) which have suffered due to SPS standards not being met. Improved food safety is also likely to be welcomed by Chinese consumers who are showing a growing concern for improvements in this area.

### Sustainability Context

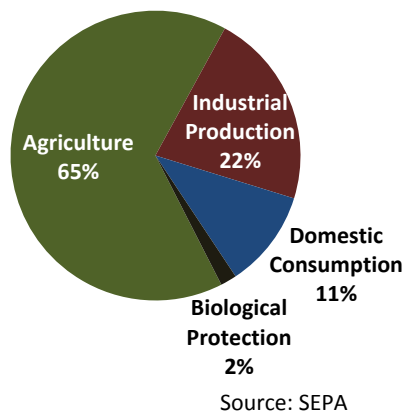
One of the cornerstones of sustainable development is an environmentally sound agricultural sector. The pressures currently being placed on China's land and water resources due to agricultural practices are among the most important environmental concerns in China. These include an excessive use of water, shortages of clean water, land degradation including soil erosion and desertification (most notably in Inner Mongolia), and the pollution and ill health impacts of the excessive use of fertiliser and pesticides during agricultural production.<sup>199</sup>

### Water Pollution

The agricultural sector accounts for almost two-thirds of water use in China (Figure 59). Combined with China's share of grain production which is decreasing in favour of more value-added fruit and vegetable production, water usage is expected to continue to increase<sup>200</sup>. The expanding agro-foods industry is a further contributor to water usage, particularly during food processing. Water resources are used wastefully in China, which is primarily caused by the low level of water prices. Prices do not reflect the true scarcity of water and do not provide an incentive to curb water use. Raising water prices will be difficult for agricultural users due to affordability.

The agriculture sector is also a primary source of water pollution. In China, substances involved in water pollution include agro-chemicals, animal waste and pesticides. The Chinese government has actively promoted the use of

Figure 59: Water Use in China (2004)



<sup>198</sup> The European Spirits Organisation (2005)

<sup>199</sup> US Department of Commerce, 2002

<sup>200</sup> The output of fruit has risen from 64.4 million tonnes in 1999 to 161.2 million tonnes in 2005.

chemical fertilisers and pesticides since the early 1960s in order to achieve food security. This has made China the fourth most intense user of chemical fertiliser in the world. There are a number of impacts which result from such intensive application, including non-point source pollution from agricultural run-off which contaminates drinking water and eutrophication of surface waters<sup>201</sup>. Of particular concern is the common use of agro-chemicals like ammonia bicarbonate fertiliser and pesticides which are cheap and easy to use but also soluble and easily washed into various water sources.<sup>202</sup>

*The sustainable management of land use to ensure that land continues to be arable in the long-term will be an important component of future policy making.*

### **Land and Biodiversity Degradation**

Over-reclamation, deforestation, and over-grazing of land all contribute to soil erosion and are outcomes of agricultural practices. Addressing the intensity of land use, and effectively implementing and enforcing land management policies to take account of biodiversity needs, will be an important part of China's future sustainable agricultural policies. The sustainable management of land use to ensure that land continues to be arable in the long-term, will be an important component of future policy making for China. Such policies may contribute to lower than current levels of production.

### **The Role of the Agricultural Sector in Energy Use and Production**

Substantial energy is also consumed in agricultural production, particularly in the agro-processing sector. The most energy intensive activities are those with significant heating, baking, cooking and freezing operations (e.g. bread, meat processing), followed by dairy related operations (e.g. refrigeration, drying, heating), and the preparation of cereals (heating and refrigeration).<sup>203</sup> Initiatives to conserve energy in this sector can include using natural gas as an alternative to heavy fuel, improved energy management, and efficient equipment and process innovations.<sup>204</sup>

*China has proposed to set aside US\$ 101.1 billion by 2020 to meet 15 percent of its transportation energy needs through the use of biofuels.*

The agriculture sector will also be central to the introduction of co-generation and use of agricultural products as alternative energy sources. The sector can potentially play a valuable role in helping China meet its energy needs in a sustainable manner. China has been implementing a biofuels programme since 2000 and is already the third largest producer of ethanol (after the US and Brazil). The Chinese government has plans to further promote biofuels, targeting replacement of five percent of its total gasoline consumption with nearly 5 million tonnes of ethanol in the next five years through tax incentives. In addition, China has proposed to set aside US\$ 101.1 billion by 2020 to meet 15 percent of its transportation energy needs through the use of biofuels.<sup>205</sup>

It is important that gains in energy from biofuel production are not off-set through the excessive use of fertilisers and pesticides. There is a delicate balance between the potentially conflicting goals of, on the one hand, feeding the world's most populous nation with internal food sources and, on the other hand, China's objectives to become one of the world's major biofuel producers.

<sup>201</sup> Zhang et al (2005) Do Farmers Overuse Fertiliser?

<sup>202</sup> Johnson, Liu & Newfarmer, 1997

<sup>203</sup> CIAA, 2002

<sup>204</sup> CIAA, 2002

<sup>205</sup> Alavi (2007)

### Box 15: Sustainable Agricultural Practices

There has been traditional scepticism among developing countries with regards to the universal applicability of higher farming standards in developed countries. However, increasingly the link between raising agricultural standards and boosting exports has gained credibility. In both Argentina and Thailand, organic production is being promoted with government support in devising and promoting recognised national organic standards. After Namibia set up standards in hygiene, veterinary care and animal welfare, it has grown into Africa's largest exporter of beef to the EU. As demand for organic foods is expected to continue to grow, higher standards could allow many other exporters in developing countries to carve out higher value added market niches.

In China, the government has highlighted the need to achieve more sustainable agriculture and rural development. Although measures taken so far have focused on relieving the tax burden of China's rural population, there is scope for future policies to be translated into more sustainable agricultural practices. These practices could result in increased rural employment as a result increased export, more labour-intensive and environmentally friendly farming. Organic production of fruit, vegetables, tea and other agricultural commodities, many of which are destined for export, have expanded exponentially in China in the past decade. China is home to more than half the world's pigs, and is the second largest producer of chicken meat behind the US. Food safety and animal welfare is becoming an increasingly important consideration for consumers in export markets. In an effort to improve the safety, quality and traceability of meat and other livestock products, China has already established a domestic 'assured meat' scheme. In addition, many multinational retailers, particularly in Europe, have responded by establishing higher standards amongst their suppliers to ensure food safety and animal welfare.

*Continued...*

There is, however, substantial scope for ethanol and other biofuel producing projects which do not necessarily require large amounts of arable land or compete with grain supplies.

### Social Issues

As in any country, the countryside is an important container of national identity. Although the contribution of agriculture to the Chinese economy has decreased since the 1990s, from 27 percent to its current level of 13 percent of GDP, China's agricultural employment still accounted for 44.8 percent of the total in 2005. Too rapid liberalisation, resulting in further restructuring in the agricultural sector, is likely to create further short-term social challenges in terms of income inequalities and urbanisation. One recently removed obstacle which has hindered greater equality between the rural and urban population has been the range of taxes and ad hoc fees that local governments levy on farmers in order to boost revenue. There have been recent steps by the central government to address this, for example, through the introduction of village level grass roots elections, and a scheme to replace arbitrary fees with standard taxes and the complete abolition of agricultural tax as of 2006. In addition, further migration of surplus rural labour to urban areas will be necessary if rural incomes are to rise further.<sup>206</sup> It is possible that the scrapping of agricultural tax in support of the rural population will also be accompanied by subsidies and other protectionist measures.

### Baseline Trends<sup>207</sup>

The growth and increasingly diverse demand for agricultural products has so far been met predominantly from domestic sources. As land and water resources become increasingly stretched, domestic production is likely to be increasingly supplemented by imports for selected staple agricultural products. Early evidence points to particular growth in sectors such as meat and oil which require large quantities of imports to support them, such as the importation of soybeans for oil production and certain products for use as animal feed for meat and dairy production growth. Excluding pork, the consumption of meat in both rural and urban areas is expected to increase by around 30-40 percent by 2010.

Demand for dairy products will increase slightly, though mainly in urban areas, where access and household storage facilities are more accessible. As agriculture in China is characterised by scarce land and capital, domestic production of dairy will have particular difficulties in satisfying demand. By conservative estimates, China will only see 87 percent self-sufficiency in dairy products by 2020. In addition, a rapidly increasing middle class in urban areas will likely increase demand for higher value added non-staple products which are not traditionally locally made (e.g. wines and cheese). Consumption of non-domestic spirits, but also wine, can be expected to continue to grow at double-digit rates. Presuming that IPR infringement can be reduced, high value products registered as GIs could benefit as an emerging large middle class

<sup>206</sup> The Economic Intelligence Unit Limited 2007

<sup>207</sup> Trends are based on authors' interpretation of DG Trade (2007)

### **Sustainable Agricultural Practices (cont.)**

The fact that Chinese farmers are prepared and able to produce such goods to international organic standards is a clear indication of the potential for Chinese livestock producers, given the incentive of lucrative export opportunities in the EU and elsewhere, to develop sustainable practices in the production of meat, eggs and milk. In addition, the development of such farming systems in China would naturally afford trade opportunities for European manufacturers of equipment and systems as well as consultancy services related to more sustainable farming practices.

**Source: OiE, RSPCA, China Daily (2007)**

consumer base is willing to spend more money on products that are associated with high quality.

In the medium to long term, EU agricultural exports and investment potential in China will remain constrained by a number of factors. Geographical distance (or rather lack of convenient transport routes) is one constraint, but a lack of solid institutional frameworks, particularly in the field of SPS and IPR related issues, will also disadvantage EU exporters and investors. China's relative openness to foreign agricultural imports will also likely have substantial social and environmental implications, as the country balances its traditional preference for self-sufficiency and protection of rural jobs with increasing environmental constraints.

## Sector-Specific Background:

### E. Environmental Goods and Services

Europe as an early adopter of clear environmental policy guidelines has become the world's leading producer and exporter of environmental goods and services. This is an industry expected to outgrow its traditional niche status and become a mainstream industry. European companies leveraging their expertise in high-value added segments across industries have fostered what can perhaps be best described as "green competitiveness". Such industries show particular strength in segments such as advanced power generation, photovoltaic cells, wind energy and water supply and treatment<sup>208</sup>.

*The Chinese market for environmental goods already accounts for 19.7 percent of total European exports in this sector.*

The Chinese market for environmental goods already accounts for 19.7 percent of total European exports in this sector.<sup>209</sup> Exports are projected to continue developing rapidly with an increasing number of policies and legislation being implemented and enforced to safeguard the environment. However, only 6 percent of Chinese companies providing environmental goods and services can be considered as being large-scale (i.e. fixed assets worth more than RMB 50 million or € 4.8 million). The remaining smaller companies are mainly engaged in producing primary treatment equipment - a low-end, highly competitive market segment dominated by products that are of poor quality, unreliable and costly to operate. The potential users of such equipment lack access to the necessary know-how needed to use these products effectively. This demand and supply mismatch is expected to last well into the implementation of China's 11<sup>th</sup> Five Year Programme (2005-2010), which placed environmental protection at the forefront of Chinese policy formulation. This policy priority creates substantial opportunities for European operators to provide high-end environmental technologies and services.

