

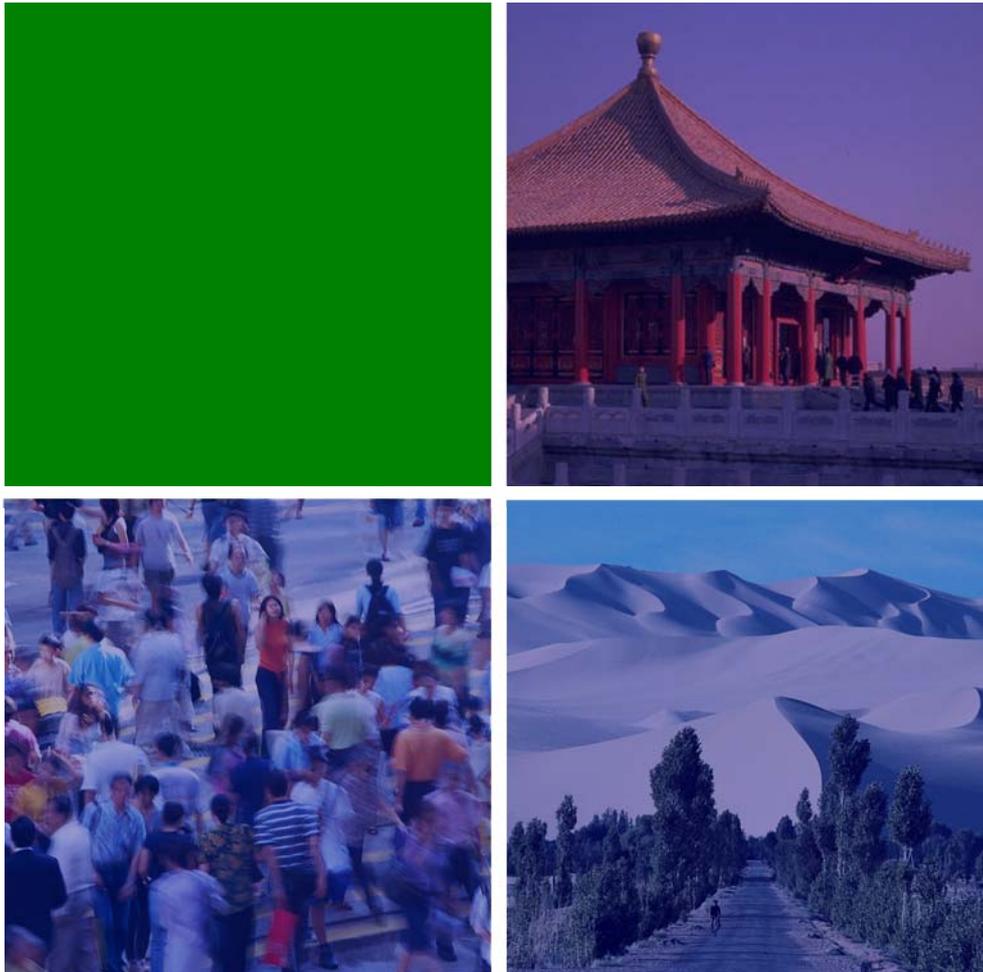


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# Trade Sustainability Impact Assessment of the Negotiations of a Partnership and Cooperation Agreement between the EU and China

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## Inception Report (Revised)

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## Glossary

<b>CGE Model</b>	Computable General Equilibrium Model
<b>Globe CGE model</b>	Regional CGE model used
<b>GDP</b>	Gross Domestic Product
<b>GTAP</b>	Global Trade Analysis Project
<b>GTAP dataset</b>	Dataset for Globe Regional CGE model from GTAP
<b>PCA</b>	Partnership and Cooperation Agreement
<b>PE Model</b>	Partial Equilibrium Model
<b>TAPES</b>	Trade Analysis Partial Equilibrium Sussex, suite of PE models developed at The University of Sussex, UK
<b>MDGs</b>	Millennium Development Goals
<b>NTB</b>	Non-Tariff Barrier
<b>aveNTB</b>	ad valorem or tariff equivalent of NTB
<b>PPP</b>	Public Private Partnerships
<b>SAM</b>	Social Accounting Matrix
<b>SPS</b>	Sanitary and Phyto-Sanitary
<b>SIA</b>	Trade Sustainability Impact Assessment
<b>TBT</b>	Technical Barriers to Trade
<b>TECA</b>	Trade and Economic Cooperation Agreement
<b>WITS</b>	World Integrated Trade Solution

## 1. Introduction

China has benefited enormously from globalisation by following a development model of slow, incremental liberalisation which emphasises the incorporation of the latest foreign technologies in order to achieve a leapfrog effect. According to official statistics, this has meant that China's GDP (as measured by purchasing power parity) has increased over 6-fold over the last 20 years, driven mainly by its exports which have grown annually by about 25% for the same period. Today, exports account for around 60% of GDP and China is the world's third largest trading nation. Following EU enlargement in 2004, the EU became China's largest trading partner and China became Europe's second. Bilateral trade stood at over € 257 billion in 2006, with China registering a trade surplus of € 130.5 billion, according to Eurostat. China's trade surplus with the US is even higher.

The magnitude of China's trade surplus with many of its trading partners has been cause for concern. This has brought to the forefront issues such as the low valuation of China's currency, the Renminbi, and unfair treatment of foreign companies wishing to sell their products in the Chinese market. Many in Europe perceive that a range of policy instruments in China place European exporters and investors at a disadvantage. These instruments vary from selective public procurement, state sanctioned dissemination of unlicensed foreign IP, 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 and implemented by the same consortium of this Trade SIA, quantified the cost of these non-tariff barriers to European exporters at over €21.4 billion<sup>1</sup>.

China argues that maintaining controls on its exchange rate provides an element of stability for the economy, allowing important gradual reforms to take place. At the same time, China has to tackle the challenges of an increasing labour surplus and a large amount of its domestic companies operating on very low margins, struggling to compete with multinational incumbents. The large trade surplus of China with Europe and the United States, many in China argue, is largely a result of changing global supply patterns with higher value-added goods originally manufactured in more developed Asian countries passing through China to be assembled and re-exported.

### 1.1 Europe and China: The Potential for Partnership to Address Joint Economic Environmental and Social Challenges

Global competition has seen the gradual restructuring of Europe's more traditional manufacturing industries and a corresponding increase in service-based industries. Even so, the EU still consumes more than 2.6 trillion kilowatts of electricity a year and 14.5 million barrels of oil per day. DG Environment estimates that the total amount of waste generated each year in Europe is around 2,000 million tonnes of which over 40 million tonnes is classified as hazardous. It also faces a number of social and economic challenges as the population ages.

Europe has begun to formulate a comprehensive response to the challenges of sustainable development with civil society groups in Europe increasingly involved in the up-take of stakeholder-oriented policies (the Trade SIA is an example of this). Many countries in the EU have introduced recycling requirements and are gradually expanding the responsibilities of producers throughout the supply chain. Europe, in partnership with other countries, has established market mechanisms such as emissions trading to address the challenges of achieving sustainable development. At the same time, steps are being taken to address some of the social issues related to increased global competition such as the Globalisation Adjustment Fund (EGF) which is an annual € 500 million fund to help EU workers cope with job losses in less competitive sectors.

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<sup>1</sup>Study on the Future Opportunities and Challenges in EU-China Trade and Investment Relations 2006-2010 (henceforth referred to as the 'Competitiveness Study')

Despite its astonishing growth, several serious challenges remain for China as social and environmental indicators are failing to keep up with economic improvements. GDP per capita, at USD 1,700, still lags far behind the level of any economy that matches China's industrial strength, while an excess supply of labour continues to exist, particularly in rural areas.

Urbanisation on a massive scale means that the government is under intense pressure to create employment, the problem of which is exacerbated by short-term lay-offs often associated with privatisation. China faces the challenge of reforming its social security system as the benefits of the substantial growth rate are not shared by all. Income disparity in China has widened during two decades of economic reform. According to the World Bank, China's Gini coefficient - an international measurement of income disparity - stood 0.45 in 2005. The index in India is 0.33, the United States 0.41 and Brazil 0.54. At the same time, pollution is increasingly getting out of control. The World Bank concludes that pollution is costing China an annual 8-12% of its \$1.4 trillion GDP in direct damage, such as the impact on crops of acid rain, medical bills, lost work from illness, money spent on disaster relief following floods and the implied costs of resource depletion.

China's 11<sup>th</sup> 5 year programme recognises many of these problems and provides a sober and frank summary of the challenges ahead for China's overall development. It identifies the need for China to establish more balanced sustainable economic growth ('the 5 balances'), with strong economic performance achieved through reduced energy and recourse inputs, reduced environmental impact and a greater spread of benefits to marginalized areas and sectors. The government plans to realign strategic industries by moving up the value chain, reduce overheating of some areas of the economy and increase the overall quality of development through increased innovation. These initiatives are intended to spearhead rural development and support every aspect of the rural economy ('the socialist countryside').

China and Europe recognise the need to further integrate economic governance, environment and social issues into policy formulation. Matching Europe's strengths and innovations in this area with China's challenges can serve as a solid basis for future strategic engagement, partnership and cooperation. A foundation of partnership between Europe and China built on these principles can address a number of significant challenges which still exist, particularly in the areas of trade and investment. It is clear that the current Partnership and Cooperation Agreement (PCA) between the EU and China is important for both parties in terms of economic impact, but also vital in achieving broader social and environmental policy aims.

## **1.2 EU-China Trade SIA: A dialogue for sustainable trade and investment**

The current legal framework under which contemporary EU-China relations are structured is the Trade and Economic Cooperation Agreement (TECA) which dates back to 1985. Since then, the EU-China relationship as trading partners has expanded organically through separate, smaller framework agreements on cooperation and dialogue in specific policy areas. In September 2005, the EU-China Summit called for the early negotiations on a new, comprehensive China-EU Framework Agreement to reflect the full breadth and depth of the strategic partnership between China and the EU. Following agreement between the two trading partners 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.

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 scope of the PCA will include a broad range of cooperation issues looking at economic, environmental and social aspects. One of the most important aspects of the PCA will be trade- and investment-related

issues including competition, IPR and public procurement (**Table 1**). Although these issues are already the subject of dialogue and cooperation between the EU and China, the promise of the PCA, however, is to bring together the results of the ongoing dialogues in an all-encompassing strategic framework.

**Table 1: New commitments the EU has indicated to China that it wishes to negotiate**

<b>Investment</b>	Market access commitments in the primary and secondary sectors, non-discrimination and transparency, and general principles of investment protection.
<b>Public Procurement</b>	Participation of companies in public procurement for goods, services and works contracts in conformity with each party's obligations under WTO, as well as technical discussions in view of facilitating China's commitment to join the Government Procurement Agreement.
<b>Intellectual Property Rights</b>	Provisions to achieve a high level of protection, taking into account on-going technological progress and relevant international conventions, and provisions to develop an effective system of protection of geographical indications.
<b>Customs and Trade Facilitation</b>	Increased cooperation.
<b>Exchange rate/ payment systems</b>	Setting the objective of the progressive liberalisation of capital movements.
<b>Trade in Services</b>	Addressing issues such as transparency and the regulatory environment for services.
<b>Technical Barriers to Trade and SPS</b>	Provisions to increase transparency, eliminate unnecessary technical barriers to trade, while ensuring effective regulation to achieve legitimate public policy objectives and respecting the WTO TBT and SPS agreements.
<b>Competition</b>	Provisions to ensure effective competition rules and enforcement and a mechanism for cooperation in order to avoid those anticompetitive practices adversely affecting bilateral trade and investment flows.
<b>Sustainable Development</b>	Provisions to foster the management and protection of natural resources and to promote the development of sustainable trade including its social and environmental dimensions.

