



STRATEGY
& CHANGE

THE RISE OF ASIA AND STRATEGIC QUESTIONS FOR EUROPE

THE HAGUE CENTRE FOR STRATEGIC STUDIES AND TNO





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STRATEGY & CHANGE

The TNO and *The Hague* Centre for Strategic Studies (HCSS) program Strategy & Change analyzes global trends in a dynamic world affecting the foundations of our security, welfare and well-being.

The programme attempts to answer the critical question: what are the policies and strategies that must be developed to effectively anticipate on these emerging challenges?

Strategy & Change provides both a better understanding and feeds the agenda for a sustainable future of our society.

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1 ABSTRACT

The rise of Asia will shape the global landscape of the 21st century and have profound implications for the way Europeans live and do business. Against the background of changes in the global balance of power, demographic shifts, and growing resource scarcity, Asia's advance will challenge Western social, economic, and political models and is already now altering the global innovation landscape. This report analyzes Asia's transformation in demographics; resources; economics; science, technology, and innovation; political stability; and international relations and international security, while assessing strategic questions and possible implications for Europe. In doing so, it formulates a research agenda and poses a series of strategic questions that merit further consideration by European decision makers in the public and private sectors.

2 INTRODUCTION

The 21st century is often referred to as the Asian or Pacific century, indicating a shift of economic and political power from the United States (US) and Europe towards the emerging economies of Asia.¹ Since 2008 — after the financial crisis hit the US and Europe² hard, while Asian growth rates barely budged — we have been witnessing a new phase in the process of globalization marking the end of the hegemony of the old triad: the US, Europe, and Japan.

While there is a broad consensus that the shift of economic and political power towards Asia will have major consequences, there is wide disagreement both about the details of what exactly the Asian century will entail and about its specific consequences for Europe. It seems likely that Asian economies will continue their rapid advance in the 21st century, but this notion does not go undisputed, as these economies will encounter some severe challenges to their growth. With some exceptions, such as China and Japan, Asian countries do not occupy key positions in international economic and security organizations in the current world order. For the moment, it remains unclear whether they will become the dominant economic and political powers of the international system. Like their European counterparts, some Asian countries, especially China, will soon start to experience the effects of an aging population. As China becomes richer, it will also lose some of the advantages of absolute low wages on which its export-oriented economic model relies. The implications of the rise of Asia for Europe are also the subject of fierce debate. Some see the rise of Asia as a major threat for Western countries in terms of job losses not only in the manufacturing sectors, but increasingly also in services, including high-skilled jobs. Others emphasize the economic opportunities created by increasingly affluent Asian markets of more than two billion people.

What seems clear, though, is that the 21st century will be a multi-polar world in which the dominant models developed in the previous century will be challenged. This requires Europeans to look at things with different eyes and to take into consideration the fact that different countries in Asia and in Europe are following different development trajectories, based on specific objectives, needs, interests, capabilities and resource endowments. In the new multi-polar world, not only will there be new sources of conflict and areas of competition, but also new opportunities. It is important for European countries to assess their interests, which areas will see competition (e.g., over access to scarce resources), and where joint interests and opportunities for cooperation lie (e.g., in areas such as bolstering international security, developing green technology, and mitigating the impact of demographic changes).

The joint TNO/HCSS program, 'Strategy & Change', analyzes key global issues, such as the rise of Asia, to obtain a better understanding of their nature and ramifications, in order to stir debate on their impact for Europe and the Netherlands. At the same time, it seeks to explore issues that may be addressed through applied research, and to contribute to setting research agendas. The present report constitutes a first assessment of the key trends related to the rise of Asia, highlighting uncertainties and issues for further research.