#### Market Size

The environmental goods and services industry (or eco-industry) can be broadly defined as 'activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use.'<sup>210</sup> The eco-industry is non-comparable to other industries in that it does not constitute a discreet set of similar business activities. The eco-industry is an emerging sector in its own right, constituent of sub-sectors which in terms of required competencies are often further removed from each other than they are to a sector outside of the eco-industry.<sup>211</sup>

Since normal product classifications do not necessarily differentiate between a product's environmental or non-environmental application, the exact market

<sup>208</sup> Commission of the European Communities, 2004, Stimulating Technologies for Sustainable Development: An Environmental Technologies, Action Plan for the European Union, Communication from the Commission to the council and the European Parliament

<sup>209</sup> Authors' own calculations based on trade data for narrow definition of OECD category list for the environmental goods (see below)

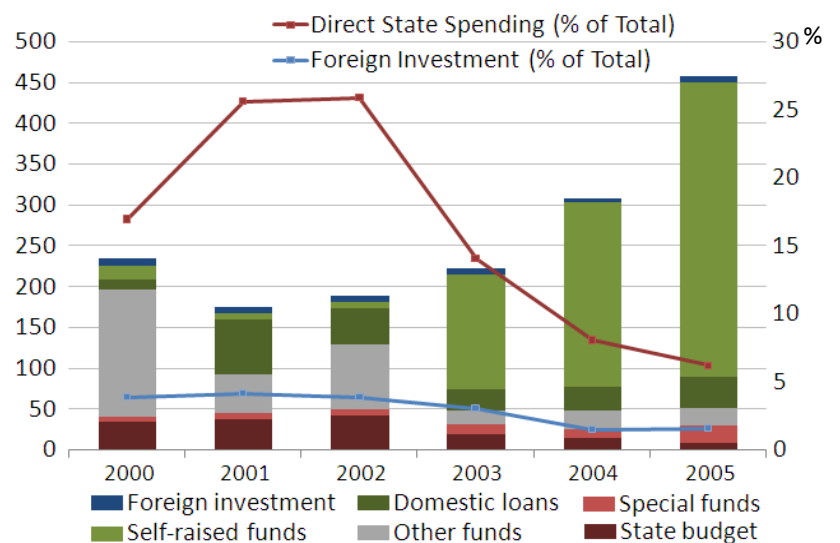
<sup>210</sup> OECD/Eurostat Informal Working Group (OECD/Eurostat, 1998)

<sup>211</sup> To illustrate, air pollution control machinery and water treatment chemicals can both be considered as part of the eco-industry; however, producing air pollution control machinery is more closely related to activities typically associated with the machinery sector, while those involved in waste water treatment chemicals might be closer to the chemicals sector in terms of the production process and service provisions involved.

size of the sector can be difficult to determine and is dependent on the definition adopted.<sup>212</sup> The International Centre for Trade and Sustainable Development (ICTSD) estimates that the global market for environmental goods and services increased from US\$ 200 billion in 1990 to over US\$ 607 billion (€ 488 bn) in 2005, with the environmental services segment accounting for more than half of the total market.<sup>213</sup> The US, Western Europe and Japan together are estimated to account for 84 percent of this market.<sup>214</sup>

The environmental goods and services market in China is estimated to have reached US\$ 17 billion (€ 14 bn) in 2005 having grown at about 15 percent through the last decade. This market is expected to exceed US \$30 billion (€ 24 bn) by the year 2010.<sup>215</sup> The growing market for environmental goods and services is primarily the result of the Chinese government’s commitment to strengthening environmental legislation, pledging the equivalent of € 9.4 billion over the period 1998 to 2007. Significant investments have been made in water and wastewater treatment, refuse disposal, and gas emissions reduction. The 11<sup>th</sup> Five Year Programme (FYP) - in which a further € 140 billion has been pledged for environmental protection - goes beyond pollution reduction and encourages the modernisation of industry (the most polluting factories are to be closed, others are to be moved away from residential and commercial areas) and improvements in the efficiency of energy are to be pursued.<sup>216</sup>

**Figure 60: Sources of China’s Investment in the Treatment of Industrial Pollution (100 mn RMB)**



Source: China Statistical Yearbook (2006)

Despite the government’s increasing financial commitments, direct state spending on the environment is no longer the largest single source of growth of China’s environmental sector. Non-state funding has increased dramatically in recent years (**Figure 60**). Official statistics indicate that in 2005 over 80

<sup>212</sup> For example, pipes and tubes sold by water treatment companies can also be produced by non eco-industries, for use of non-environmental purposes (OECD, 2005) ‘Environmental Goods: A Comparison of the APEC and OECD Lists’

<sup>213</sup> Alavi (2007)

<sup>214</sup> Sawhney (2006)

<sup>215</sup> Claro & Lucas (2006)

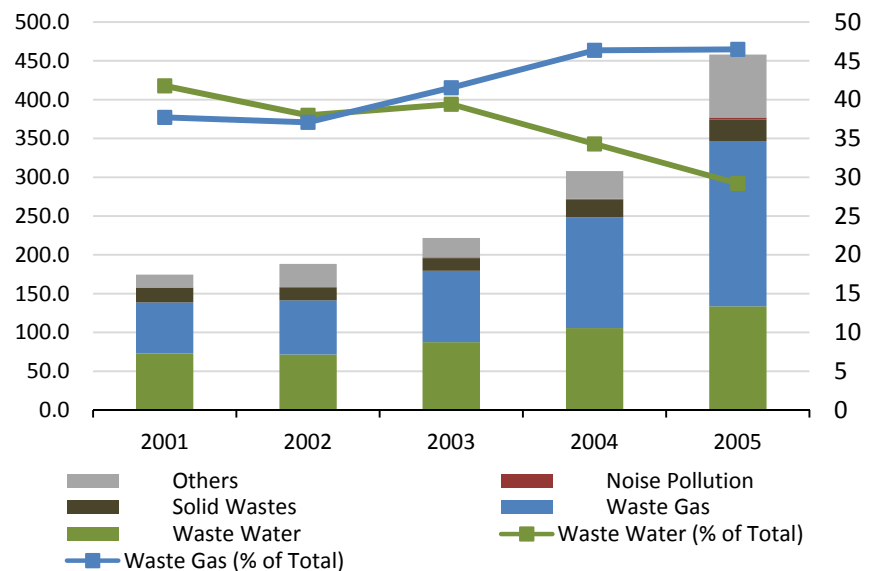
<sup>216</sup> DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

percent of the RMB 45.8 billion (€ 4.8 bn) invested in the treatment of industrial pollution originated from self-raised funds and bank loans. This is in part a result of China tightening legislation as well as Chinese companies' endeavour to become more competitive in international markets where standards are higher and more stringently enforced.

The **social impact** of worsening environmental conditions in China was recently illustrated in the town of Wuxi, Jiangsu Province. In May 2007, the total drinking supply to the town of over 1 million people was cut off due to water polluting algae in Taihu Lake. The town had to use bottled water for all its water needs. The cause of the algae was due to low water levels and the accumulation of waste and untreated sewerage. There are over 20,000 chemical plants in the Taihu Lake region that regular pollute local water. Environmental regulation in the Taihu Lake basin, which accounts for an area comprising 3 percent of the country and 8 percent of the population, is a high priority for the national government.

The government retains a key role, however, in indirectly determining the amount of investment directed towards environmental goods and services through the formulation of increasingly stringent environmental protection policies, particularly those measures which enforce the polluter-pay-principle. Notable laws which China has recently implemented in this area include the *Law on the Prevention of Air Pollution* (September 2000); the *Cleaner Production Promotion Law* (January 2003) and the *Law on Prevention and Control of Pollution by Solid Wastes* (April 2005). In addition, laws promoting investments in cleaner and more efficient technologies are expected to have an increasing impact. The *Cleaner Production Promotion Law* enacted in June 2002, for example, established demonstration programs for pollution remediation in ten major Chinese cities, and designated several river valleys as priority areas. More recently, China's new *Renewable Energy Law* effective since January 2006 is expected to have a particularly large impact, imposing a national renewable energy requirement that is expected to boost the use of renewable energy capacity by up to 10 percent by the year 2020 – up from only 3 percent in 2003.

**Figure 61: Chinese Investment Completed in the Treatment of Industrial Pollution (RMB 100 mn)**



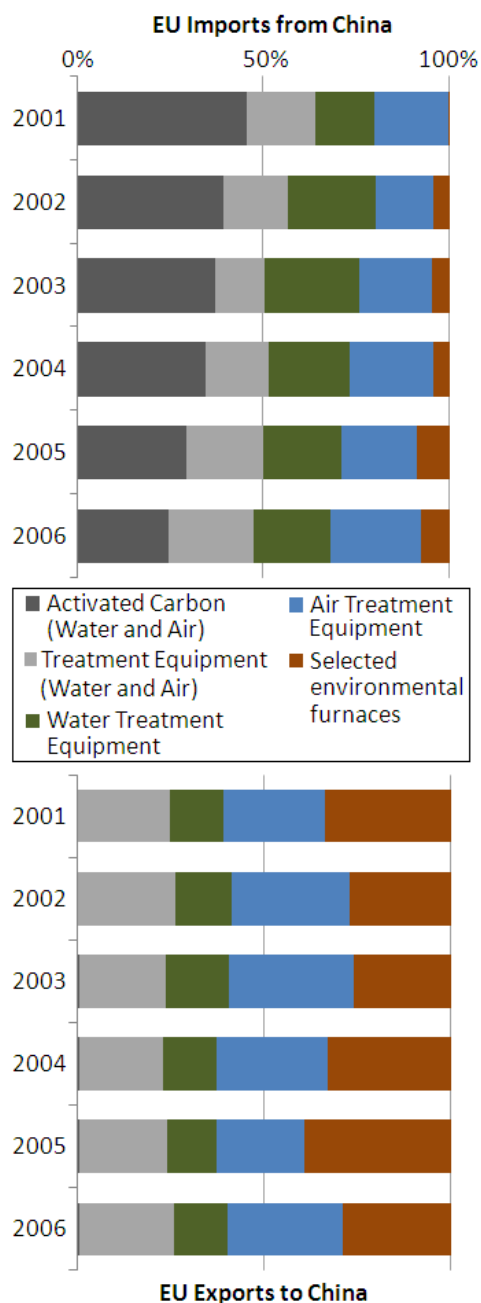
Source: China Statistical Yearbook (2006)

As a water-scarce country, with a high need for potable water and sanitation services, the majority of investments in the treatment of industrial pollution has traditionally gone into water treatment in China. However, as **Figure 61** shows, in the last five years investment growth in the treatment of air pollution has outstripped that in the treatment of waste water, and now accounts for the largest proportion of investment (46.5% of the total).