Since 1999 Trade SIAs have been undertaken by the European Union during major trade negotiations to identify the potential economic, social, and environmental impacts of a trade agreement. Although it is not envisaged to negotiate a Free Trade Agreement, the PCA should cover new commitments on trade and investments, going beyond the WTO obligations of the parties. The aim of the Trade SIA is to take into consideration the economic impact of a new trade agreement, but also of other factors such as the social and environmental issues arising from a new agreement.

## 2. Methodology used for EU-China Trade SIA

A key component of a Trade SIA is to conduct an analytical and rational assessment phase, including quantitative analysis and modeling. The first part of this section outlines the modeling approaches used and highlights the issues that can be addressed and the relative importance of the impacts expected.

The second part of this section focuses on how stakeholders will be engaged in this Trade SIA. Stakeholder consultation is central to a successful Trade SIA, and forms an integral part of the data-collecting phase and reviewing of outputs. The implementing Consortium has developed an extensive network of organisations in China, spanning government agencies, academics and business which will be leveraged for this Trade SIA.

### 2.1 Quantitative and analytical tools

The modelling team will take an integrated regional economy-wide approach centred on China, and a sectoral approach that facilitates the deeper study of sectoral issues in China. The regional model incorporates levels and changes in economic variables such as output, trade, employment under different scenarios including changes in tariffs and changes in estimated aveNTBs in China and in trading partners. It also incorporates levels and changes in social variables such as unemployment and functional income distribution. The model will be extended to include environmental variables such as CO<sub>2</sub> emissions. These estimates will be supported by a qualitative assessment of water and land resources as a part of the sector studies. This approach builds on the economy-wide methodologies applied in previous Trade SIAs. The proposed modelling of sectoral issues, including tariff and aveNTB changes at a high degree of disaggregation in conjunction with new sector case study work, extends the sector model which proved a powerful tool in the EU-China Competitiveness Study.

#### 2.1.1 The Globe Regional CGE Equilibrium Model

The basic tool for the economy-wide analysis of trade, social and environmental scenarios is the comparative static Globe Regional CGE model centred on China. The Globe model is a multi-region descendant of the single country CGE models developed in the 1980s. The first Globe Regional CGE model was developed to evaluate NAFTA. The Globe model therefore has a long pedigree with well known properties. The Globe Regional CGE model uses as its primary data base a Social Accounting Matrix (SAM) and is constructed so that the Globe model generates an updated SAM with every model solution. The present Globe Regional CGE model uses a SAM representation of the Global Trade Analysis Project (GTAP) v6 dataset for 2001. The Globe Regional model is, in effect, a series of single country/region CGE models that are linked by commodity trade in which domestically produced and consumed commodities are imperfect substitutes for both imports and exports. The SAM representation of the 2001 GTAP dataset has 87 regions/countries, 57 commodities and 5 factors of production. The regions, commodities and factors can be aggregated as desired in any particular application. The regions covered include all of China's main trading partners including the 27 EU countries.

This methodology is well suited to the simulation of the economic, social and environmental impact of basic trade policy reform and can also be used to study the impact of trade induced technical change where suitable data is available. The social aspect will concentrate on measures of economic welfare, levels of employment, income distribution, poverty and more generally the Millennium Development Goals. Modelling of environmental stress or potential stress can be accomplished using estimated emission coefficients that accompany the GTAP dataset, augmented where possible by direct estimates from sector experts.

In assessing trade policy integration and liberalisation, it is important to consider the impact of policies and trends affecting both "shallow" and "deep" integration. Shallow integration involves the lowering or elimination of barriers to the movement of goods and services across national borders within the region. Deep integration involves establishing or

expanding the institutional environment in order to facilitate trade and relocation of production irrespective of national borders). Importantly, while the CGE model described above is suitable in exploring the degree of shallow integration, it will not capture the full extent of deep integration on a disaggregated sector-specific level.

### **2.1.2 The TAPES PE Model**

The strength of the Globe Regional CGE model is its capacity to capture economy wide impacts in a regional context. However, the Globe Regional CGE model cannot be disaggregated for targeting highly disaggregated sectoral analysis. The TAPES PE model is well suited for this purpose, to 'drill down' to uncover sectoral characteristics relating to tariff and aveNTBs and where possible to deep integration. The TAPES PE model used for this Trade SIA will build on recent work conducted using the TAPES PE model to quantify the impact of market obstacles on EU-China trade for the Competitiveness Study<sup>2</sup>. The TAPES PE model can be applied for most sectors explored in this SIA, including a number of Government Procurement and IP issues where new estimates of aveNTBs can be developed in conjunction with more qualitative methodologies applied to these issues in the sector studies.

There are a number of reasons why the TAPES PE model was chosen for the deeper sector analyses, and for exploratory work with new aveNTBs:

- At the most disaggregated level, the TAPES PE model can work with HS6 trade, tariff and aveNTB data available from WITS and from secondary sources such as the World Bank.
- The data requirements are less demanding because the TAPES PE model requires only sector and not economy wide data.
- The TAPES PE model can be run for the recent years that WITS trade and tariff data are available, compared to the Globe Regional CGE model which uses the GTAP dataset (most recently available for 2001).
- Sectors can be chosen to fit the sector case studies, including the sub-sectors in the sector studies where data is available.
- The loss of general equilibrium interactions can be partly compensated for by careful interpretation of results and sensitivity testing.

### **2.1.3 Indicators**

- In the case of the Globe Regional CGE model, indicators include the levels of demand for skilled and unskilled labour, returns to capital, land and resources for each national or regional economy, together with the estimated changes in the functional distribution of income for any particular scenario.
- Changes in economic welfare can be estimated by indicators such as changes in absorption or the equivalent variation method of estimating changes in economic welfare.
- Some key MDGs such as poverty reduction will be estimated from the results of the Globe Regional CGE model using a sub-model to estimate the poverty impact of each scenario.
- The Globe Regional CGE model also gives considerable sectoral detail of economic changes and estimates of trade creation and trade diversion where assessment of China's regional trade agreements is involved.
- The TAPES PE model can be used to develop scenarios in parallel with the global model. The indicators include levels and changes in sectoral output, trade and apparent consumption.

### **2.1.4 Data Sources**

The key datasets to be used are:

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<sup>2</sup> For more details see: Evans, H.D, *et al* (2007) "Market Access into China: Tariff and Non Tariff Barriers in Selected Sectors", *IDS & CARIS (University of Sussex) Joint Working Paper* (Forthcoming)

- For the Globe Regional CGE model, the GTAP dataset for 2001 will be used. This dataset includes 57 commodities, 87 regions and tariffs and tariff equivalents for traded goods including some tariff equivalents of preferential trading arrangements and non-tariff protection measures. The GTAP dataset can be aggregated to the desired number of regions, leaving the key regions in the global model (27 EU countries) and major trading partners.
- Within-China regional disaggregation is not possible within the Globe Regional CGE model. However, where supplementary data allows, within-China regional issues will be proxied from the model results.
- Carbon and other emission coefficients are available by sector with the GTAP dataset for China, the EU and major trading partners.
- Generally, aveNTB data for China will be based on the GTAP and World Bank datasets as well as the findings of the sector experts.
- In the case of the TAPES partial equilibrium model, the core dataset is from WITS (the same as used in the GTAP dataset), supplemented with domestic production data and aveNTBs from secondary sources such as the World Bank and from the sector studies.
- A consistent effort will be made to generate new aveNTB data through the sector studies for both sector outputs and generally for Government Procurement, IPR's, estimated impact of energy reducing investment and relaxation of licensing restrictions. Comparison with other estimates of aveNTBs for China such as from the World Bank or from other country estimates will also be employed for cross-checking new estimates.
- Generally, the qualitative assessment of NTBs would be greatly improved if it were possible to incorporate into the sector studies new estimates of aveNTBs by direct price comparisons for 2 or 3 key product groups for the particular aveNTBs under consideration. This method should be applicable for standard aveNTBs affecting sector output, such as for Government Procurement, for IPRs, for banking charges, for the estimated impact of different strategies for lowering emissions.

### **2.1.5 Establishing Baseline Context and Scenarios**

It is the nature of scenarios prepared within a CGE or PE model that they represent "what if" or counter-factual experiments that estimate what is likely to happen under the assumptions made in the model, the data estimates, and the policy and other changes specified. Since the PCA negotiation will not involve tariff negotiations, the modelling team will construct 'tariff equivalents' based on existing literature and the various NTBs in play. All scenarios will be prepared in consultation with DG Trade. Dynamic efficiency and productivity gains are, in a modelling sense, exogenous. Input-output coefficients can be adjusted (for example through a trend parameter). The implication is that the SIA model analysis can offer sensitivity analysis of the impact of 'high' and 'low' scenarios, drawing where possible on estimates of previous studies<sup>3</sup>.

#### **Global Context Analysis:**

An important part of the development of the Globe Regional CGE model and the TAPES PE model will be to conduct a global context analysis. This will explore baseline conditions and establishes the current constraints in trade and investment. The global context analysis will also outline the expected outcome should current conditions ('business as usual') persist and there are no new moves to liberalising trade and investment flows between Europe and China. The context analysis will take account of China's WTO accession schedule and its performance in implementing those commitments, as well as other expected changes such as in the labour supply and foreign investment.

**Ambitious ('Optimistic') Liberalisation Scenario:** After the context of EU-China trade negotiations has been established, an ambitious liberalisation scenario will be produced, whereby optimistic outcomes regarding the PCA negotiations are considered. Although this scenario will fall short of a comprehensive free trade agreement, (such as full elimination of

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<sup>3</sup> See for example Van Ark *et al.* (2007).

tariffs, full protection of IPR, full government procurement reform, full elimination of NTBs, dramatic revaluation of RMB, and full services liberalisation) it will explore the degree to which such outcomes can be achieved. The ambitious outcome scenario will then simulate the maximum extent to which these the above outcomes can be optimistically expected.

**Less Ambitious ('Realistic') Liberalisation Scenario:** The final mix of policies and commitments that can realistically be achieved will be finalised once the direction of the negotiations becomes clearer. Other scenarios could be built depending on reduction in protection, alternative regional arrangements entered into by China, more or less optimistic assumptions about surplus labour, growth of other factors and technical change. To begin with the less ambitious liberalisation scenario will consider the minimum outcomes which can be realistically expected in the PCA conditions and take a large amount of the conditions of the global context analysis on board.

### 2.1.6 Model Characteristics and Constraints

The Globe Regional CGE is a SAM based model in which all the commodities and inputs in the economy are considered. The SAM is in fact a highly disaggregated version of the National Accounts. The base structure of the each country/region economy is built into the model and individual SAMs are linked through the bilateral trade flows. This allows for identification of the major channels of transmission of economic shocks within each country/region of the model, and inter-regionally through trade flows. The GTAP dataset is unique for estimating a multiregional CGE model such as the Globe model. In this respect, the SAM based CGE models are structural models. **Table 2** below lists the main indicators and outputs that characterises the Globe Regional CGE model.