## EU-China Trade Flows in Environmental Goods

Establishing the exact amount of trade in the eco-industry between Europe and China presents difficulties in classification. The trade statistics in environmental goods presented in this report are based on a narrow definition of the industry, based on a series of trade codes suggested by the OECD which can be identified as having exclusively an environmental application.<sup>217</sup> As such, these trade statistics do not take into account commodities with possible environmental applications which can also be used outside of the eco-industry and do not take into account trade in environmental services. The trade data for the eco-industry given in this section is primarily used to illustrate trends, as well as relative competitiveness in exports from eco-industries between the EU and China, rather than as an indicator of its absolute value.<sup>218</sup>

**Figure 63: Composition of Trade of Selected Environmental Goods between the EU and China**



Source: Eurostat Comexr; EMG Analysis (2007)

**Figure 62: Trade Value of EU-China Trade Environmental Goods (€ mn)**



Source: Eurostat Comext; EMG Analysis (2007)

The above trends show that demand for eco-industry products in China is growing and remains unmet through domestic means. The EU's exports in these goods have continued to grow and the EU has a substantial trade surplus in environmental goods (see **Figure 62**). However, the EU's trade surplus has recently showed signs of narrowing as Chinese exports to the EU have grown at a faster rate than EU exports. In the last five years, imports from China have grown at 22 percent compound annual growth rate (CAGR) while EU exports have grown at a slower pace of 18.5 percent CAGR.

**Figure 63** shows that although in 2001 relatively low value added activated carbon was still the dominant import from China (46% of the total), in 2006 activated carbon only accounted for 24 percent of imports. This is despite imports of activated carbon continuing to grow at an average rate of 8 percent per year. The rapid increase of China's higher value added exports of environmental goods to Europe confirms previous findings<sup>219</sup> that Chinese

<sup>217</sup> UNCTAD, 2003. "Environmental Goods: Trade Statistics for Developing Countries", Expert Meeting on Definitions and Dimensions of Environmental Goods and Services in Trade and Development. Available at: [http://www.unctad.org/trade\\_env/test1/meetings/egs/crp.pdf](http://www.unctad.org/trade_env/test1/meetings/egs/crp.pdf)

<sup>218</sup> Please note that the decision at this early stage of the Trade SIA to adopt a narrow definition based on the OECD list of the eco-industry, to analyse trends in trade statistics, does not preclude that at later stages in the Trade SIA a broader definition will be adopted to more accurately capture the true value of trade flows in this sector. It is envisaged that this will be particularly important where econometric impact assessment is conducted. Where different definitions of the eco-industry are used this will be clearly indicated. It is further noted that the OECD data primarily deals with established environmental technologies (EET) over environmentally preferable products (EPP) (see footnote 211). The merit of using a broader trade category which includes EPP, in which developing countries typically have an advantage, will also be explored in latter stages of this Trade SIA.

<sup>219</sup> Notably DG Trade's (2007) Study into Future Opportunities and Challenges in EU-China Trade and Investment Relations.

exporters are rapidly moving up the value chain through a combination of indigenous innovation and foreign technology transfer.

## Foreign Participation and Market Access Issues

In a recent survey conducted by the OECD on NTBs facing exporters of environmental goods and services, China stands out as being named problematic by the largest number of exporters for four of six most important NTB categories<sup>220</sup>. The survey also highlights the concern of eco-industry exporters to China with regards to technology transfer through illicit means such as intellectual property rights (IPR) infringements (Table 10).

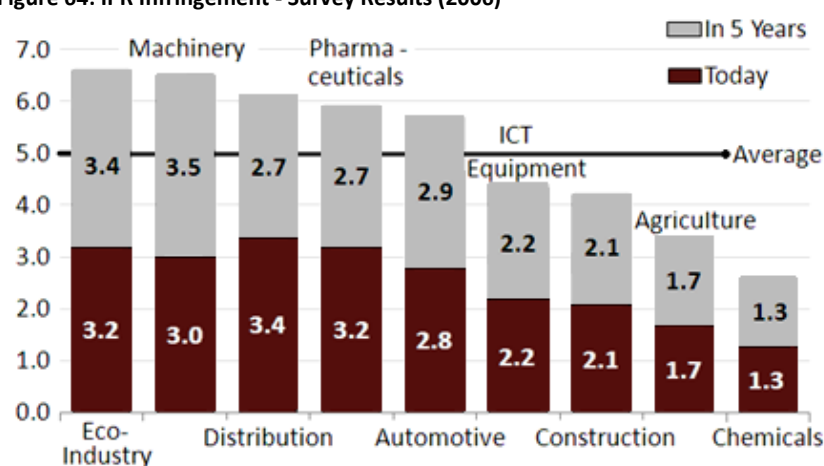
**Table 10: Most Frequently Mentioned Export Market for the Leading NTBs Categories**

NTB Category	Most frequently mentioned export market
Inadequacy of IP protection	China (12), Chinese Taipei (2), Germany (2), Korea (2)
Regulations on payment	China (7), India (3)
Testing and certification	Europe (5), China (4), Russia (3), Spain (3), US (3)
Customs procedures	China (3), Chile (2), Europe (2)
Government procurement	China (3), Chinese Taipei (2)
Technical regulations and standards	US (4), Russia (3)

Source: adapted from OECD (2007)

Due to a reliance on high value-added and proprietary technology, IPR infringement is a particular concern for the eco-industry. Another survey conducted by DG Trade of 200 European companies operating in China, found that of nine industry sectors, eco-industry practitioners voiced on average the highest concerns with regard to the current and future state of IPR enforcement in China<sup>221</sup> (Figure 64).

**Figure 64: IPR Infringement - Survey Results (2006)**



Note: 4 = significant importance; 1 = little importance

Source: DG Trade (2007)

Despite improvements in Chinese legislation which is largely in line with international standards, unsound judicial interpretations, procedural barriers, and poor enforcement were cited as particular problems for surveyed

<sup>220</sup> Fliess & Kim - OECD (2007) 'Business Perceptions of Non-Tariff Barriers (NTBs) Facing Trade in Selected Environmental Goods and Associated Services: Survey Results'. OECD Trade and Environment Working Paper 2007, Part 1

<sup>221</sup> Study 12: Exploring China's IP Environment - Strategies and Policies DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

companies. There have been signs that Chinese companies are themselves becoming more aware of the dangers and threats of excessive piracy and currently the majority of current civil litigation in trademark infringement cases is between Chinese parties. It should be noted that many European companies indicated that they were hesitant to bring IP infringements due to lengthy legal processes, perceived absence of impartiality of the judicial system and fear of a possible commercial backlash.

As mentioned at the beginning of this section, the eco-industry's service element accounts for over half of the market. Environmental services can thus only be provided effectively with local presence through foreign investment (GATS Mode 3). China's service sector has traditionally been one of the most heavily regulated and protected parts of the economy. Foreign service providers are largely restricted to licensed operations that have limits on entry and restrictions on the geographic scope of activities. All services require official approval, and service providers (except consultants) are required to operate either through joint ventures or wholly-owned foreign enterprises. These agreements can often involve the forcible transfer of technology to local Chinese partners or research institutions<sup>222</sup>.

Another difficulty reported by eco-industry companies operating in China is the lack of enforcement concerning the compliance of industry with environmental standards. This takes away a key incentive for domestic companies to invest in environmental goods and services stymieing the further development of the sector in China. Most local companies still do not comply with the rules regarding treatment of water, waste and air pollution as the regulatory mechanisms in place are weak and disorganised. This is mainly due to scarcity of human resources at government institutions as well as a lack of technical know-how in enforcing regulations. Furthermore, where controls are carried out, many foreign companies allege that this is done far more strictly than at domestic companies, particularly SOEs.

These market access obstacles have meant that despite the substantial opportunities presented by the Chinese market, which has grown at an average rate of 17.2 percent over the last five years, many foreign eco-industry companies, particularly SMEs, are reluctant to operate in China due to numerous obstacles affecting their operations. This has led to concerns about the longer-term sustainability of operating within the Chinese market.

## Sustainability Context

The eco-industry has always had a high priority on the trade agenda and there exist over 38 international treaties or agreements in the environmental field which contain trade-related measures<sup>223</sup>. The Doha Ministerial declaration brought the eco-industry to the forefront of trade liberalisation by explicitly calling for 'the reduction, or as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services.'<sup>224</sup> The trade in environmental

### Box 16: CDM Focus

The Kyoto Protocol legally binds participating industrialised countries to reduce emissions of heat trapping gases with specific emissions reductions targets up to 2012. The protocol enables industrialised countries to trade emissions amongst themselves and to meet a portion of their targets by purchasing emission reductions from developing countries, through employing market based mechanisms such as the Clean Development Mechanism (CDM). The CDM system allows industrialised countries under the United Nations Framework Convention on Climate Change (UNFCCC) to invest in greenhouse gas (GHG) emission reduction projects in developing countries. The industrialised countries can claim Certified Emission Reductions (CERs) from these projects to assist them in complying with their binding GHG emission reduction commitments under the Protocol. China is a major potential beneficiary of CDM because of its rapidly expanding energy demand, heavy reliance on coal, and a low level of energy efficiency, as highlighted in **Section 4**. These three factors create ample cost-effective opportunities for reducing GHG emissions.

*Continued...*

<sup>222</sup> US Commercial Guide FY 2003: China, in Sawhney (2006)

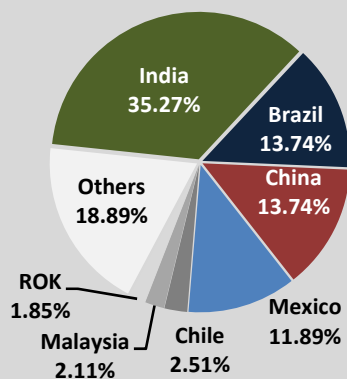
<sup>223</sup> Examples of trade-related measures include the Montreal Protocol, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Convention on International Trade in Endangered Species, the Persistent Organic Pollutants and Prior Informed Consent Conventions, and the Biosafety Protocol of the Convention on Biological Diversity. Other MEAs, such as the Kyoto Protocol may have significant trade implications in the future, especially through trade in emissions reduction credits (ADB, 2005).

<sup>224</sup> Paragraph 31(iii)

## CDM Focus (cont.)

China's CDM potential, however, has not yet been reflected in CDM projects that have been registered, approved, or are under validation. As of August 2007, 104 CDM projects from China had been registered with the CDM UN executive board. Bottlenecks and challenges for CDM in China include a lack of appropriate methodologies for application, no local operational entities to validate projects, insufficient capacity of local project developers to design and write project design documents, and human resources for the CDM administrative process. However, as the technology transfer is restricted by 51% local ownership requirements, the full potential of European investors and companies in China has not been realised.

### Total Registered Projects: 757



Source: UNFCCC (Aug, 2007)

goods and services is increasingly fundamental to achieving sustainable development goals.