**Table 2: Indicators Modelled in the Globe CGE Model**

Core Indicators	Output from the Globe Model
Economic Indicators	Imports and exports by commodity
	<i>Levels and change by scenario</i>
Output	By sector
Trade	Imports and exports by commodity
Factors	Skilled and unskilled labour capital, land, resources by sector
Prices	Output, commodities (domestic and international), factors
<i>Macro</i>	
Real Expenditure	Savings, Consumption, Expenditure
Fixed Capital Formation	Changes in investment incentives
Exchange Rate	Real exchange rate (price of traded relative to non-traded goods)
<i>Regional Indicators</i>	
Trade Creation/Diversion	Changes in trade pattern arising from regional trade agreements
Terms of Trade	Changes in price of exports relative to imports compared to base in each scenario
<b>Social Indicators</b>	
Equity	Wage effects for skilled and unskilled labour, wage vs non wage income
Poverty	Measured for each scenario compared with base using sub-poverty model and changes in factor income, China only
<b>Environmental Indicators</b>	
General	General information on sectoral and country-level effects from impacts on main economic variables from scenario change
Environmental quality	Carbon and other emissions

CGE models are almost always economy wide, whether in the single country or regional version such as the Globe Regional CGE model. Sometimes, they also include macro

economic variables such as interest rates and determinants of the level of economic activity in the short run. The Globe Regional CGE model is economy wide but has no modelling of macro economic variables. Where important, macro economic considerations are in the background when scenarios are specified, for example involving the choice between exogenous or endogenous determination of factor prices or the real exchange rate. Very simply, when a factor price is endogenous, then the supply of that factor is exogenous. When the price of a factor is exogenous, then the employment of that factor is endogenous. The choice between exogenous and endogenous determination of factor prices and the real exchange rate, the choice of values for the exogenous variables, and the choice of compensating tax changes when tariffs cuts are analysed, are central to developing alternative scenarios to be explored. Core CGE models usually specify constant returns to scale in production and perfect competition in factor and commodity markets. These assumptions can be modified when good empirical data on scale economies and types of imperfect competition are available but often this is not possible. It is also widely believed that opening trade has a long run benefit through induced technical change. Where good empirical estimates are available, trade induced technical change can also be included in the Globe Regional CGE model.

A hallmark of CGE and PE models involving traded goods is the “Armington” assumption whereby domestically produced and imported goods in the same sector are treated as imperfect substitutes, and different country/regional sources of supply of goods in the same sector are treated as imperfect substitutes. On the export side, domestic goods and exported goods are treated as imperfect substitutes in a Constant Elasticity of Transformation (CET) function. The Armington and CET specification is widely used in CGE models, greatly improving the realism of CGE models.

The Globe Regional CGE model can be used to explore the economy-wide and regional impacts of any trade policy scenarios; the Tapes PE model focuses on particular sectors and commodities. Regional impacts on China itself are included through the regional sourcing of imports and the regional destination of exports. The latter is of particular importance when considering trade barriers in regional partners faced by China’s exporters. The great advantage of the Tapes PE model is that it can easily be used at any level of aggregation desired - at the sector study level down to HS6 which can be of considerable importance when many trade policies deal with only a specific commodity or regional markets. Note that the increase in depth of the Tapes PE model is associated with increased information from the high level of disaggregation whereas the Globe Regional CGE model has a wider breadth of outputs because these are available for all of the regions in the dataset used.

**Table 3: Indicators Modelled in the TAPES PE Model**

<b>Core Indicators</b>	<b>Output from the TAPES PE Model</b>
<b>Economic Indicators</b>	<b>Imports and exports by commodity and region of origin/destination</b>
	<i>Levels and change by scenario</i>
Trade	Changes in trade pattern arising from regional trade agreements
Production	Changes in domestic output
<b>Social Indicators</b>	
Economic welfare	<ul style="list-style-type: none"> <li>- Changes in apparent consumption</li> <li>- Consumer and producer surplus</li> </ul>

The analysis of standard trade policy and aveNTB reform in both the Globe Regional CGE model and the TAPES PE model generate a large body of indicators. Added to this is the proposed quantitative analysis of sustainable trade policy reform outside the standard trade policy areas, such as services liberalisation and IPR, and in the analysis of the environmental issues. The quality of these extensions to standard CGE and PE modelling work will be greatly influenced by the availability of supplementary data. **Table 4** below

outlines a current realistic estimate of what negotiating objectives can be taken into account with the CGE and PE models.

**Table 4: Negotiating objectives considered in CGE and PE simulation models**

<b>Investment</b>	The effects of a liberalisation of foreign investment and the impacts on domestic investment will be considered exogenously in both the CGE and PE models based on sector study estimates and incorporated into scenarios. For example if foreign investment increases by 25%, how this will influence other parts of the economy – in particular domestic production - can be traced in both the CGE and PE models.
<b>Public Procurement</b>	An attempt will be made to compare prices of goods and services purchased by the public bodies as opposed to private consumers, supplemented by key informant interviews. This could be done for the most important commodity groups involved. This price differential will give some insight of the quantitative impact of current public procurement policies, which can be taken into account in the models.
<b>Intellectual Property Rights</b>	The degree to which royalty payments are foregone, as well as to the extent that market share has been lost due to counterfeits remains a contested issue and will therefore be difficult to justifiably be taken into account into the models. The impact of IPR will be analysed qualitatively and quantitatively where possible in individual case studies and through key informant interviews.
<b>Customs and Trade Facilitation</b>	An attempt will be made to establish the quantitative impact of current customs regulations on the cost of imports. Should it be possible to generate such aveNTBs, the CGE and PE models will estimate the extent to which trade facilitation will have an impact on trade flows.
<b>Exchange Rate/ Payment Systems</b>	In the CGE and PE models by the exchange rate will be set exogenously. Changes in the exchange rate eg revaluation will be developed in the scenario analysis so that the impact of such revaluation on trade flows and other economic variables will be taken into account . Other aspects such as liberalisation related to capital movements will also be explored qualitatively.
<b>Trade in Services</b>	The degree to which trade in services will have an impact on the outcome of trade negotiations will be explored qualitatively. In so far as aveNTBs for these sectors can be generated through sector studies or key informant interviews, a quantitative dimension to the analysis of trade in services will be added.
<b>Technical Barriers to Trade and SPS</b>	TBT and SPS measures will be taken into account by converting these into <i>ad valorem equivalent</i> tariff rates using case study and key informant interview data.
<b>Competition</b>	Generally, the impact of a trade liberalization on domestic competition will be analysed qualitatively and through the various liberalisation scenarios considered above on the international competitiveness of domestic industry. The impact of lower prices due to increased competitiveness of domestic markets will not be considered since imperfect competition is not explicitly modelled in either the CGE or PE models.
<b>Sustainable Development</b>	This will be restricted to the CGE model and will not be able to be taken into account in the PE model
<b>Note on methodology</b>	See <b>Annex 1 &amp; 2</b> for further details on extending the dataset on aveNTBs and on Sustainable development.

### **2.1.7 Geographical Scope**

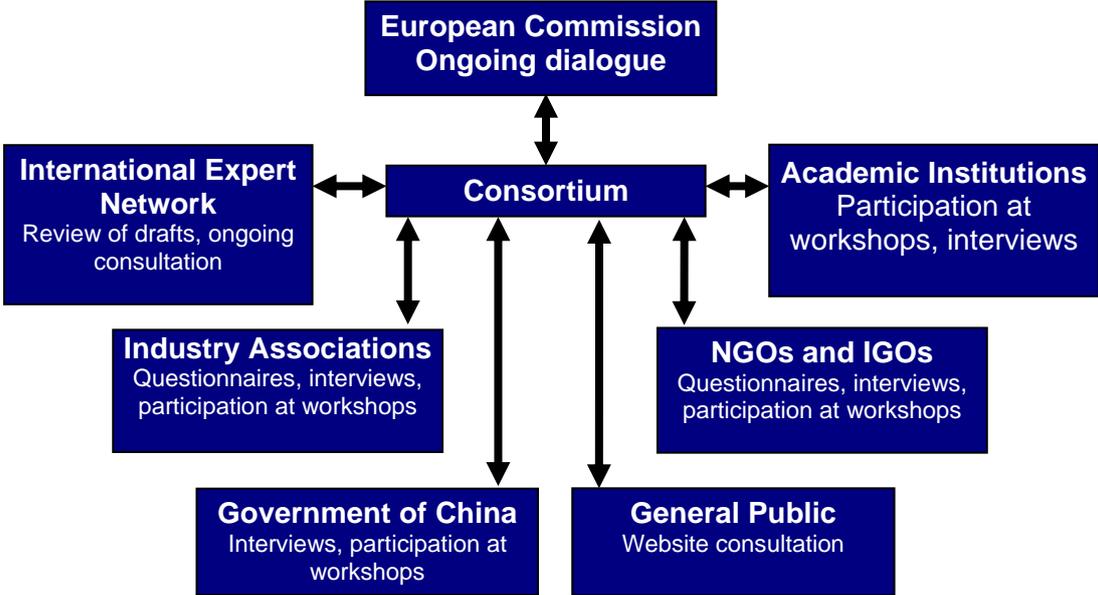
The GTAP6 database consists of 57 different sectors/commodities and 87 countries/regions. The choice of sectors/commodities and regions/ varies for particular applications. For the trade SIA using the Globe Regional CGE model, the final choice of sectors/commodities is likely to be between 20 and 30 according to the main sectors/commodities covered in the scenario analysis and the country/regional aggregation of around 20 according to the final selection of China's most important trading partners. All 27 EU member countries are included in the GTAP6 dataset, but for most purposes, it is envisaged that the EU15 and the EU12 new members would be suitable. Other selected countries and regions deemed appropriate (e.g. ASEAN) will also be included in the model. Unfortunately, the GTAP database does not provide data on China's internal regions. Should additional regional

Input/Output and SAM data for China become available<sup>4</sup>, it may be possible to incorporate an approximate regional dimension into the presentation of the results of the Globe Regional CGE and Tapes PE models.

**2.2 Consultation**

This section outlines the proposed consultation with stakeholder groups and supporting the creation of an SIA network. The communications infrastructure aims to ensure comprehensive involvement of stakeholders and includes the organisation of a workshop in China, data-collecting through fieldwork and a process of ongoing consultation and dialogue with the contracting authority. **Figure 1** shows the dialogue and flow of information during consultation activities.

**Figure 1: Consultation Framework**

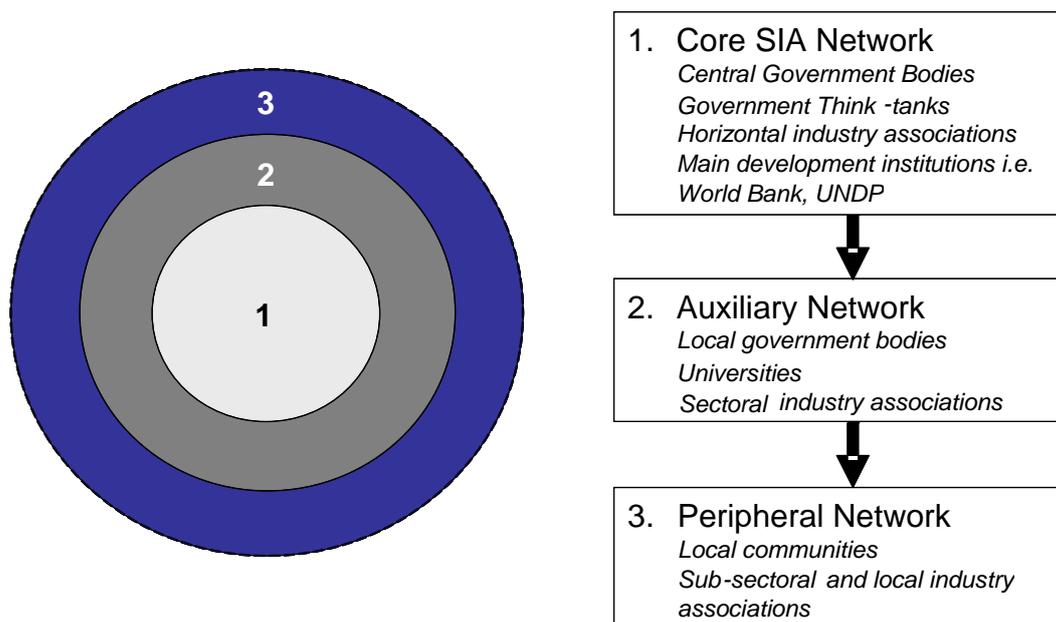


**2.2.2 Creation of SIA Network**

The mobilisation of stakeholder networks will form an essential part of this SIA. A Core SIA Network, comprising key central-level institutions which will form the basis of the larger stakeholder network will be the initial focus (see **Figure 2**). The buy-in of the Core SIA Network will be crucial in ensuring the extensive reach of the SIA consultation process. Therefore, the consortium has organised a meeting involving all Core members in order to officiate the SIA launch. The Core SIA Network will then be in a position to liaise with the members of the Auxiliary networks at a sub-central level. Auxiliary network members will then in turn liaise with peripheral network members, at which point local communities will be able to secure their input.