Although improving environmental quality has always been seen as a key element in improving quality of life, it is only more recently that the eco-industry is becoming seen as an important economic driver of innovation and job creation. Employment opportunities from the eco-industry can range from boosting the service sector, to expanding the manufacturing base, to promoting trade and investment. The Institute for Economic Research estimated as early as 1999 that the eco-industry in Europe contributed to over 2 million jobs directly and 660,000 indirectly.<sup>225</sup> It is likely that with increased environmental protection, the sector in China which according to national statistics<sup>226</sup> already employs over 1.8 million workers, will result in the formation of larger scale local companies and the employment of increasing amounts of highly skilled workers.

According to the European Commission, the biggest barrier to diffusion of eco-technologies into society is the lack of information about potential environmental technologies<sup>227</sup>. Among customers in China there is often little knowledge about the socio-economic issues influencing the uptake of environmental technologies. This knowledge relates to the ultimate cost and benefits throughout a product's life-cycle of adopting higher quality, environmentally sound products. Europe can draw on its experience of working with diverse interest groups, such as civil society, governments and business to promote awareness of the importance of adopting eco-industry technologies and services. There are substantial opportunities for Europe to share its experience in nurturing a culture of energy conservation and waste reduction, while working to strengthening sustainable community partnerships with government, universities and research centres in China.

## Baseline Trends

Europe has a strong comparative advantage in this sector, which will be an area for major growth in the future. A recently published report for the German Ministry of the Environment<sup>228</sup> predicts that the global environmental industry is set to reach an expected € 2,200 billion by 2020. Germany alone controls 30 percent of the world's power generation market<sup>229</sup>. For the time being, the eco-industry remains primarily driven by legislation aimed at tackling global environmental issues including the greenhouse effect, damage to the ozone layer, biodiversity loss and environmental degradation. The technologies and services it provides are of increasing importance to construction, mining, urban development and state infrastructure as national and international legislation imposes stricter controls on negative environmental effects. It will be of key importance for Europe to continue to develop its green competitiveness, by supporting the development of

<sup>225</sup> Institute for Economic Research, University of Lueneburg, 2004, The Contribution of EU Eco-Industries to Sustainable Development Accounting Methodology and Results, Source, [www.uni-lueneburg.de/eman/eman2004/pdf/4/Wackerbauer.PDF](http://www.uni-lueneburg.de/eman/eman2004/pdf/4/Wackerbauer.PDF)

<sup>226</sup> The closest categorisation of the eco-industry in China is the national statistical yearbook and has since 2003 been listed under Management of Water Conservancy, Environment and Public Facilities.

<sup>227</sup> Commission of the European Communities, 2004, Stimulating Technologies for Sustainable Development: An Environmental Technologies Action Plan for the European Union, Communication from the Commission to the Council and the European Parliament.

<sup>228</sup> Franz-Vahlen-Verlag, 2007, GreenTech made in Germany, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

<sup>229</sup> Ibid

international standards of environmental protection and taking advantage of new market opportunities in emerging economies.

Due to the severity of China's environment challenges (as described in **Section 3**), and a short to medium term shortage of viable local suppliers, achieving China's ambitious environmental targets (as outlined in the 11<sup>th</sup> 5YP and China's renewable energy law) are likely to require foreign companies' know-how and investment. China's eco-industry has grown mainly in the more developed areas along the coast in eastern China, consisting largely of small scale enterprises. China offers numerous opportunities for European companies to offer higher value added environmental technologies and services. It is expected that China will source at least 12 percent of its sustainable technologies and services needs from EU suppliers until at least 2010.<sup>230</sup>

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<sup>230</sup>DG Trade (2007) Future Opportunities and Challenges in EU-China Trade and Investment Relations

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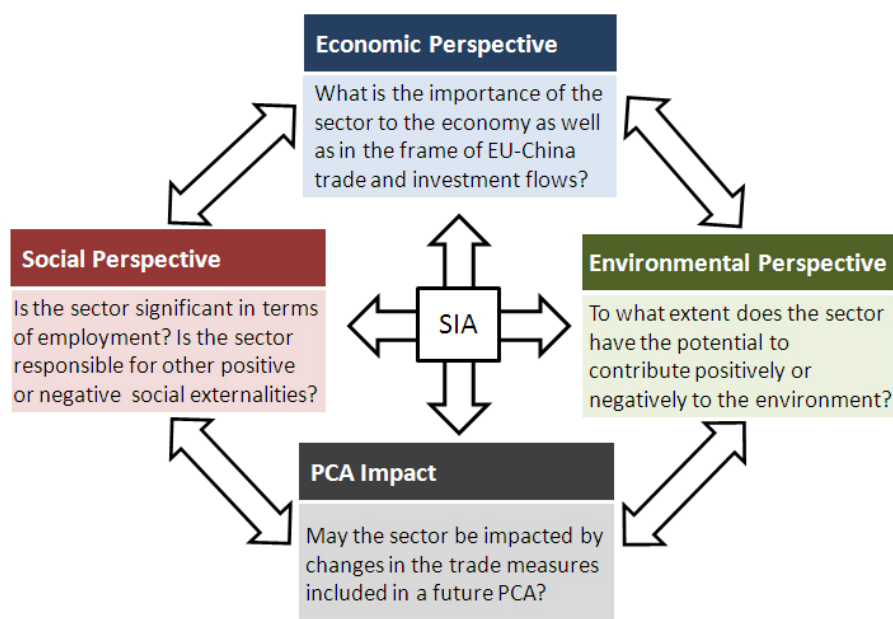
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# Technical Annexes

## Technical Annex

### I. Detailed Sector Choice Justification

This technical annex provides a detailed justification for the sector choices suggested for in-depth analysis in the preceding stages of the EU-China Trade SIA. These chosen sectors are deemed particularly representative in terms of expected sustainability outcomes based on their relative importance from an economic, social, and environmental perspective, as well as the extent that each sector may be impacted on by changes in the trade measures included in a future PCA.



An initial list of twelve potential sectors to be considered for in-depth analysis in the Trade SIA was drawn up in consultation with the European Commission. These sectors were subsequently ranked along the four themes explored in the Trade SIA (economic, social, environmental significance, as well as relevance to the PCA). This assessment was made qualitatively supported by quantitative indicators. The sectors were thereafter given a score in inverse proportion to their ranking. These scores were subsequently averaged<sup>231</sup> to gain their 'overall balanced sustainability score'.

Following this rationale, five sectors were selected to be taken forward for more in-depth analysis in the preceding stages of the Trade SIA. These are:

1. **The Machinery Sector** (including power generating machinery);
2. **Environmental Goods and Services** (or 'Eco-Industry');
3. **Banking Services** (including insurance);
4. **Chemicals Industry** (including pharmaceuticals<sup>232</sup>);
5. and **Agriculture** (including processed food);

<sup>231</sup> In this instance a sector's economic, social and environmental scores were determined with reference to the indicators provided in the *Handbook for Trade Sustainability Impact Assessment* (DG Trade, 2006), pages 52-56, as well as noted additional indicators. The scores in the three sustainability themes were then averaged and combined with the sector's PCA score, determined by the likelihood of inclusion or progress of the sector under the PCA negotiations. The rationale for this approach is to ensure that sectors to be analysed should be chosen based on both their potential impacts as well as the likelihood of progress within the PCA. Subsequently, the sectors which scored above the overall average score of 12 (i.e. of moderate relevance "6" in both sustainability themes and PCA relevance) were selected for in-depth analysis.

<sup>232</sup> Please note, that although the Pharmaceutical industry was not selected for in-depth analysis on its own merit, it was deemed appropriate that it should be analysed as a sub-sector of the Chemicals industry.

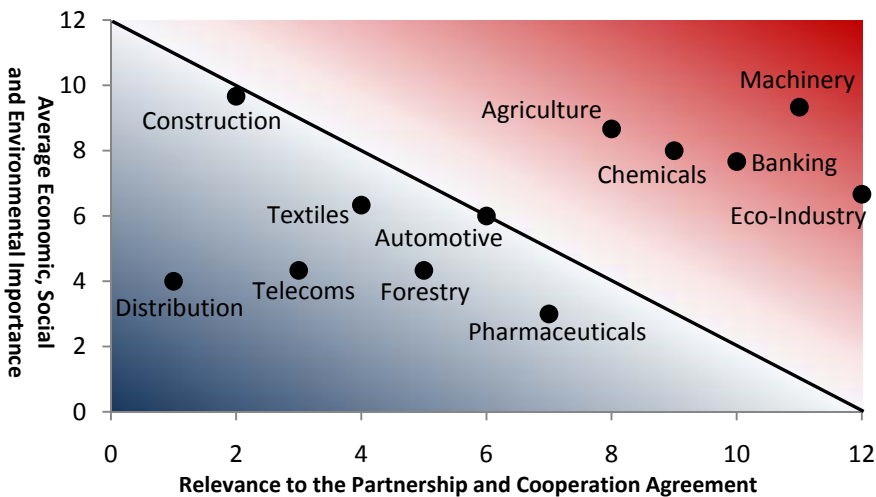
The flowchart below provides a visual overview of how sectors were selected for in-depth analysis using their relative ranks the three sustainability themes and PCA relevance. The tables on the following pages go through the rationale of ranking and scoring each sector.

### (1) Sustainability Scorecard

Sector	Economic Ranking (Score)	Social Ranking (Score)	Environmental Ranking (Score)	Average Impact Score	PCA Relevance Ranking (Score)
Machinery	1 (12)	5 (8)	5 (8)	9.3	2 (11)
Eco-Industry	11 (2)	7 (6)	1 (12)	6.6	1 (12)
Banking Serv	2 (11)	2 (11)	12 (1)	7.6	3 (10)
Chemicals	3 (10)	6 (7)	6 (7)	8	4 (9)
Agriculture	8 (5)	1 (12)	4 (9)	8.6	5 (8)
Automotive	6 (7)	8 (5)	7 (6)	6	7 (6)
Construction	4 (9)	4 (9)	2 (11)	9.6	11 (2)
Textiles	9 (4)	3 (10)	8 (5)	6.3	9 (4)
Pharmaceuticals	10 (3)	9 (4)	11 (2)	3	6 (7)
Forestry	12 (1)	11 (2)	3 (10)	4.3	8 (5)
Telecoms	5 (8)	12 (1)	9 (4)	4.3	10 (3)
Distribution	7 (6)	10 (3)	10 (3)	4	12 (1)

Average Impact Scores cross-referenced against PCA Relevance Scores

### (2) Sectoral Priority Scale



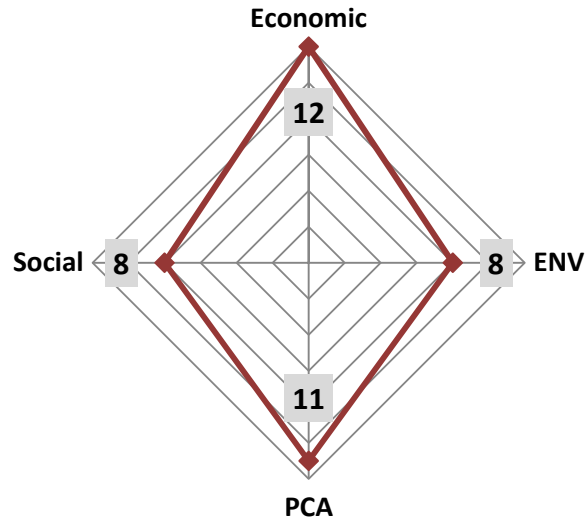
### (3) Avg Impact Scores

Sector	Overall Score
Machinery	20.3
Eco-Industry	18.6
Banking Serv	17.6
Chemicals	17
Agriculture	16.6
Automotive	12
Construction	11.6
Textiles	10.3
Pharmaceuticals*	10
Forestry	9.3
Telecoms	7.3
Distribution	5

\* Specific issues pertaining to the Pharmaceuticals industry will be considered in the Chemicals industry study.

- Using the indicators outlined in the *Handbook for Trade Sustainability Impact Assessment* (DG Trade, 2006), pages 52-56, as well as noted additional indicators in the descriptions in the following pages, economic, social, environmental and PCA relevance rankings are determined. These rankings are then assigned scores between 12 for rank 1 and 1 for rank 12. Environmental, social and environmental scores are averaged to compute Average Impact Scores.
- Average Impact Scores and PCA Relevance Scores are cross referenced to form the Sectoral Priority Scale. This scale indicates which sectors have both a high potential impact in addition to being highly relevant to the PCA negotiations. High priority sectors are located in the red quadrant while lower priority sectors are in the blue quadrant.
- Average Impact Scores and PCA Relevance Scores are totalled to determine overall priority sectors. Sectors with an overall score greater than 12 are selected for analysis.

## 1. Machinery Sector



### Economic Importance

**Ranking (Score): 1 (12)**

Valued at € 70 bn in 2005, machinery tops the list of trade flows between Europe and China and is both trading partners' biggest export sector globally. The EU is the world's largest importer and exporter of mechanical machinery, with 34% of the global market share. European machinery manufactures enjoy a global revealed comparative advantage (RCA) of 1.66 in advanced mechanical machinery and power-generating equipment. These two sub-sector alone account for a turnover of € 360 billion in 2003 (EU-15). China has a strong trade surplus in electronic machinery with the EU valued at US\$ 12.6 bn in 2005. In China, the market for general machinery comes second only to textiles in size, and is estimated to continue growing between 20 - 25% p.a over the next five years. With regards to power-generating machinery China is investing heavily in the energy sector. The state is currently spending €7.8 bn a year to develop a national energy grid. It is estimated that China will have to spend almost US\$ 2 trillion on electricity generation, transmission and distribution over the next 30 years.

### Social Importance

**Ranking (Score): 5 (8)**

China's machinery sector employs over 8.1 mn people or 13.4% of the manufacturing workforce; two-thirds of which are employed in non-electrical machinery sector. The machinery sector in China is restructuring as non-performing SOEs are privatised. Despite that overall employment in the sector continues to grow, localised large-scale layoffs particularly in the North East region are potential sustainability hotspots. Further liberalisation is likely to exacerbate the existing concerns of the short term social impact of restructuring. In the EU the mechanical machinery industry alone directly employed 2.24 million people in the EU-15 in 2003, accounting for 7% of the EU manufacturing industry's employment. With trade liberalisation there is a chance that some lower value added machinery manufacturing, particularly in newer member states might result in delocalisation of activities or restructuring.

### Environmental Importance

**Ranking (Score): 5 (8)**

The installation of more advanced power generating machinery, but also the use of more environmentally efficient machinery will have an economy-wide impact. It is an integral part of reducing overall energy use, and emissions from the highly polluting energy sector. Mainly in China, but also in the EU, a large number of power and manufacturing plants operate old machinery resulting in high levels of wastage.

### PCA Impact

**Ranking (Score): 2 (11)**

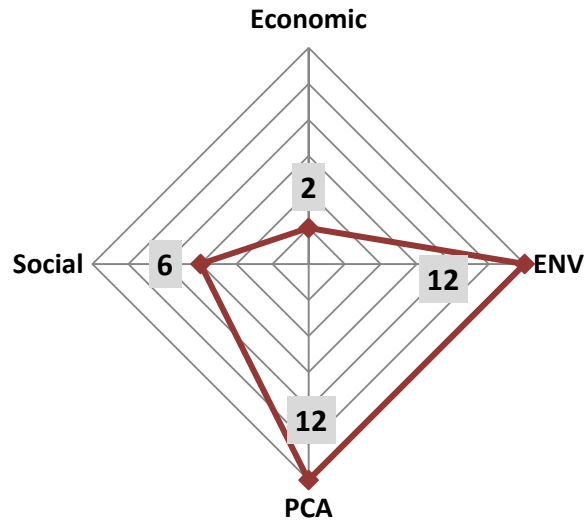
There is considerable scope under the PCA for a reduction of NTBs (currently estimated at US\$ 7 billion p.a.). Government subsidies and procurement practices remain disadvantageous for foreign firms, especially under current investment rules and the high cost obligations associated with CCC certification. IPR infringements are also an increasing source of high losses. In addition, energy efficiency is likely to be a priority area in the PCA which will impact upon the power-generating equipment and mechanical machinery subsectors in particular.

**Economic, Social, and Environmental Average** 9.3

**PCA Score** 11

**Weighted Sustainability Score** 20.3

**2. Environmental Goods & Services (Eco-Industry)**



**Economic Importance**

**Ranking (Score): 11 (2)**

Even when adopting a broad definition of the environmental goods and services market remains comparatively small (US\$ 607 billion) but is growing strongly. Some estimates predict that the global environmental industry is set to reach an expected € 2,200 billion by 2020. Europe has a strong comparative advantage in environmental goods and services. The Chinese market currently accounts for US\$17 billion and is expected to double by 2010 as the Chinese government has allocated US\$ 140 billion for environmental protection. The EU is the largest technology exporter to China with a contracted value of US\$ 7.54 billion in 2006 (42% of the total) of which a high percentage is made up of environmentally efficient goods and services.

**Social Importance**

**Ranking (Score): 7 (6)**

In 1999 that the eco-industry in Europe was already estimated to have contributed to over 2 million jobs directly and 660,000 indirectly. Despite its relative youth, employment in the sector in China is expected to grow rapidly from its present 1.8 million workforce, emulating growth patterns in the European eco-industry.

More importantly, environmental quality has always been seen as a key element in improving quality of life, and eco-industry products thus play a key component in improving quality of life, be it thorough noise reduction, access to safe drinking water, clean air, and so on. Prioritising environmental issues and ensuring a wider adoption of environmentally friendly technology is essentially a social challenge and intricately linked to knowledge of eco-friendly products available.

**Economic, Social, and Environmental Average** 6.6

**PCA Score** 12

**Weighted Sustainability Score** 18.6

**Environmental Importance**

**Ranking (Score): 1 (12)**

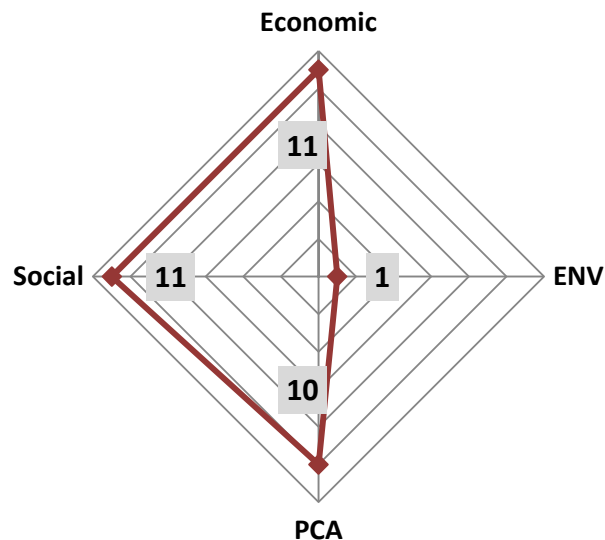
The increasing weight behind environmental concerns in both Europe and China has resulted in the bolstering of parallel regulation encouraging companies to cut down on wastage. In China the focus has traditionally focused upon water wastage, though this is shifting to cover air and land pollution as well. Investment directed towards environmental goods and services through the formulation of increasingly stringent environmental protection policies, particularly those measures which enforce the polluter-pay-principle.

**PCA Impact**

**Ranking (Score): 1 (12)**

The eco-industry has always had a high priority on the trade agenda. The EU and China have been collaborating on sustainability issues for many years and continue to develop their aligned interests, most notably in energy efficiency and related environmental issues. As mentioned above, China already imports large amounts of technology from the EU, with a substantial amount being environmental goods and services. This trend is likely to increase in the short-term due to technology transfer associated with increased bilateral technical cooperation. Substantial concerns remain as reported IPR infringements by EU companies in the eco-industry in China are higher than in any other sector. In addition foreign eco-industry operators are often required to provide technology transfer as part of JV deals. Weak or lack of enforcement of national environmental legislation within industry in general also hold back development in the sector. Restrictions on operating services also limit foreign firms' size and geographic coverage. The resolution of existing disputes over definitions of environmental goods and services would allow for a larger trade volume in products, especially in technology related to implementation of the CDM.

### 3. Banking Services



#### Economic Importance

**Ranking (Score): 2 (11)**

While Chinese banking sector currently seems relatively small compared to that of the EU's, it has arguably the greatest growth potential worldwide. The Chinese middle class is expected to increase to 40% of the population by 2020 and coupled with existing high savings rates, will provide tremendous opportunities in banking services for foreign institutions. China is slowly modernising the sector, lifting some restrictions starting in late 2006. Liberalization is expected to experience significant expansion in the forthcoming years, with estimated growth of over 20 per cent p.a.

#### Social Importance

**Ranking (Score): 2 (11)**

During 2002-2005 the number of branches of the big 4 Chinese banks has declined by 25% while the number of employees has declined by 7%. Further liberalisation of the Chinese banking sector, is expected to speed up automation and further closing down of unprofitable branches. More importantly, the Chinese banking sector would have an important indirect social impact as soft loans to Chinese SOEs which currently amount to over € 1.2 bn would be cut down. This would inevitably result in the further downsizing and reduction of social welfare provisions in the state owned sector. Although such drastic reforms are a long-term necessity, in the short-time these impacts mean that reforms will be very selective.

#### Environmental Importance

**Ranking (Score): 12 (1)**

The banking sector does not directly have a significant environmental impact. However reform of the banking sector as one of the largest service sectors in China would be an important contributor to the rebalancing of the Chinese economy away from an over-reliance of manufacturing towards less energy intensive services.