<sup>4</sup> Selected provinces, autonomous regions and larger cities in China publish their own statistical yearbooks in Chinese. A selection of representative regions will therefore be modelled.

**Figure 2: SIA Networks**



**A. Core SIA Network**

This network will consist of central government bodies, leading think-tanks and universities, industry associations as well as the largest international development agencies in Europe and China. The Core SIA Network will be sent email updates on a monthly basis of progress on the SIA, and will be sent an edited copy of interim reports for comment. They will also be asked on occasion to provide input or assist in liaison with stakeholder sub-groups. All documentation will be housed for public access on the dedicated Trade SIA website to be managed by the consultants.

Where possible, representatives from the Foreign Trade Departments of ministries will be contacted. If this is not possible, the consultants will invite the International Cooperation Departments. For think-tanks, representatives will include Directors of their respective research departments, which will mainly be those which cover domestic economic, social and environmental issues. Senior-level secretariat staff from industry associations will also be contacted, as well as Programme managers and senior economists from development agencies.

The EC Delegation Trade Section will form a key part of the Core SIA Network, and will provide guidance in the absence of the Steering Committee. It will also be important to involve Member States, especially during phase 3 when flanking measures are to be identified. It is proposed that when in Beijing, experts of the consultants team will liaise with representatives the EC Delegation, the European Chamber of Commerce in China and the EU-China Trade Project.

**B. Auxiliary Network**

The Auxiliary Network will consist of sub-central agencies at provincial level, local projects, sectoral associations and other stakeholder groups identified by the Core SIA network. Members of the Core will be asked to participate in the identification of particularly affected groups, the process of which will be supported by the screening stage of the SIA.

**C. Peripheral Network**

The Peripheral Network constitutes the 'grassroots' network. Individual businesses, municipal and township-level agencies, and local communities form the bulk of this network. Members from the peripheral network will be contacted on a selective, post-screening basis, as the network is too extensive to fully cover.

### 3. Current Trends and Conditions: Towards a Global Context Analysis

China remains for the foreseeable future the world's most important (re-)emerging market. The recent study for DG Trade<sup>5</sup> implemented by the Consortium argues that European industry within the tradable goods sectors should focus on gaining market share in the higher-end markets that are expected to grow on average 12% per annum, reaching a combined value of over €1,000 billion by 2010. Growth in the service sectors, where Europe has the most significant comparative advantage, is outpacing that in other sectors (14% per annum, reaching a market value by 2010 of €500 billion - excluding banking services). In addition, European operators are increasingly using China as an investment destination to develop their dual strategy of developing cost-cutting strategies through China-based manufacturing while at the same time capturing the emerging Chinese market for quality products. China's renewed ambition to pursue sustainable growth through increasing energy efficiency, investing in renewable energy and improving overall environmental protection has considerable implications for Europe's materials, engineering, construction, machinery, chemicals, automotive and ICT sectors. It is estimated that the market value for the application of environmentally sustainable technologies and services in these sectors could amount to over €98 billion by 2010.

Although a member of the WTO, China has signed, or is negotiating, various trade agreements with many with its Asian trading partners (in particular ASEAN), but also with more distant trading partners in Africa, the Middle East and Latin America. In view of the proliferation of regional free trade agreements among WTO members, China is not falling behind this trend and is engaged in negotiations for 9 regional free trade agreements involving 27 countries and territories that could cover one fourth of China's total foreign trade (**Box 1**).

#### Box 1: List of Trade Agreements Under Negotiation by China

1. *Closer Economic Partnership Arrangements (CEPA)* with Hong Kong and Macao with zero tariff and 27 service sub-sectors in addition to the WTO schedule of commitment.
2. With ASEAN, the *Comprehensive Economic Cooperation Framework Agreement*, and the *Agreement on Dispute Settlement Mechanism* are planned for conclusion by 2010.
3. China and the ASEAN signed an agreement on *trade in services* in Cebu on January 15 2007-a major step toward establishing a free trade area (FTA) in the region by 2010.
4. The *China-Chile Free Trade Agreement* zero tariff for 97% of products to be achieved within 10 years. Negotiations on services and investment will commence soon.
5. China-Pakistan on-going negotiations on *Early Harvest Agreement* on all products.
6. 4 rounds of negotiations with the Gulf Cooperation Council on a Free Trade Agreement, expected to conclude soon.
7. 8 rounds of negotiations with New Zealand for a Free Trade Agreement covering trade in goods, trade in Services and investments, expected to conclude within 1-2 years.
8. 5 Rounds of negotiations for a Free Trade Agreement with Australia, planned to conclude within 1-2 years.
9. Negotiations with the Custom Union of Southern Africa (South Africa, Namibia, Lesotho, and Swaziland) are planned to start soon.
10. Negotiations with the Republic of Korea, Japan and Iceland are at an exploratory stage.

Despite the significant opportunities brought about by China's increasing integration into the world trading system, the increasing importance of China as a trading partner also presents new challenges to Europe's economy, the environment and social policy. China's low-wage workforce, combined with a still relatively underdeveloped framework of environmental safeguards, is common to many developing countries, although few have had the scale of impact that China has had. Europe, along with other advanced economies

<sup>5</sup> Study on the Future Opportunities and Challenges in EU-China Trade and Investment Relations 2006-2010

reliant on knowledge-based economic growth, must carefully consider its response to these challenges. The EU-China Trade SIA contributes to finding a joint solution to these challenges by supporting the dialogue for sustainable trade and investment between policy-makers in the EU and China, while also actively involving key stakeholder. In particular the Trade SIA will identify ways in which liberalising trade with the world's most populous nation can produce a win-win outcome supported by a number of mitigation and enhancement measures. However, before this can be done a baseline Global Context Analysis must be conducted to establish what outcomes can be expected if current trends are extrapolated and no further advances are made in liberalising the mutual trade and investment climate. The sections below represent the first steps towards constructing a more in-depth baseline analysis that will be presented in the Global Context Analysis Report at the conclusion of Stage 1 of the EU-China Trade SIA (for more details see **Section 5** on Project Implementation and Forward Work Plan)

### **3.1 Current Policy Environment**

This section will feed into the Global Context Analysis Report and provides an initial assessment of the context and policy environment overview of the negotiating objectives of the EU-China PCA taking into account existing commitments of China under WTO - to what extent these commitments have been implemented, as well as other existing tariff and non-tariff barriers and implication on effective market access. Though it has improved significantly in recent years China's regulatory environment still remains challenging for foreign businesses to navigate. The regulatory regime is fragmented and opaque, lacking transparency, and international standards have not been adopted as a 'norm' but rather have been adopted with 'Chinese characteristics'.

To some extent, China's position as a developing country explains the lack of legal certainty which forms the basis for predictability in business. Many Chinese officials lack the necessary administrative training and are unaware of international rules such as those of the WTO. Despite the reforms China has undertaken, Marxist theory is still taught nationwide in schools and a mentality of central planning also prevails over the use of market mechanisms and rule of law. At the same time a number of industries remain protected from global competition. Through industrial policies and the desire to create national champions, both legislation and administrative practices have on several occasions undermined the market system towards which China proclaims to be striving. The following section will provide an overview of the negotiating objectives described in the TOR and briefly describe their relevance in China's context.

#### **3.1.1 Investment Rules**

Investment rules are understood to refer to market access, non-discrimination and transparency and investment protection. China follows a highly strategic FDI policy, which prescribes detailed guidelines on sectors and modes of investment. On market access, China's Catalogue for Guidance of Foreign Investment Industries describes in detail the sectors and sub-sectors in which FDI is either prohibited, restricted, encouraged or permitted. The investment catalogue is not a legally binding document in the sense that restricted sectors are still technically open to investment, however, it may be more difficult to gain regulatory approval and there may be additional restrictions as a result. A description of the investment class of each of the sectors to be covered in this SIA is shown in **Table 5**:

**Table 5: China investment catalogue classification of sectors mentioned in TOR**

<b>Sector</b>	<b>Investment class</b>	<b>Conditions</b>
<b>Agriculture (meat, dairy) and food products</b>	Mostly encouraged	Grain production restricted
<b>Petrochemicals and chemicals</b>	Petrochemicals: Mostly restricted Chemicals: Partially encouraged	
<b>Pharmaceuticals</b>	Partially encouraged	
<b>Automotive, motor vehicles</b>	Encouraged	50% equity limit on Joint-Ventures
<b>Textiles</b>	Partially encouraged/restricted	Cotton and wool spinning, silk reeling restricted
<b>Machinery and electronics</b>	Mostly encouraged	
<b>Forestry</b>	Restricted	Planting of trees is encouraged
<b>Distribution services</b>	Encouraged	Restrictions still apply on certain products
<b>Construction</b>	Mostly restricted	
<b>Banking</b>	Restricted	Recently liberalised (Dec 2006)
<b>Telecom</b>	Encouraged	50% equity limit on Joint-Ventures
<b>Environmental goods/technologies</b>	Encouraged	

Significant market access commitments to be made by China would likely include lifting of equity caps in technology-intensive sectors such as automotive and petrochemicals. International companies in these sectors have complained strongly that their local partners have been uncooperative and in many instances behave more like rivals than as partners. Indeed, the main purpose of the JV model was to ensure that local companies learned the skills and technologies from foreign counterparts. Now that they becoming increasingly adept at utilising advanced technologies and management know-how, they are providing formidable competition in the domestic market.

Another issue in investment is the imposition of local content rules, the most visible being the 40% rule on auto parts which is currently the subject of a consultation under the WTO. In sub-sectors such as wind power generation, local content requirements reach as high as 80%. These rules oblige the foreign investor to manufacture a certain proportion of their final product locally, contrary to the spirit of the WTO and particularly the agreement on TRIMs. Again, the main motivation behind local content rules in China is to localise production of advanced technologies, a step which foreign companies are often reluctant to take due to IP protection concerns.

### **3.1.2 Public Procurement**

Non-transparent and discriminatory procurement practices are common in China. Corruption is a common theme running through foreign investor complaints of unfair procurement, as is poor planning and lack of capacity in technical aspects of procurement. When foreign companies do win large bids, it is usually because they have agreed to provide training and transfer technology to local companies.

Article 10 of China's Government Procurement Law (GPL) states that unless goods or services cannot be provided domestically or unless the use of the goods and services will be overseas, government entities should select domestic products. In addition the catalogue which lists the range of goods and services covered by procurement rules is relatively short and refers mainly to items such as office supplies. Public works are not covered.

In addition, a national framework on legal and contractual forms of Public Private Partnerships (PPP) is lacking. While some regions such as the Beijing municipality have taken the lead in issuing such regulations, it is unclear whether China intends to implement a nationwide system for PPPs.

China announced in April this year that it intends to table an offer for accession to the Government Procurement Agreement (GPA) by December 2007. While it may take some years between the launch of the negotiations and the conclusion of an agreement, GPA accession will be a positive step forward in procurement reform for China. Some key issues will include the scope of entities covered, with particular reference to state-owned enterprises.

### ***3.1.3 Intellectual Property***

IP protection in China has consistently been one of the highest concerns for European industry, which is experiencing an erosion in the value of their intangible assets due to poor enforcement. While China has reiterated its determination time and again to crack down on IP infringement and bolster innovation, limited progress has been made so far.

While China is a member of the WTO, and a signatory of TRiPs and other conventions, there still remains a fundamentally different view in China concerning the role of IP, particularly patents, in relation to economic growth. Rather than perceiving IP as an area for creating value, as is the case with developed economies, Chinese industry perceives that the requirements of IP payments to foreigners is an affront to its development.

Hence, domestic manufacturers are often encouraged by government agencies to ignore royalty payments concerning the use of patented foreign technologies. For instance, DVD player manufacturers consistently refuse to pay licensing fees for the 6C, 3C and 1C technologies owned by foreign patent alliances. In other instances, government ministries have even assumed a pro-active role in disseminating technologies, such as the infamous case of Combustion Engineering, which licensed its boiler technology to the Ministry of Electric Power, only to find that all Chinese boiler makers had rapidly acquired the technology.

Observers have now 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 overseas developing country markets, thus not only eroding the value of foreign firms' IP but also their legitimate markets.

On copyrights and trademarks, the situation is just as serious. China is notorious for being the counterfeiting capital of the world, with 65% of counterfeit goods seized at the EU's borders originating from China. Pirated books, CDs and DVDs can be openly found for sale in all of China's major cities.

The situation is exacerbated by an overlapping and conflicting institutional and legal framework. Courts share similar functions as administrative bodies, there are overly burdensome requirements concerning the legalisation of court documents, several interpretations exist for the valuations of infringements, and relatively light sentences for infringements make for weak deterrents.

### ***3.1.4 Customs and Trade Facilitation***

China Customs has made considerable progress in recent years, having had to keep up with the management of trade volumes rising at about 30% every year. Clearance times in many sea ports have been cut from as high as 22 days in 1995 to under 2 days currently. Current modernisation efforts include the incorporation of increasingly automated data exchange platforms, as well as the adoption of more sophisticated control procedures in the area of risk management.

However outstanding problems still remain in resolving inconsistencies across various ports of entry, notably in valuation practices. This has had the effect of importers going 'port shopping', which is essentially the selection of different ports of entry depending on the type of goods in order to obtain the most favourable tariff classification.

Onerous documentation requirements also create onerous administrative requirements for traders, who often need to submit applications to and gain the approval of as many as 6 agencies before being able to proceed with importation/exportation. Implementation of a 'single window' or one-stop shop would do much to streamline procedures.

Moreover, there is a lack of transparency of China Customs regulations for foreign operators. No English-language website of China Customs currently exists, and traders must be physically present at inquiry points to have their questions answered.

### ***3.1.5 Capital Movements: Exchange rate/ Payment Systems***

China currently has a tightly controlled current account, and since the supposed lifting of the US dollar peg, there has been a decline in the transparency of factors determining the value of the RMB as to the composition of basket of currencies to which the RMB is now pegged is not known.

While the central government has repeatedly stated its intention to move to a more flexible currency regime in the long-run, there are number of reasons not to expect immediate changes. 'Hot' speculative capital, mainly in the form of real estate investment, has poured into China, applying 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'.

Nonetheless, further liberalisation of currency markets is expected to come, which will likely apply further upward pressure on the RMB. A more liquid FX market, further availability of FX swaps and the participation of major institutional investors in the FX market in addition to further international pressure are factors contributing to faster incremental appreciation.

### ***3.1.6 Trade in Services***

While China's booming merchandise trade has resulted in a rebalancing of the world trading system in the last decade, the service industry is a different story. China enjoys little comparative advantage in services sectors, where knowledge of local markets and innovation play a more important role than in labour-intensive manufacturing.

Hence there is much concern among Chinese policymakers about the crowding out effects of FDI in sectors ranging from telecoms to banking. Licensing procedures are often lacking transparency, the important issue in the telecoms sector being the allocation of licenses to operate 3G mobile phone networks. Licensing in the telecoms Value-Added Services (VAS) sectors is also a source of concern. While China has committed to liberalising VAS, foreign companies report that while over 15,000 licenses have been handed out, less than 10 went to foreign operators.

Foreign operators in the banking sector, a designated 'strategic sector' in China and subject of heavy protection, have been experiencing long delays in the application for licenses and are subject to vague application criteria. In addition foreign banks are subject to much higher capital requirements and capital adequacy ratios than local banks.

Foreign involvement in construction services in China (China's largest service export) has also been limited due to insurmountable regulatory requirements. There are obstacles concerning hiring of foreign architects and engineers, restrictions on the provision of cross-border project management services, high capital and assets requirements and qualification

restrictions concerning the grade of projects undertaken by the foreign partners in consortiums.

### **3.1.7 TBT and SPS**

Certification issues remain problematic for foreign operators in China. Many view the newly-established General Administration for Quality Supervision, Inspection and Quarantine (AQSIQ) as an agency created specifically to create national certification procedures to block imports. In addition, China is also experimenting with home-grown technological standards which diverge from internationally-accepted ones.

China Compulsory Certification (CCC) is one of the most contentious certification procedures in China, affecting a wide range of goods. The procedure is time-consuming, expensive and overlaps internationally-recognised certificates. In addition, foreign operators are obliged to pay the costs for Chinese inspectors to inspect manufacturing facilities in their home countries.

China's determination to use home-grown standards has on some occasions created significant obstacles for foreign products. The most notorious case was the nationally-imposed WAPI standard, the wireless internet protocol, which would have effectively blocked wireless internet access by any computers made outside of China. After intense lobbying from foreign chipmakers and government, the government decided to postpone implementation of the standard indefinitely.

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.

### **3.1.8 Competition**

China is currently in the final stages of passing the draft Anti-Monopoly Law (AML), which would represent the first comprehensive piece of competition legislation in China. However, there are some concerns among the international community over the purpose of the law, which some say is primarily to target multinationals. A separate concern exists over the IP-related provisions in the law, which, in their current wording, could force foreign IP holders to hand over their IP on charges of 'IP abuse'.

Another problem is the question of enforcement authority. As the AML currently stands, enforcement authority will be distributed among two horizontal agencies and a plethora of sectoral regulators. In view of the heavy vested-interests of sectoral regulators in various state-owned enterprises in their respective sectors, some doubts exist as to whether the law will have any effect on the state-owned sector at all.

Nonetheless, some positive developments have taken place in the law. For instance, the provisions on administrative monopolies seem to have been reinserted after much debate. State-sanctioned monopolies are prevalent across most sectors in China, though it remains to be seen what powers the enforcement authority will have to act against other agencies.

Other areas of concern are that current M&A legislation is taking a turn towards protectionism. A recent revision to M&A regulations designates several sectors and types of companies for which acquisition will require special approval. Moreover, the M&A regulation in general is discriminatory in the sense that it only applies to foreign investors.

One element which has not been addressed in the draft regime on competition however is state aid, which has the potential to distort competition particularly in the case of subsidies to overseas investments. China currently operates a vast system of direct and indirect subsidies, fuelled by its decrepit banking sector which often, due to political pressure, grants discounted loans or simply writes them off.

### ***3.1.9 Sustainable Trade and Natural Resources***

China's burgeoning economy has caused considerable impact on global commodity prices as it imports vast quantities of raw materials to fuel its manufacturing sector. While this is due to the relocation of production for much of the world's manufacturing of commodities, there remains much space for improvements in resource intensity. The EU has much to offer China in terms of sustainable technologies, be it in electricity generation, waste management or biodiversity management. Trade policies can be adjusted in several ways to in order to promote the environmental and social ends.

## 4. Provisional Exploration of Key Sectors for the Trade SIA

This section provides short summaries for some of the key sectors that have been identified at an early stage explored in the Trade SIA. Please note that the forthcoming Global Analysis Report will identify five priority sectors which will be taken forward for in-depth analysis.

### 4.1 Machinery and Electronics

The EU is the world's largest importer and exporter of machinery, with 34% of the global market share. The industry's EU-25 turnover in 2005 was €360 billion, while exports were at €131 billion. The machinery sector is a strategic sector due to its cross-industry application and its role as an important enabler for other industries, often supplying key inputs for production processes. 65% of innovations within the manufacturing sector as a whole emanate from innovations within the machinery and equipment sector. Despite the EU's continued global dominance in this sector, emerging economies including China are increasingly gaining market share at the lower-end of the market. Due to the low-cost base of Chinese producers, European companies are finding it increasingly difficult to compete in the production of certain of these lower-value sub-sectors, particularly in the electrical machinery segment.

At the same time, China's capital investment-driven growth means significant market opportunities exist for European companies, particularly in mechanical engineering where they continue to enjoy a strong competitive advantage. The drive for lower energy intensity will lead to an increased demand for more energy efficient machines, power generators and renewable energy-related equipment, a field in which the European machinery industry excels. European operators must continue to capitalise on their superior knowledge of producing specialised, innovative, highly integrated and precise machines. Projections to 2010 put sales growth for European companies at 10% per annum, making China the market with the highest growth potential in the Asia-Pacific region for customised services. While China still has a trade deficit in machinery, import substitution policies should result in a trade balance by 2008-2010.

### 4.2 Petrochemicals and Chemicals

The EU is the leading chemicals producing region in the world (28% of world production) with a €360 billion annual turnover. The chemical industry's contribution to the GDP in the EU-15 amounts to 2.4%. This sector provides inputs to, and enables virtually all other sectors of the economy and therefore directly affects the competitiveness of its downstream user industries. The strong overall growth of the Chinese economy directly effects demand for chemicals. When compared with other international markets China's chemicals industry shows the highest growth potential for foreign chemical companies aiming to take advantage of these growth prospects. However, through restructuring and upgrading of large-scale production sites, Chinese industry is increasingly able to satisfy domestic demand through its own resources. Important measures to be taken for European industry to remain competitive include the need to innovate and invest and to develop with economic and environmental sustainability in mind.

2004 saw China's chemical imports (including pharmaceuticals) valued at around €44 billion (bn) and the size of the domestic market reach around US\$ 180 bn. If further reforms (e.g. improved IP protection and the company law regime) continue to support market growth trends in key customer industries (manufacturing, construction and farming) the chemicals industry will grow at a compound annual growth rate of 10.2%. European commodity chemicals producers in upstream segments should be able to be in a position to leverage their financial strengths and invest in China, while speciality and fine chemicals producers should seek further export opportunities in China. Chemical companies should continue to capitalise on the strength of their customer relationship management expertise to provide customer specific R&D and servicing. Overall, European operators should build on their

position as the world leaders in terms of energy efficiency, environmental management and the development of environmentally-friendly materials.

### **4.3 Processed Agricultural Products**

The EU is the world's leader in agricultural products both in terms of output, exports and imports. In the agricultural products exports market, the EU holds 10% of the global share (excluding intra EU trade). This equates to roughly EUR 35 billion and accounts for 9% of the EU's entire exports. However, most of the EU's agricultural products are currently prohibited in China given stringent SPS rules on European imports. Therefore resolving these SPS/TBT issues for European agricultural products to China will be a future priority for European agricultural producers.