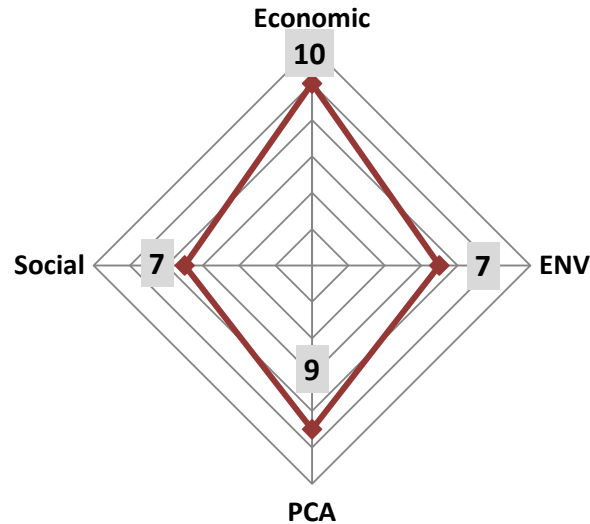
#### PCA Impact

**Ranking (Score): 3 (10)**

Significant geographical licensing difficulties for branches and investment restrictions mean that substantial obstacles for foreign banks operating in China continue to exist. However, given the importance of reforming the Chinese banking sector further, there should be substantial opportunities for further liberalisation in selected sub-sectors. Since China has no major stakes in the European financial sector yet, and is not expected to do so in the near future, the EU would have to discuss to tie opening up of the financial sector with the opening of other sectors with China in order to achieve concessions in further financial market opening.

<b>Economic, Social, and Environmental Average</b>	<b>7.6</b>
<b>PCA Score</b>	<b>10</b>
<b>Weighted Sustainability Score</b>	<b>17.6</b>

#### 4. Chemicals Industry



#### Economic Importance

**Ranking (Score): 3 (10)**

The Chemicals industry has a global value of US\$1.7 trillion, with Europe and China being 1st and 4th in terms of global turnover. In addition Chemicals are an important input for manufacturing. With €360 billion turnover the EU is the lead chemicals producing area of the world (28% of world production). Domestically, the chemicals industry is China's 3rd largest industry and is growing at an annual rate of 30%. Europe has a global comparative advantage in the production of chemicals (RCA= 1.27) At the same time China still requires large volumes of basic chemicals, specialty and fine chemicals which are not available domestically in sufficient quantities. Although, the Chemicals industry is essentially local in nature, and participation of EU producers in the Chinese market would be most important through investment in local production facilities bilateral trade flows accounted for over € 11 bn in 2005.

#### Social Importance

**Ranking (Score): 6 (7)**

The chemicals sector directly employs 1.3 million people and twice that number indirectly. It comprises about 27 000 enterprises, 96% of which are SMEs generating 30% of sales and 37% of employment. The Chinese chemical industry is a major employer, constituting 10 percent of the total manufacturing sector (excluding pharmaceuticals). Trade-related restructuring of the industry has been high, as illustrated by job cuts at China's three Chemicals giants. Following WTO accession, Sinopec cut 150,000 jobs, with PetroChina making similar adjustments. Most of the restructuring of chemical giants has been made, although substantial layoffs may still occur in smaller companies especially as the government reforms the financial system which further pressure small inefficient firms. The chemicals industry has been traditionally used in China to as stimulant for economic growth in less developed regions.

#### Environmental Importance

**Ranking (Score): 6 (7)**

The chemical industry is one of seven industrial sectors that contribute the most to China's pollution. The sector contributes considerably to China's high air and water pollution levels. China's waterways are the most polluted in the world and despite regulation, enforcement is not widespread especially at a regional level. Discharges from the industry have serious associated health risks. China's biggest cause of premature death is now cancer and areas in which chemical plants operate show rates considerably bigger than national averages. The chemicals industry in China also has the potential to substantially improve energy efficiency and to minimise greenhouse gas emissions.

#### PCA Impact

**Ranking (Score): 4 (9)**

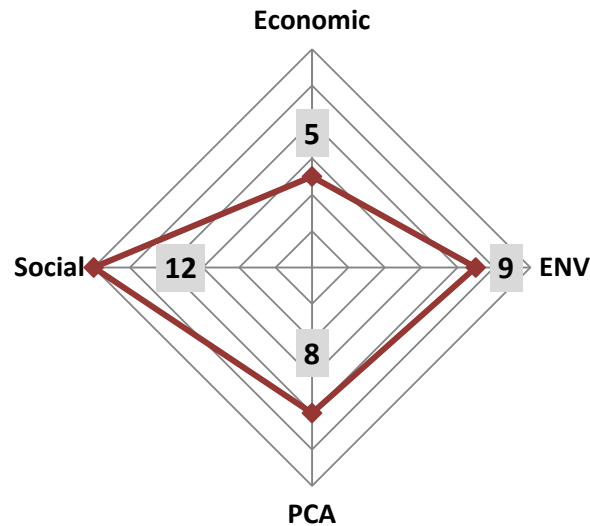
Although foreign investment is encouraged in many subsectors, ownership structure regulation still does not allow for fully integrated plants. Long and opaque project approval periods and limitation in choice of partner in some areas continue to exist as barriers to market access. An overly stringent and expensive chemical registration process affects both imports and local foreign- manufacturing, and unequal application of environmental regulation to foreign and local producers lowers profit margins considerably.

**Economic, Social, and Environmental Average** 8

**PCA Score** 9

**Weighted Sustainability Score** 17

## 5. Agriculture Industry



### Economic Importance

**Ranking (Score): 8 (5)**

Despite its decline in relative importance to the economy, the agricultural sector in Europe and China remains a key component of the economy. The agriculture industry still accounts for 13.6% of total manufacturing turnover in the EU15 (€ 725 bn production, € 784 bn. for EU 25), and 11% value added. Although the contribution of agriculture to the Chinese economy has decreased since the 1990s, from 27 percent to its current level of 13 percent of GDP, China's agricultural employment still accounted for 44.8 percent of the total in 2005. Since WTO accession, European exports to China have doubled to US\$ 1.1 billion by 2005. Chinese exports to Europe are over 3 times the size, mainly in the lower value sector. Overall Europe has an RCA of 0.79, but is globally competitive in sub-sectors such as wines and spirits, aquatic and dairy products.

### Social Importance

**Ranking (Score): 1 (12)**

As in any country, the countryside is an important container of national identity. In the EU25, 5.2% of the entire workforce in 2005 was employed in agriculture. Although the contribution of agriculture to the Chinese economy has decreased since the 1990s, from 27 percent to its current level of 13 percent of GDP, China's agricultural employment still accounted for 44.8 percent of the total in 2005. Importantly, China's rural population (most of which is employed in agricultural production) has not benefited to the same degree from the economic boom and remains considerably lower down in all social indication ranks than their urban counterparts, leaving them particularly vulnerable. Too rapid liberalisation, resulting in further restructuring in the agricultural sector, is likely to create further short-term social challenges in terms of income inequalities and urbanisation.

### Environmental Importance

**Ranking (Score): 4 (9)**

The agricultural sector accounts for almost two-thirds of water use in China and the unregulated use of fertilisers and pesticides within Chinese agriculture remains a major source of pollution of waterways. Total use of water is also high in comparison to other industries and increasing. More efficient technology in irrigation as well as water purification will be needed in the future. The agriculture sector accounts for two thirds of national water usage and is estimated to increase with farming of more water intense, higher value-added crops. Other concerns over biodiversity and land loss due to overgrazing and deforestation remain, particularly in the interior.

### PCA Impact

**Ranking (Score): 5 (8)**

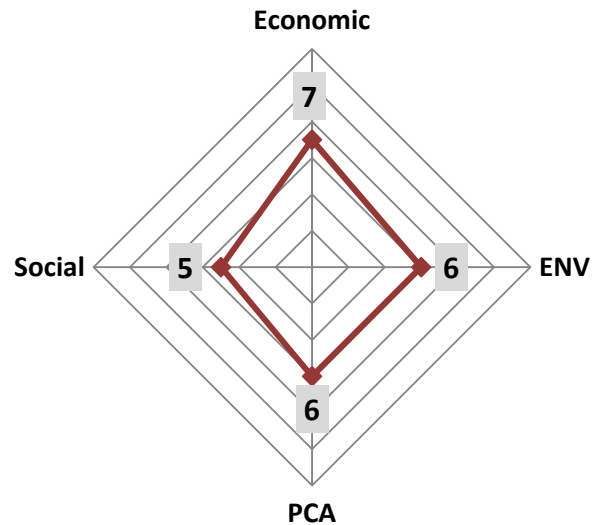
Exporters from both Europe and China perceive significant barriers due to differences in SPS regulation and high compliance costs. Of all export industries Chinese exporters of foodstuffs report the highest frequency of difficulties when selling their goods abroad. The requirements in terms of required purchase of quarantine and import inspection permits and unequal application of food standards as well as labelling requirements for imports are high on the list of European exporters as well. In addition there remains substantial scope for the further uptake of Geographical Indicators in China to increase food-standards, reduce the negative externalities (env pollution etc) and improve the positive spill-overs (cultural interest, tourism etc.) from agricultural industry.

**Economic, Social, and Environmental Average** 8.6

**PCA Score** 8

**Weighted Sustainability Score** 16.6

## 6. Automotive Industry



### Economic Importance

**Ranking (Score): 6 (7)**

The automotive industry is one of Europe's key sectors contributing 3% of GDP, 7% of total manufacturing value added (€ 114 billion, EU15). The automotive industry accounts for less than 2% of China's GDP, of which European car manufacturers account for 38%. Still, the sector sales are growing at fast rates and will become more economically significant as Chinese auto producers increase production and intend to compete with global players. In China, particularly important is the car parts sector which has grown at an average of 60% a year from 2002 to 2005. However, Europe's US\$ 2.4 billion trade surplus in China in this sector is expected to decrease due to increased competition from Asian manufacturers and overcapacity within the Chinese market.

### Social Importance

**Ranking (Score): 8 (5)**

The automotive industry accounts for 6% of total manufacturing employment (over 2 million, EU25). The industry also provides indirect employment to 10-11 million people. Although the automotive sector in China is so-called 'pillar industry', it employs only 1.6 million people -a relatively a small number given China's labour force. The industry in Europe has consolidated over the past few years and is unlikely to change greatly.

### Environmental Importance

**Ranking (Score): 7 (6)**

Cars are a major source of urban pollution, which has grown exponentially with the high sales volumes (second only to the US). New environmental standards introduced by the Chinese government are modelled on European regulation, thus there is potential for increased cooperation with European partners both for complete vehicles and components.

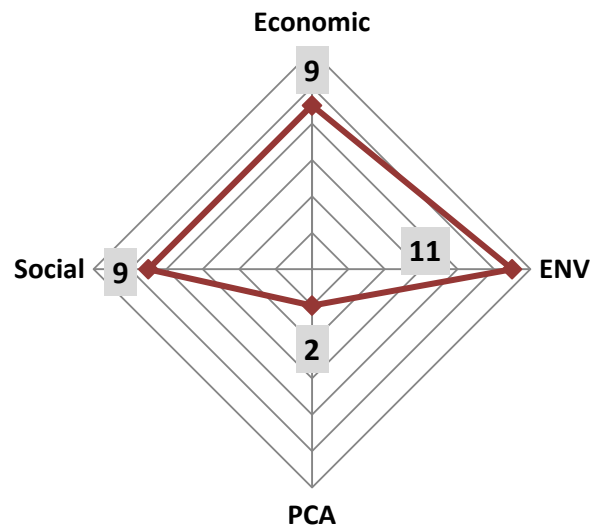
### PCA Impact

**Ranking (Score): 7 (6)**

Non-tariff barriers in the auto industry are significant, costing European manufacturers an estimated US\$ 4.6 billion annually. These barriers are certainly important, although European car and component manufacturers are increasingly positioned in a specific niche in the upper-level market, which should not be overly affected by changes in the trade provisions envisaged in the PCA.

<b>Economic, Social, and Environmental Average</b>	<b>6</b>
<b>PCA Score</b>	<b>6</b>
<b>Weighted Sustainability Score</b>	<b>12</b>

## 7. Construction Sector



### Economic Importance

**Ranking (Score): 4 (9)**

The Chinese market for construction is a huge opportunity for growth. China's strong economic growth, but still basic infrastructure acts as catalysts to the overall development of the construction sector in China. In China, the sector contributes to 5% of the GDP and is estimated to grow at an accelerating pace. China is currently the world's largest construction market and its state of development requires a high level of infrastructure, so opportunities for growth are abundant in the foreseeable future.

It contributes approximately 10% to the EU's annual GDP of EUR 1,000 billion. However, the value-added per person employed is in construction significantly lower than in most other activities, mostly due to the limited potential for increased automation and capital intensity of production. The investment per worker is less than half of the level of the industry in most of the countries.

### Social Importance

**Ranking (Score): 4 (9)**

The construction industry is an important sector of the EU's economy being its largest employer. In 2003, the share of the employment in the construction industry in relation to total industry employment amounted to around 28.8% at the EU-15 level. The sector employs about 5% of Chinese workers. Despite the expected strong growth, the number of people employed is likely to level off as human resources are used more efficiently. The sector is particularly important for the rural-urban economy divide, as a large portion of the rural population is supported by family remittances from migrant construction workers in the cities.

### Environmental Importance

**Ranking (Score): 2 (11)**

The construction industry is a major consumer of energy, materials, water and land. Besides wise land use planning and management, and good design, environmentally efficient and sustainable construction requires environmentally friendly materials, energy- and waste-saving developments, and so on. With no sign of deceleration, it will be increasingly difficult to provide enough resources to the construction industry in China. In view of the growing focus on energy efficiency, the greater usage of eco-friendly construction materials and energy saving buildings is expected to become increasingly important.

### PCA Impact

**Ranking (Score): 11 (2)**

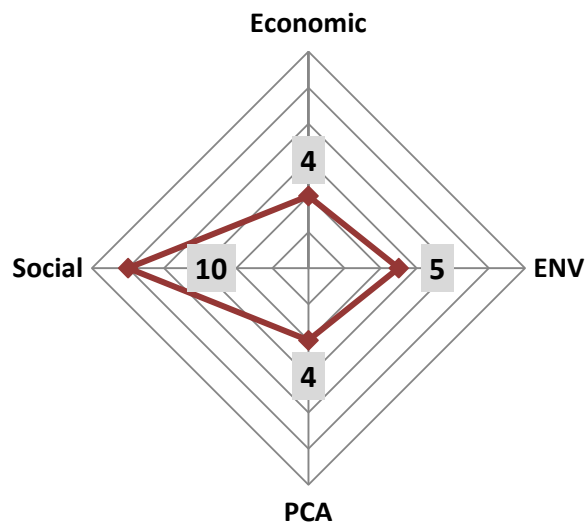
Outside access to the Chinese construction sector has become more difficult since Chinese accession to WTO. Whilst there is some scope for negotiation pertaining to issues of registration and qualification recognition for FIEs, the current protectionist climate suggests that the sector will remain closed off to major foreign investors. In addition, the scope for trade liberalisation in the construction sector is limited by the fact that most construction activities cannot be traded.

**Economic, Social, and Environmental Average** 9.6

**PCA Score** 2

**Weighted Sustainability Score** 11.6

## 8. Textiles



### Economic Importance

**Ranking (Score): 9 (4)**

China is the world's largest exporter of textiles and clothing, and are, apart from the luxury ends of the markets, very competitive compared European textiles and clothing manufacturers. In 2005, Chinese imports into the EU were nearly \$5 billion in textiles and \$23 billion in clothing, up from \$2 billion and \$10 billion respectively in 2002. Despite the increased production capacity and attractiveness as a sourcing destination, the sector accounts for only 7% of industrial output yet its high RCA (3.34) means that it is likely to remain as a key industry.

### Social Importance

**Ranking (Score): 3 (10)**

Despite the size of employment in the sector (12 million workers), China's substantial comparative advantage in producing textiles means that these jobs are not under any major threat from restructuring due to international trade (apart from competition within China itself). Although employment in Europe is comparatively low with only 2.1 million workers, China high competitiveness in this sector means that the social impact of trade liberalisation can be very suddenly felt on a local level. The social importance of textiles was already succinctly demonstrated by the voluntary trade quotas agreed between the EU and China under the Agreement of Textiles and Clothing in 2005 (ATC).

### Environmental Importance

**Ranking (Score): 8 (5)**

The sector has varying environmental impact depending on fabrics, dyes and glues used, though environmental effects in China tend to be higher in China than in Europe due to the high percentage of synthetic materials used.

### PCA Impact

**Ranking (Score): 9 (4)**

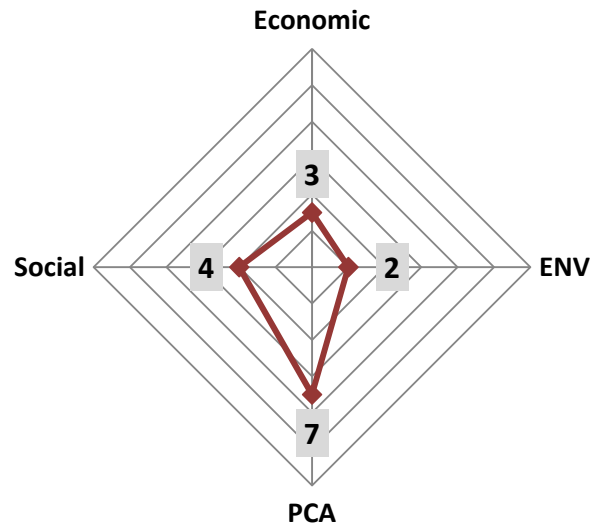
The EU and China have already agreed that the ATC will be gradually phased out and Chinese imports into Europe will inevitably increase in the near future which will not be affected to any great extent by any new provisions made under the PCA.

**Economic, Social, and Environmental Average** 6.3

**PCA Score** 4

**Weighted Sustainability Score** 10.3

## 9. Pharmaceuticals Sector



### Economic Importance

**Ranking (Score): 10 (3)**

The size of China's drug market is currently comparatively small, accounting for only 1.5% of the global market. Strong growth over the coming years (10%) is expected however, resulting in China becoming the world's 5<sup>th</sup> biggest market, though Traditional Chinese Medicine will continue to account for a high proportion of this. Foreign firms enjoy a strong presence in the non-TCM sector, accounting for 80% of market value. Moreover the European trade surplus (currently US\$450 million) is increasing as expected by its high RCA (2.01).

### Social Importance

**Ranking (Score): 9 (4)**

Current per capita expenditure on pharmaceuticals in China is only USD \$16, which is expected to rise with greater access to a variety of drugs and more knowledge of non-TCM medication. The ageing of the population is also expected to strongly affect the demand and sales of medication, with a greater proportion of income spent on drugs targeting old-age ailments. The growing adoption of western private health care policies is also expected to affect distribution and purchasing patterns of medication.

### Environmental Importance

**Ranking (Score): 11 (2)**

The environmental implications directly attributable to the industry are on the whole insignificant. Water pollution from pharmaceutical plants is addressed under the chemical section. Following the SARS outbreak in 2003, disposal of China's annual 650,000 tonnes (STAT-USA) of medical waste has been strictly regulated and construction of treatment facilities and disposal plants have been stepped up.

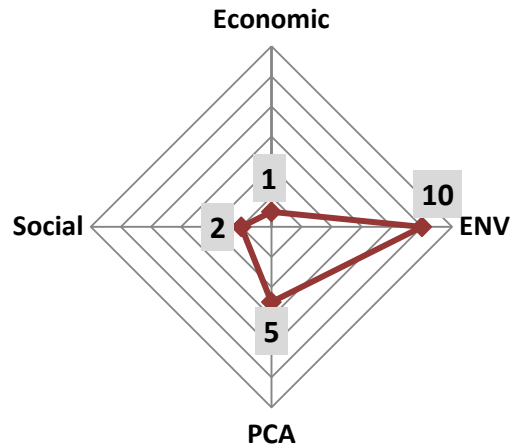
### PCA Impact

**Ranking (Score): 6 (7)**

IPR and registration procedures remain key concerns for European exporters, as do drug distribution chains. Registration for distribution licences is complex and expensive (often costing 3 times as much as the official \$7000) and packaging and labelling regulation is perceived as overly –stringent. Distribution in hospital chains is often regionalised and expensive, with preferential treatment given to local competitors.

<b>Economic, Social, and Environmental Average</b>	<b>3</b>
<b>PCA Score</b>	<b>7</b>
<b>Weighted Sustainability Score</b>	<b>10</b>

## 10. Forestry



### Economic Importance

**Ranking (Score): 12 (1)**

Europe is still a major exporter of wood products (accounting for about 50% of world exports), although the majority of products are destined for intra-Europe trade. Heavy restrictions on Chinese logging in 1998 to preserve local forests has meant that China has become the world's biggest importer of industrial roundwood and tropical sawnwood, though the majority of this has been sourced from Russia and ex-CIS countries. China is a global leader in waste paper recycling, and import values of waste paper to China increased 300% between 2002 and 2005. On the other hand, China as the world's top producer of Secondary Processed Wood Products (60% of global total) has a strong surplus in furniture exports to Europe, valued at €209 million in 2005 compared to Europe's reciprocal €31 million.

### Social Importance

**Ranking (Score): 11 (2)**

Due to restrictions on logging within China, the sector does not rank highly in total employment number, although employment in the furniture and pulp recycling sectors are growing. These however are generally highly mechanised processes whose labour requirements remain low. Growing affluence in China has led to a greater demand for wooden construction material and domestic furnishings, which puts greater strain upon Asia's forests although this does not directly affect China's logging industry.