EU exports to China have been unable to reach full potential due to market obstacles such as China's SPS regime, insufficient logistics for transport to and from China as well as storage in China, and insufficient protection of intellectual property rights for some high-value agricultural products. Export opportunities exist in the agricultural services sector as the EU has substantial experience in organic production, value-added food production and sustainable land management. European operators also have considerable investment opportunities in China's rural economy such as in irrigation systems, supply chain management services, eco-tourism and biodiversity protection.

### **4.4 Environmental Goods and Technologies**

Sustainable development has been identified as an important priority for the Chinese government. China's 11<sup>th</sup> five year programme (2006-10), contained many references to sustainable development and places rural development (e.g. infrastructure, health, education and rural credit), energy efficiency, environmental protection and innovation throughout *all sectors* at the forefront of Chinese policy. Significant opportunities will emerge for European environmental equipment manufacturers in a wide range of environment and energy sub-sectors. For example, the Chinese government intends to spend US\$1.8 billion on the construction of hazardous waste treatment centres and has stipulated that all coal-fired power plants must install desulphurization equipment by 2010. China's sustainable development needs are well matched by the expertise offered by European sector operators in a range of sectors.

With significant problems of environmental pollution, China offers significant growth opportunities to European technology and service sector suppliers in the environmental and energy efficiency fields. China has prioritised the water sector before air or solid waste management and this is where most European operators have developed opportunities in China. China currently lacks the expertise to produce the most advanced environmental protection equipment itself.

### **4.5 Banking Services**

China's banking industry is considered as one of the weakest sectors in China, and saddled by bad debt and under-performing assets. A high non-performing loan (NPL) ratio at China's four biggest banks produces a high concentration of risk. For European banks entering the Chinese market the potential rewards will likely outweigh the risks, for example the attraction of China's domestic savings pool which is estimated to be worth between € 1.2 and 1.4 trillion. As Chinese banks compete mainly in the retail banking sector and have few capabilities beyond that, there exist significant opportunities for European banks to develop within the Chinese investment banking sector. Despite the recent opening of the banking sector, there still remain a large number of areas where market access for European banks can be improved. Indeed, many European banks feel that the restrictions that have remained since the new banking regulations were issued in December 2006 are more constraining than they had hoped.

Despite this, strong growth in the Chinese economy means that a sustained 20% annual growth of consumer loan business, 50% in credit card business and 15% in business

transactions is expected. Due to limited market access, current market share of European banks is only 0.8%, though this is expected to grow to 3.5% by 2010.

#### **4.6 Automotive Sector**

Europe represents the world's largest automotive production region accounting for 34% of world output and for 14.9% share of world trade. Historically, European car manufacturers have featured prominently in China and have started as leaders in the 1980s with European company Volkswagen as the first to set up a Joint Venture. However, in recent years European manufacturers have seen their market share decrease, falling from 60% in the late 1990s to less than 38% in 2005 in favour of other foreign manufacturers gaining market share, particularly from East-Asia. Still, European motor vehicle exports to China were US\$1.751 billion and imports from China into the EU were approximately US\$ 200 million in 2005<sup>6</sup>.

As far as China, manufacturers have focused on car parts supply for completed vehicles. European car parts exports to China were US\$ 1.5 billion in 2005 while imports from China into the EU grew to over US\$ 600 million in 2005, posting a yearly average growth of 60% from 2002 to 2005<sup>7</sup>. Regarding full-fledged automotive production, independent domestic producers only hold around a quarter of the market, however this is likely to increase given the high investment levels of domestic manufacturers. As well, China is likely to become a more predominant source destination as global carmakers are increasingly expecting to source full production in China.

The auto industry in China accounted for RMB 1.2 trillion in terms of output for the latest available figure, representing 5% of total industrial output and 1.8% of GDP<sup>8</sup>. Regarding employment, the sector employed 1.6 million workers as of 2003<sup>9</sup>, which is a large number but relatively less significant compared to other sectors in which over 10 million workers are employed. In terms of environment, the sector is of primary importance given the negative effect of an increasing number of vehicles on China's already delicate environment. Increasing vehicle ownership has led to exhaust emissions becoming a major source of pollutants, and of particular concern are the domestically designed and manufactured cars which emit 10-20 times more CO<sub>2</sub>, NO<sub>2</sub> and hydrocarbons than European, US and Japanese models<sup>10</sup>. The need to use environmentally friendly technology gives an advantage to European companies since new standards introduced by the Chinese government to combat air pollution are modelled after European regulation. Thus, it can be expected to see an increase in cooperation with European partners both for complete vehicles and for components.

#### **4.7 Textiles Sector**

China is the world's largest exporter of textiles and clothing as well as the leading buyer of textiles machinery equipment<sup>11</sup>. The performance of the Chinese exports has tremendously increased after the recent Agreement on Textiles and Clothing (ATC) that led to significant liberalisation from some trade quotas in the industry. China's share of the EU garment market reaching 29% in 2005, up from 20% in 2002<sup>12</sup>. In 2005, imports from China into the EU accounted for nearly US\$5 billion in textiles and US\$23 billion in clothing and accessories, up from US\$2 billion and US\$10 billion respectively in 2002<sup>13</sup>. At the same time, liberalisation has led to a decrease in average unit price due to a considerable increase in production capacity and heightened competition in the market.

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<sup>6</sup> Data accounts for passenger motor vehicles (excluding buses). Comtrade.

<sup>7</sup> Motor parts imports from China grew from \$148 million in 2002 to \$610 million in 2005. Comtrade.

<sup>8</sup> Data as found on China's Ministry of Commerce (MOFCOM)

website <http://brandpromotion.mofcom.gov.cn/aarticle/g/200609/20060903171625.html>

<sup>9</sup> China Association of Automobile Manufacturers.

<sup>10</sup> Economy, 2004.

<sup>11</sup> according to the International Textile Manufacturers Federation

<sup>12</sup> The Global Textile and Clothing Industry Post the Agreement on Textiles and Clothing, Hildegunn Kyvik Nordas, WTO 2004

<sup>13</sup> Textile and Clothing & Accessories data. Comtrade.

The social importance of the textiles sector in China is significant, with the sector employing over 12 million workers<sup>14</sup>. Despite the growth of the market, some negative effects on employment, such as extensive layoffs, are likely to take place as consolidation occurs throughout the sector. Also, increased competition already pushed down prices of textiles and apparel, and has a diminishing effect on wages. These changes will particularly affect the migrant population which has traditionally been employed in the sector, including many women.

The textiles industry accounts for 7% of industrial output. While it evidently has a large impact socially, it does not nearly have a similar impact economically and thus not as significant. Environmentally, the textiles sector has a varying degree of impact depending on type of fabrics produced and method of production. Specifically, glues used in some fabrics pose the highest threat in the sector. However, as a whole the sector is not considered a major contributor to environmental disruption in China.

Regarding future trends in the trade mechanism, it seems that in the near future Europe will be expecting a larger influx of Chinese imports as trade will be further liberalised in the beginning of 2008 as agreed in the ATC. China is likely to continue to dominate in the mass market given its low cost comparative advantage. On the other hand, Europe textile operators should be able to maintain their competitiveness in the higher value added sector of the market, such as weaving.

#### **4.8 Distribution/Retail**

In 2005 retail sales<sup>15</sup> reached RMB 5,659 bn, making China the 7<sup>th</sup> largest retail market<sup>16</sup> in the world and the world's largest emerging retail market. The retail sector employs nearly 7% of the population and its growth will certainly have a strong social effect on increased employment and household income<sup>17</sup>. The distribution sector consumes a significant deal of resources including water, energy, as well as combustion gases indirectly consumed by the transportation fleet. There is already an evident need for China to deal with waste management both for the environment and in order to be more economically competitive.

European companies account for 17 of the world's top 20 retailers. Many of these large retailers have established a solid presence in Chinese first-tier cities and are increasingly expanding to second- and third-tier cities due to rising incomes and population densities. While the share of European companies of total foreign retail sales is slightly decreasing compared to other non-European foreign retailers, it is still growing in absolute terms. As a whole, total value of sales in the Chinese market is expected to increase to almost € 1 trillion by 2010 from about € 600 billion in 2006, posting well over 10% average yearly increase.

China is also a key source for sourced goods with the largest retailers exporting tens of billions of Euros worth of goods. The sector is important as China spends 35% of its income on food, a considerable higher ratio than in more developed industrialised countries. Also, more opportunities await European companies as the number of brand- and health-conscious consumers that are willing to pay a premium increases.

#### **4.9 Construction Industry**

For the EU, the construction industry holds an important position as EU's largest employer, so understanding the competitive threats from abroad, including from China, is very important. The Chinese construction sector is vibrant across all of its sub-sectors, reflecting significant economic growth and the need to build infrastructure. Considering China's stage of development, the share of construction spending relative to GDP is expected to increase as China moves up to be a newly developing country and opportunities for growth are abundant.

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<sup>14</sup> 2004 figure. It includes textiles and clothing and excludes leather. China Statistical Yearbook.

<sup>15</sup> Figures include wholesale and retail

<sup>16</sup> After US, Japan, UK, Germany, France and Italy, Retail Forward, 2005 estimates

<sup>17</sup> Employment figure in the sector was computed using figures available in the China Statistical Yearbook 2006

Construction contributes to about 5% of China's GDP, or slightly above RMB 1 trillion of about RMB 18 trillion GDP in 2005<sup>18</sup>. The industry employs roughly 5% of employed people in China.<sup>19</sup> While the sector is expected to grow in absolute investment terms, the number of people employed is likely to level off as human resources are used more efficiently.

European companies provide quality engineering, design and management services, and are in a good position to profit from these opportunities. Given the specific high-end niche in which they operate, China does not pose a high level of threat in terms of price competition. Most Chinese construction companies operate in the less sophisticated segments of construction, characterised by high volume low margin activities. Environmentally, the construction industry poses a significant threat to China's well-being as a major consumer of energy, materials, water and land and thus a major contributor to resource depletion. As the world's largest construction market with no sign of slowing down, it will be increasingly difficult to provide enough resources to construct and manage the buildings. Thus, the need to improve the sector's efficiency with better insulation and low-energy lighting can open opportunities for more sophisticated European construction companies in China.

#### **4.10 Telecom Industry**

Europe is the world's largest market for telecoms with revenues of approximately 1 trillion Euros, while China represents the fastest growing and largest telecom market in the world in terms of users. For these reasons and given the saturation of Europe's telecom market, European service providers and equipment manufacturers are eager to develop China's increasingly larger market in pursuit of growth opportunities.

The Chinese telecom market is currently posting growth of around 20% a year and rising incomes and consumer demand make it attractive for European providers that offer more sophisticated services. The sector accounts for RMB 613 billion revenues from telecom equipment manufacturing, and RMB 580 billion revenues from telecom service providers in 2005, with the former sub-sector growing at a much faster rate<sup>20</sup>. In terms of employment, as of 2004 960,000 people were working in the telecom service sub-sector, which is a contained figure given the size of the Chinese market. Environmentally, the telecom sector does not create as severe effects as other sectors discussed. Environmental effects mostly include energy consumption, so the need to be more energy efficient in the future is necessary given China's diminishing ability to meet its energy demand.

There are severe obstacles for European telecom providers to access the Chinese market as the telecoms market remains one of the most restricted in China. China's closed market and potential attempts to develop its own standards might limit market potential in this area.

There is still a lack of a comprehensive law system that establishes regulations and transparencies in the sector. As of today, there are only two leading players that operate on a national level in China. Still, the services, rather than equipment, sub-sector is the most open market segment in the Chinese telecoms services sector. In the near future most foreign participation in the telecoms services market will be limited to this sub-sector. It can be expected that China will open up further to competition once its telecom providers are ready for foreign expansion. At that point, they will allow foreign competition in the Chinese market in order to be granted the right to operate abroad. Thus, for the purpose of this report it is still premature to address feasible opportunities before a further opening of the Chinese telecoms market.

#### **4.11 Forestry Sector**

After an initial boom period of timber trading during the mid-90's the global trade of wood is increasingly been replaced by other sources of fibre, notably recycled paper. Europe remains a

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<sup>18</sup> China Statistical Yearbook

<sup>19</sup> Employment figures are of 2002. China Statistical Yearbook.

<sup>20</sup> Ministry of Information Industry of the People's Republic of China  
[http://www.mii.gov.cn/art/2006/02/09/art\\_169\\_6243.html](http://www.mii.gov.cn/art/2006/02/09/art_169_6243.html)

net exporter, but falling prices in wood products and higher regulation are reducing margins. European exports of cork and wood to China were US\$ 141 million while imports were US\$ 233 million in 2005.

Moreover, restructuring of forest management in Russia and CIS countries which enjoy low cost advantages, mean they will become more important as suppliers in both Europe and Asia. Revenue from other segments of the industry including recreational services, subsidies and environmental protection funding are approaching wood production levels, and this trend is set to continue. Due to this restructuring in the industry, employment levels in the sector are falling. In general, economic growth for the sector is low (1.3% p.a.) albeit higher in Eastern Europe (4.2%).

In terms of waste paper recycling, China is a global leader: 60% of China's paper and paper board products comes from waste paper which is imported from mainly developed countries. In 2005, pulp and waste paper exports to China were over US\$ 700 million while imports were a modest US\$ 8 million, with import value of waste paper increasing over 300% from 2002. The second largest source of raw material for paper production is straw, which despite requiring higher levels of water, is cheaper and more abundant than wood. On the other hand, China has a large trade surplus with the EU in terms of wooden furniture, exporting to the EU roughly seven times more than it is importing from the EU<sup>21</sup>.

Despite its extensive territory, China is largely devoid of harvestable forests and is thus forced to rely upon timber imports from outside. A concern is where Chinese companies source their wood imports from. Currently large volumes come from areas such as Indonesia and Russia where logging laws are lax and forests and their ecosystems are already under intense pressure.

In terms of Sino-European trade, forestry products do not figure significantly accounting for less than 3% of Europe's exports to China and less than 2% of Chinese exports to Europe. Whilst European exports have been growing, this is largely due to Chinese imports of waste paper, which arguably do not fall within the sector and represent a tiny fragment of employment. The majority of EU imports from China in this sector are processed goods.

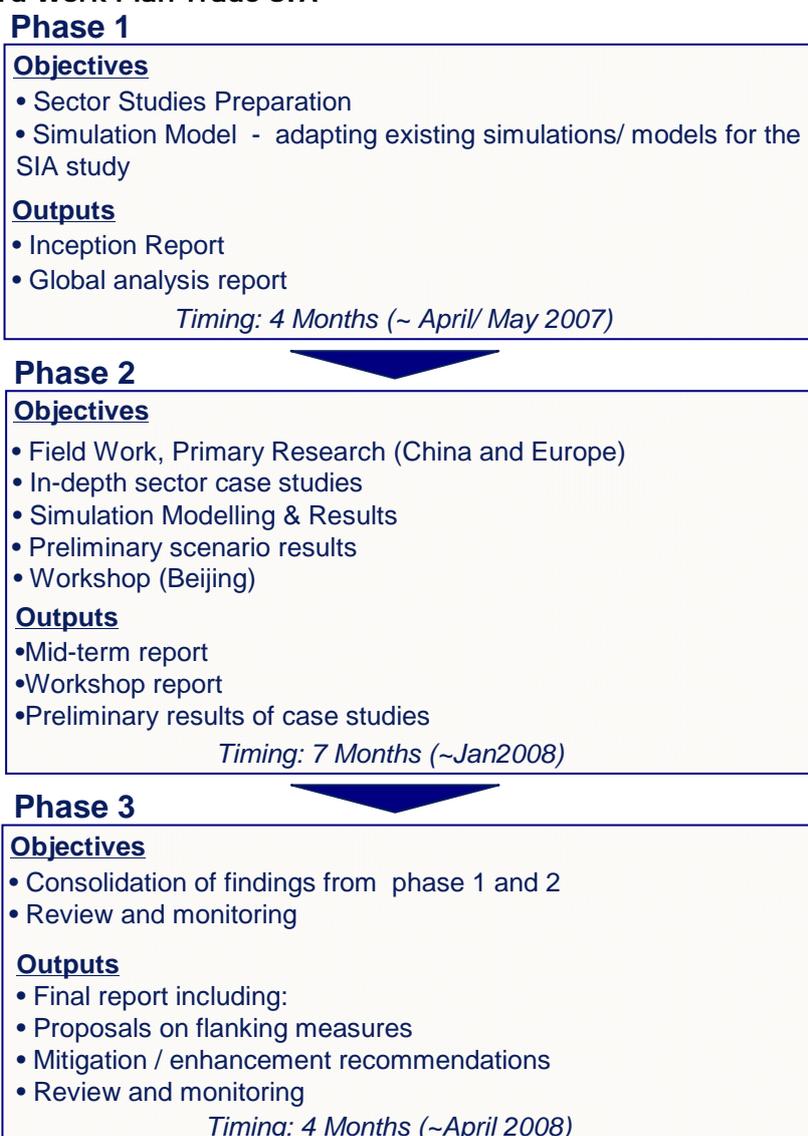
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<sup>21</sup> In 2005, wooden furniture imports from China accounted for 209 million Euros, while exports to China were 31 million Euros. Data available on Comtrade.

## 5. Project Implementation and Forward Work Plan

The implementation of the EU-China Trade SIA consists of three interlinked stages. **Figure 3** below shows the forward work plan and the concrete outputs for these stages. The timing of these stages will be confirmed with DG Trade and is dependent on the progress of the PCA negotiations.

**Figure 3: Forward Work Plan Trade SIA**



### 5.1 Phase 1

This phase will involve a preliminary assessment of the major economic, social and environmental trends currently taking place in China and in the context of EU-China trade, as well as the likely overall impact on sustainability of hypothetical liberalisation scenarios. The quantitative modelling tools outlined in this inception reports will be prepared in Phase 1, and will serve as a basis for the further phases.

On the basis of the preparation of the simulation models the sector experts will be given guidance on how to proceed with their sector-specific case studies and which areas will need to be explored in more detail. Importantly, additional specific data requirements will be communicated to the sector experts. Importantly, this will feed into the sector-specific stakeholder questionnaires which are an important element of the primary research conducted in Phase 2.

Subject to the approval of DG Trade, the consultants will also contact the various representatives of the Core SIA Network to inform them of the SIA and to organise a preliminary meeting. At the meeting, the consultants shall present the SIA process, creating awareness of the ongoing SIA and solicit the initial feedback of the participants on the economic, social and environmental issues at play.

**Concrete Outputs Phase 1:**

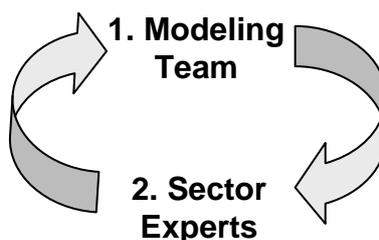
- Inception Report
- Global Analysis Report

*Timing: 4 Months April/ May 2007*

**5.2 Phase 2**

Following the Phase 1, the sector case studies will be deepened and findings fed back to the quantitative analysis team, who will then begin with applying the models prepared in Phase 1. Based on the data generated by the models, it will be possible to conduct screening for sectors and regions which will be significantly affected by the new agreement. A threshold of significance will be established for the sectors and regions, which, if exceeded, will merit further examination of specific sectors/regions. As shown in **Figure 4** data requests originate from the modelling team, who after receiving initial results will request new areas of exploration, and so on. In parallel to this dynamic, the stakeholder questionnaires will be developed and distributed.

**Figure 4: Information Flow between Modelling Team and Sector Experts**



The preliminary results of the sector studies and simulation model will be presented at a the SIA stakeholder workshop held in Beijing towards the latter stages of Phase 2. During the workshop, the Consortium will present both the intermediate findings of Phase 2 and a summary of Phase 1, as well as a general presentation of the SIA process. Comments will be solicited from the participants in an interactive form whereby discussion and debate will be encouraged. The workshop programme and documentation will be developed in consultation with the Steering Committee. Documentation will include factual findings, an overview of progress, as well as material to facilitate discussion. Venue and participants will also be identified in close consultation with the Steering Committee and the EC Delegation.

**Concrete Outputs Phase 2:**

- Mid-Term Report
- Workshop Report
- Preliminary Case Study Results

*Timing: 7 Months ~ January 2008*

**5.3 Phase 3**

Phase 3 will consolidate the findings from Phases 1 & 2 in the Final Report with recommendations on potential mitigation and enhancement of negotiation objectives in the form of specific actionable flanking measures. The normal monitoring and review procedures will also be followed in the report.

**Concrete Outputs Phase 3:**

- Final Report (incl. Recommendations)

*Timing: 4 Months ~ April/May 2008*

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## Annex 1: Technical Specifications of the Globe CGE Model

The Globe model is a multi region development of the single country/region CGE model first described by Dervis, et al., (1982), and subsequently development models reported by Robinson et al., (1990) and Kilkenny (1991). The properties of this type of model are well known. The multi region formulation is a direct descendant of a model first developed to evaluate NAFTA (see Robinson, et al., 1993). The model is also a member of the class of Social Accounting Matrix (SAM) based CGE models (see Pyatt, 1998) and is therefore calibrated using a SAM representation of the GTAP v6 dataset for 2001 (see McDonald and Thierfelder, 2005).

The Globe model can be adapted to any desired regional and commodity aggregation based on the 87 regions at 57 commodities in the GTAP dataset. Regions are, in effect, a series of single country/region CGE models that are linked by commodity trade. Trade is modelled following the Armington 'insight'; namely domestically produced and consumed commodities are imperfect substitutes for both imports and exports. Import demand is modelled via a series of nested constant elasticity of substitution (CES) functions; imported commodities from different source regions are treated as imperfect substitutes and hence aggregated into 'composite' import commodities that are then imperfect substitutes for their counterpart domestic commodities. The 'composite' imported commodities and their counterpart domestic commodities are then combined to produce composite consumption commodities. These are the commodities demanded by domestic agents as intermediate inputs and for final demand.

Export supply is modelled via series of nested constant elasticity of transformation (CET) functions; the 'composite' export commodities are treated as imperfect substitutes for domestically consumed commodities, and exported commodities from a source region to different destination regions are treated as imperfect 'substitutes' for each other. Total domestic commodity production is an aggregation of the 'composite' exported commodities and their counterpart domestic commodities. As such this model differs from the GTAP model through the use of CET functions for export supply; consequently domestic producers adjust export supplies in response to changes of the relative prices of exports and domestic commodities, thereby moderating the terms of trade effects in this class of model.

The production structure is a two stage nest. Intermediate inputs are used in fixed proportions per unit of output– Leontief technology, while primary inputs are combined as imperfect substitutes, according to a CES function, to produce value added. The combination of aggregate value added and aggregate intermediate inputs to produce output can be by either Leontief or CES technology.