**Economic, Social, and Environmental Average** 4.3

**PCA Score** 5

**Weighted Sustainability Score** 9.3

### Environmental Importance

**Ranking (Score): 3 (10)**

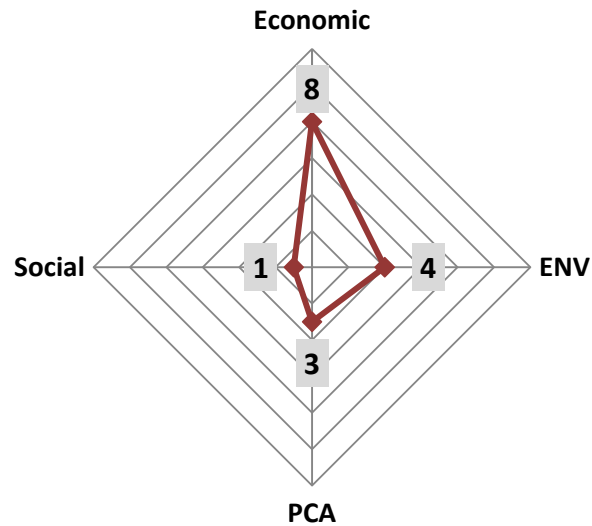
Since the link has been made between deforestation in China and some major natural disasters including flooding and desertification, China has sought to import a growing percentage of its wood. A major concern regarding China's forestry sector is the origin of its imports of timber. Large volumes come from countries lacking effective logging laws and regulation such as Indonesia and Malaysia where ecosystems are already fragile. Growing affluence is also resulting in greater imports of endangered hard woods, about which there is little social awareness. Due to the triangular nature of wood trade, a proportion of the Chinese manufactured products such as furniture entering European markets is made up of illegally harvested timber, making the sector of key environmental importance. Better knowledge and labeling of wood origin are thus seen as important ways of mitigating the environmental impact of the sector.

### PCA Impact

**Ranking (Score): 8 (5)**

It is likely that there will be particular focus regarding the unsustainable exploitation of natural resources. An example would be the impact of illegal logging in countries such as Indonesia, which eventually ends up in furniture exports from China to the EU. Better labelling tools to determine the origin of materials in products might be discussed, but it has been typically difficult to make progress on this issue and China's position on such labelling tools remains unresolved. Furthermore Trade flows in forestry products remain small, and so any agreement within the scope of the PCA will only have a limited impact on this area. Therefore a more multilateral solution to this issue would likely be preferable.

## 11. Telecommunications Services Sector



### Economic Importance

**Ranking (Score): 5 (8)**

Europe has a large stake in the telecom industry, holding the world's largest most valuable and saturated market. China is the fastest growing and largest telecom market in the world in terms of users, and is highly desirable to European players for potential opportunities but so far there have been severe obstacles for foreign competitors. High protectionism and lack of legal transparency in the sector have hitherto deterred European firms from participating significantly in the sector.

### Social Importance

**Ranking (Score): 12 (1)**

The telecom service segment of the Chinese telecom industry employs less than one million people as of 2004, which is low in comparison to other sectors. Whilst the social effects associated with the introduction of greater internet access and mobile phone usage are considerable in terms of access to information and faster communication, the substantial fostering and protection of Chinese companies means that the sector is not nearly as vulnerable to market fluctuations from international trade flows and competition.

### Environmental Importance

**Ranking (Score): 9 (4)**

The telecom sector does not have significant impacts on the environment. The negative effects are mostly limited to energy consumption, so the need to provide energy-efficient telecom equipment and services will become more important in the future.

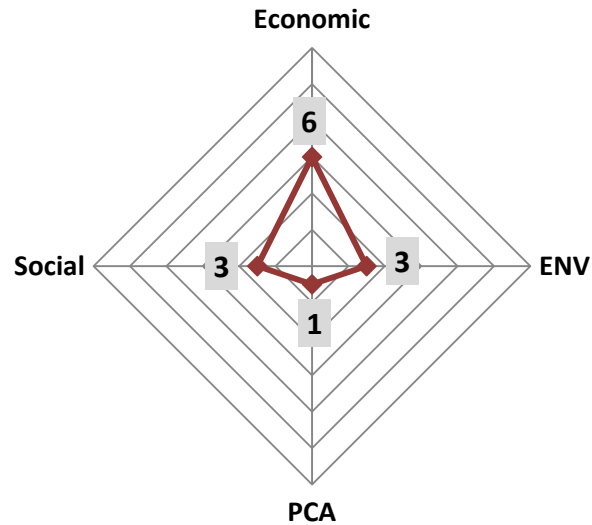
### PCA Impact

**Ranking (Score): 10 (3)**

Unless China revises the current legislation on key issues such as equity ceilings, foreign companies are not likely to increase their market share in the Chinese telecom sector. The classification list of value-added telecom in which foreign operators can operate is still unclear, and there remains little prospect for this sector to be substantially opened while the PCA negotiations are taking place.

Economic, Social, and Environmental Average	4.3
PCA Score	3
<b>Weighted Sustainability Score</b>	<b>7.3</b>

## 12. Distribution



### Economic Importance

**Ranking (Score): 7 (6)**

The distribution sector is traditionally one in which Europeans have been considered global leaders. The retail sector in China is growing at over 10% a year and provides great hopes as one of the largest consumer markets, given the rising incomes in the population. China's role as a source destination is also expected to grow given the global nature of retail.

### Social Importance

**Ranking (Score): 10 (3)**

The retail sector employs 7% of the working population, and is expected to grow over coming years. Rising affluence resulting in higher demand for a wider variety of products, and greater input into the processing of goods has an important impact on the extending of distribution networks and growth in volume.

Growing concerns over product quality standards which influence purchasing patterns are effectuating the introduction of greater sanitary and quality control measures, which favour larger retailers with high expenditure in distribution.

### Environmental Importance

**Ranking (Score): 10 (3)**

The distribution/retail sector consumes a significant level of resources including water, energy, as well as combustion gases for transportation, which are rising towards levels in the West. There will be the need for China to address management of distribution networks for the environment and in order to mitigate overly high energy expenditure in the distribution industry.

### PCA Impact

**Ranking (Score): 12 (1)**

One of the most liberalised markets in China, regulations have so far not impeded the strong growth of European global players both in first-tier and second- and third- tier cities. The conditions of the market are sufficiently open and there is little scope for improvement through PCA negotiations.

Economic, Social, and Environmental Average	4
PCA Score	1
<b>Weighted Sustainability Score</b>	<b>5</b>

## **II. Outline of Modelling Conducted for Global Analysis Report**

**Note:** Early modelling undertaken for the draft Global Analysis Report in Fall 2007 has been updated to incorporate both new data and revised scenarios. Final results are available in Section 4 of the Final Report available at the project website.

## Technical Annex III. List of Abbreviations

<b>ADB</b>	Asian Development Bank
<b>AMC</b>	Asset Management Company
<b>APIs</b>	Active Pharmaceutical Ingredients
<b>AQSIQ</b>	Administration of Quality Supervision Inspection and Quarantine
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>COD</b>	Chemical Oxygen Demand
<b>CAGR</b>	Compound Annual Growth Rate
<b>CBRC</b>	China Banking Regulatory Commission
<b>CCC</b>	China Compulsory Certification
<b>CCT</b>	Clean Coal Technology
<b>CDM</b>	Clean Development Mechanism
<b>CER</b>	Certified Emission Reduction
<b>CET</b>	Clean Energy Technologies
<b>CGE Model</b>	Computable General Equilibrium Model
<b>CIRC</b>	China Insurance Regulatory Commission
<b>CNOOC</b>	China National Offshore Oil Corporation
<b>CNPC</b>	China National Petroleum Corporation
<b>CNY</b>	Chinese Yuan
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>DOE</b>	US Department of Energy
<b>EC</b>	Commission of the European Communities
<b>EEP</b>	EU-China Energy and Environment Programme
<b>Ethylene</b>	An olefinic hydrocarbon recovered from refinery or petrochemical processes.
<b>EU-15</b>	European Union comprising 15 member states, before the accession of Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia on 1 May 2004
<b>EU-25</b>	European Union comprising 25 member states: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
<b>EU-27</b>	European Union comprising 27 member states: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
<b>EUCCC</b>	European Chamber of Commerce in China
<b>EUROSTAT</b>	Statistic Office of the European Commission
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FDI</b>	Foreign Direct Investment
<b>FIE</b>	Foreign Invested Enterprise
<b>FX</b>	Foreign Exchange
<b>FYP</b>	Five Year Programme
<b>GATS</b>	General Agreement on Trade in Services
<b>GATT</b>	General Agreements on Tariffs and Trade
<b>GDP</b>	Gross Domestic Product
<b>GHG</b>	Greenhouse Gas
<b>GI</b>	Geographical Indications
<b>GPA</b>	Government Procurement Agreement
<b>GPL</b>	Government Procurement Law (China)
<b>GTAP</b>	Global Trade Analysis Project

<b>HS</b>	Harmonized System
<b>IPR</b>	Intellectual Property Rights
<b>JV</b>	Joint Venture
<b>M&amp;A</b>	Mergers and Acquisitions
<b>MDGs</b>	Millennium Development Goals
<b>MES</b>	Market Economy Status
<b>MNC</b>	Multinational Corporation
<b>MOFCOM</b>	Ministry of Commerce of the People's Republic of China
<b>MOLSS</b>	Ministry of Labour and Social Security
<b>MoU</b>	Memorandum of Understanding
<b>NDRC</b>	National Development and Reform Commission
<b>NO<sub>x</sub></b>	Nitrogen Oxide
<b>NPC</b>	National People's Congress
<b>NPL</b>	Non-Performing Loan
<b>NTB</b>	Non-Tariff Barrier
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>OIV</b>	International Organization of Vine and Wine
<b>PBOC</b>	People's Bank of China
<b>PCA</b>	Partnership and Cooperation Agreement
<b>PE Model</b>	Partial Equilibrium Model
<b>PPP</b>	Public Private Partnership
<b>PRC</b>	People's Republic of China
<b>R&amp;D</b>	Research & Development
<b>RCA</b>	Revealed Comparative Advantage
<b>RMB</b>	Renminbi, Chinese currency, also called "Yuan"
<b>SAM</b>	Social Accounting Matrix
<b>SCB</b>	State-owned Commercial Bank
<b>SCM</b>	Subsidies and Countervailing Measures
<b>SEPA</b>	State Environment Protection Administration (China)
<b>Sinopec</b>	China National Petrochemical Corporation
<b>SITC</b>	Standard International Trade Classification by WTO; in this report SITC Rev. 3 was used
<b>SME</b>	Small and Medium Sized Enterprise
<b>SO<sub>2</sub></b>	Sulphur Dioxide
<b>SOE</b>	State-Owned Enterprise
<b>SPS</b>	Sanitary and Phytosanitary
<b>TAPES</b>	Trade Analysis Partial Equilibrium Sussex, suite of PE models developed at The University of Sussex, UK
<b>TBT</b>	Technical Barriers to Trade
<b>TECA</b>	Trade and Economic Cooperation Agreement
<b>Trade SIA</b>	Trade Sustainability Impact Assessment
<b>TRIPS</b>	Trade Related Intellectual Property Rights
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>VAT</b>	Value Added Tax
<b>VCI</b>	German Chemical Industry Association
<b>VDMA</b>	Verband Deutscher Maschinen- und Anlagenbauer, German Machinery Association
<b>WFOE</b>	Wholly Foreign-Owned Enterprise (also known as WFOE)
<b>WHO</b>	World Health Organisation
<b>WTO</b>	World Trade Organisation