Final demand by the household is modelled under the assumption that households are utility maximisers who respond to changes in relative prices and their incomes. The utility function in the model are Cobb-Douglas; this has the advantage that with a standard, neoclassical, set of closure rules the changes in household consumption expenditure can be interpreted as equivalent variations in welfare, and hence provide useful summary measures of the welfare effects of the policy simulations. Final demand by the government and for investment is modelled under the assumption that the relative quantities of each commodity demand by these two institutions are fixed – this reflects the absence of a clear theory that defines an appropriate behavioural response by these agents to changes in relative prices. The Globe model is formulated to allow a wide range of alternative closure rules; the alternatives used in this study are defined below when the policy experiments are specified.

In order to estimate the impact of trade reform experiments on poverty we follow the general approach presented by Lofgren et al., (2003), which assumes that where there are household survey data available (which include income sources that correspond to the income sources in the CGE model), changes in factor income in the CGE model can then be translated into proportional changes in household incomes and then, once all household incomes are adjusted, distributional and poverty statistics are computed and compared with the pre-adjustment values to see the impact of the experiment.

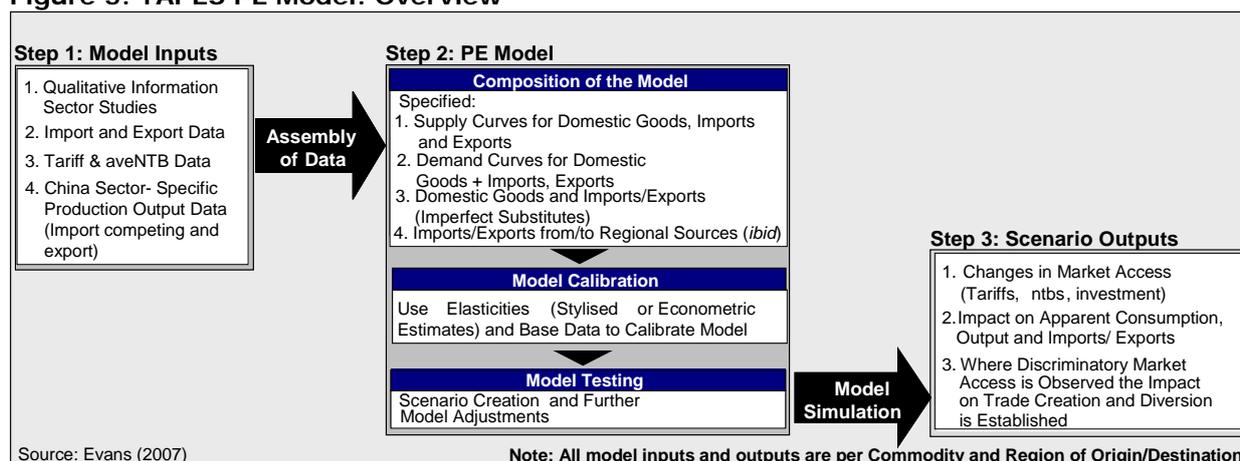
## Annex 2: Technical Specifications of the TAPES PE Model

The primary vehicle used for assessing the impact of different trade negotiations outcomes in China on a disaggregated sectoral and regional level will be the TAPES Partial Equilibrium (PE) model applied for each sector of the study. For a number of reasons, it was decided that the PE model was chosen to be used alongside the CGE model. The most important reasons for this are:

1. The data requirements are less demanding and data collected in more recent years can be used compared to a Computable General Equilibrium (CGE) model such as the GTAP standard model which uses the GTAP dataset (most recently available for 2001).
2. Sectors and regions can be more easily chosen to fit the SIA objectives.
3. Exploration of the sub-sectors in the sector studies at some future date would be facilitated by the PE approach.
4. The loss of general equilibrium interactions can be partly compensated for by careful interpretation of results and sensitivity testing.

Thus, the PE model with imports deals only with the impact of trade liberalisation focusing on China, leaving aside repercussions in other markets. The PE model, including domestic consumption, production, and imports is outlined in **Figure 5** below:

**Figure 5: TAPES PE Model: Overview**



### Step 1: Model Inputs

The base data for the model is comprised of bound and applied tariffs, ad valorem NTBs (aveNTBs), sectoral imports and exports by regions of origin and destination, and domestic production data for China. Export production is estimated by sectoral exports. Imports and exports are further disaggregated by China’s main regional trading partners. The trade, tariff and aveNTBs will be estimated from the World Bank WITS database and aveNBT database supplemented by aveNTB estimates from the sector studies and the industry survey.

### Step 2: PE Model

The core of a partial equilibrium model is built around supply and demand curves for domestically produced and consumed goods and services combined with imports. Consumer welfare can be measured using consumer and producer surpluses. Revenue collected by the government is assumed to be redistributed to others thus having no net welfare effect, unless the redistributive effects are explicitly taken into account. In this study, a simpler measure of the welfare effects in each sector is used, along with changes in apparent consumption arising from a change in tariffs, aveNTBs or any other exogenous change. The detailed workings of the PE model can be summarised as follows:

- a) Tariff and non-tariff barriers are applied to the value of imports for each sector in order to arrive at the domestic price valuation of imports. Imports, plus domestic output

valued at domestic prices, gives total apparent demand. A constant elasticity domestic supply curve is specified for each sector which by definition equals the initial domestic price and the initial or base domestic supply.

- b) Imports and domestic production are treated as a composite good in that the imported and domestically produced components are imperfect substitutes. The share of the imported and domestic good in absorption is governed by a constant-value elasticity of substitution for each sector known as the Armington elasticity. When the Armington elasticity is low, imports and domestic production are complementary; and when the Armington elasticity is high, imports and domestic production are substitutes.
- c) The composition of imports from different regional sources of supply is also treated as an imperfect substitute and is governed by a variable elasticity of substitution related to the Armington elasticities. Imports into each sector by region are aggregated using the elasticity of substitution. Total imports by sector are then treated as being substitutable with domestic production. Thus an Armington or *constant elasticity* of substitution elasticity would require, for example, that machinery imports from the US and from India be equally substitutable. B) by using a *different elasticity* of substitution between different types of imports from different regional sources can be differentiated from each other. For example, imports of machinery from the US and EU can be treated as highly substitutable with one another, but **not** highly substitutable with machinery from a less developed country such as India.
- d) Imports from each regional source have a supply curve specified. Each export sector has a supply curve specified and each regional export destination has a demand curve specified.
- e) exogenous changes in tariffs, aveNTBs, or any parameter specified in the model, are defined in what are called experiments or scenarios. Exactly how the policy experiments are put together depends upon the policy issues under analysis.

### **Step 3: Defining the Policy Experiments and Model Outputs**

Overall, the policy experiments are defined by specified exogenous shifts in tariffs, aveNTBs, the exchange rate, base values of apparent consumption, and simulation of the impact of growth and investment. Understanding the policy experiments is best done by examining the experiments in detail.

By running different sets of policy experiments, different impact effects on apparent consumption, domestic output, and imports can be measured. Sensitivity tests are run in order to explore the sensitivity of the results to different assumptions and different policy experiments. The results are measured by the following indicators:

- a) **The impact on apparent consumption**, the measure of change in economic welfare.
- b) **Changes in domestic output** which is used to assess e.g the degree to which imports substitute local production.
- c) **Changes in trade by sector or by sector and region of origin** indicates the change in the amount of exports major trading partners can expect to see for a given commodity under different trading conditions.
- d) **Changes in the price of importables**, a weighted average of the price of domestically produced imported goods or services.
- e) **Contributions of imports and domestically produced goods and services to changes in apparent consumption.**
- f) Where the policy experiment is for a discriminatory change in tariffs or aveNTBs e.g. affecting the EU-25 only, the resultant **trade creation and trade diversion effects** can be measured.

In addition to the structural characteristics of the sectors chosen, some important parameter values are chosen. In the case of the supply and demand elasticities, the stylised values chosen do not differ greatly from sector to sector, and roughly reflect a short-run response of 2-3 years.

## Annex 3: Establishing a Sector Study Database

Sector studies have been at the core of previous reports. This Annex aims to improve the contribution of the sector studies to the quantitative side of the current trade SIA work, thus improving the focus of the qualitative work done in the sector studies and providing a more secure empirical basis for the Globe Regional CGE and Tapes PE models, especially the latter where sectoral disaggregation is governed by the sectors and sub-sectors chosen in the case studies. It is aimed to extend the sector study dataset by establishing a common accounting framework and by developing quantitative estimates of ad valorem equivalents of a variety of NTBs which are not covered by the World Bank aveNTB dataset. More detailed elaboration will be required before incorporating these ideas into the ToR for the sector study work.

In previous reports<sup>22</sup> supplementary quantification was carried out to obtain domestic output for each sector using the sector study definitions. The domestic sector classification was matched to the WITS HS6 classification of traded goods as closely as possible. The modelling consultants took the sectors as defined by the case studies and matched to HS6 when implementing TAPES PE model. The sector consultants also provided a cross-check of the aveNTBs obtained for these sectors from the World Bank<sup>23</sup>. Whilst the contribution of TAPES PE modelling work to the Competitiveness report was important, it would have been even better had it been possible for that report to carry out the TAPES PE modelling at the sector and the subsector level, and to further supplement the World Bank estimates of aveNTBs. Three steps are suggested to strengthen the quantification of the sector case studies.

### 1. Preparing the ground for new aveNTB estimates

The World Bank aveNTBs are all for traded goods sectors. To extend quantification of aveNTBs to service sectors, government procurement and IPRs, a more detailed explanation of the nature of the NTB focussing on the way in which the NTBs impact on prices is needed.

### 2. Sector Study accounts

The sector output measures used in the Competitiveness Report correspond to gross output. For all sector studies, it would be extremely useful to have gross output broken down into the main intermediate inputs used and value added broken down into wages, capital and other charges and indirect taxes. It would also be of interest to know where the intermediate inputs came from (domestic vs imports), and where the major components of output were sold (domestic market (private consumption, government, investment, or exports). Such accounts correspond in the SNA National Accounts to the supply and disposition of goods. At this stage, it is suggested that the case study accounts should be a strategic guide, not a rigid set of accounting rules.

### 3. Estimating new Advalorem Equivalents (aveNTBs)

Direct price comparisons eg between cif import prices plus tariffs, indirect taxes and margins and prices actually paid by purchasers where NTBs apply have long been recognised as the best way to estimate the aveNTBs. However, obtaining data for such direct price comparisons is often extremely time consuming<sup>24</sup>. It may be possible to get around this data cost limitation whilst still obtaining aveNTB estimates that are useful for the trade SIA. For the sub sectors of the proposed case studies where the sub sectors are relatively homogeneous, sector experts are likely to be able to give ball-park estimates of aveNTBs from their knowledge of prices of inputs or outputs in the relevant markets for the sub sectors affected by the NTBs eg for government purchase of passenger cars; for government purchase of light vans and utility vehicles. Similarly, for other sub sectors where the sub sector definition is relatively homogenous compared with the main sector. A cross-check of the sector experts findings on aveNTBs could be made using *Key informant interviews*. Such sub sector experts are likely to be able to quantify the most important aveNTBs. As background to the key informant interviews, unit costs of exports and imports in the relevant sub sectors could be estimated as a part of the dataset for the TAPES PE model where quantities are available in the WITS dataset.

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<sup>22</sup> Study on the Future Opportunities and Challenges in EU-China Trade and Investment Relations 2006-2010 (Competitiveness Report)

<sup>23</sup> Kee, H.L. et al ,2004, Ad valorem Equivalents of Non Tariff Barriers, mimeo World Bank

<sup>24</sup> See e.g. Sazanami, et al, 1995, Measuring the Costs of Protection in Japan, Institute of International Economics