3 APPROACH

This report is based on an extensive review of a broad set of academic articles, foresight studies, think-tank reports, government policy papers, and media articles that have been drawn from predominantly 'Western' sources. Despite this cultural caveat, we have purposively incorporated a broad and diverse range of sources to ensure the inclusion of a wide variety of views. We have sought to do justice to the extensive range of expert opinion on the rise of Asia by selecting only those trends that appear to be robust (i.e., that have been identified in a large number of studies) while, at the same time, recognizing that there is a high degree of uncertainty surrounding this subject. This report sketches a picture of a variety of trends bridging a range of disciplines. We have chosen six areas (demographics; resources; economics; science, technology, and innovation; political stability; and finally, international relations and international security) that enable us to assess Asia's transformation. Our primary objective is not to predict the future — we would rather be roughly right than precisely wrong — but, rather, to identify a number of strategic questions for Europe that result from the rise of Asia. Each section takes a broad look at the core issues for each specific area and seeks to formulate a series of strategic questions in which the implications of the different trends for Europe are brought to the fore.

The developments in these six areas are not taking place independently; they are based on continuous interactions with developments in other areas and should therefore be studied within the prism of this bigger picture. We are using a simple six-dimensional framework to analyze interactions across these areas (figure 1). Interactions among the areas together make up a hexagon that illustrates the strong interconnectedness that exists between the issues and highlights the need to base policies on a more holistic understanding of the rise of Asia, a theme to which we will return in the concluding section.

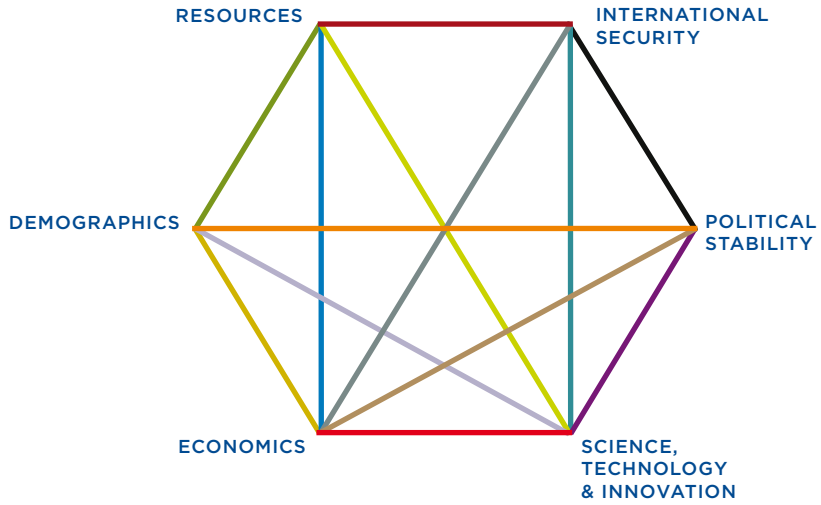


FIGURE 1. THE SIX DIMENSIONS OF THE INTERACTIVE FRAMEWORK: DEMOGRAPHICS; RESOURCES; ECONOMICS; SCIENCE, TECHNOLOGY, AND INNOVATION; POLITICAL STABILITY; AND INTERNATIONAL SECURITY.

4 DEMOGRAPHICS

Over the next several decades, Asia will experience a series of demographic shifts with respect to size, age distribution, gender, ethnic composition, and place of settlement, which have the potential to radically affect current political, economic, social, and cultural systems across the region.

While the total Asian population will grow considerably, highly developed states and China will feature minimal or even negative population growth rates.³ Population projections for Asia suggest that the region as a whole will experience significant, albeit slowing, growth well through 2030. Due to the combination of decreasing child mortality rates, increased urbanization, higher levels of education and rising female employment, fertility rates in Asia are declining overall. In fact, by 2030, only eight countries will have fertility rates in excess of replacement (2.1 children per female). As such, the United Nations estimates that the Asian population will grow by 17%, or 655 million people, during this period. The highly developed countries (Japan, South Korea, Singapore, and Hong Kong China) will experience severely stunted or negative population growth by 2030, stemming largely from a combination of cultural and economic factors.⁴ Mainland China will eventually face a similar demographic situation, which is partly the result of its one-child policy, which was instituted in 1978 and maintained with only limited adjustments since then. The Chinese population is expected to continue to grow until 2032, when it will reach its peak of 1.463 billion people.

This development will spur an aging of populations across the region.

The United Nations projects that the median age will increase by 17% across Asia. More telling, however, is the old-age dependency ratio, which compares the number of elderly persons (aged 65 and over) with the number of persons in the work force (the proportion of the population aged between 15 and 64). In 2030, this figure will have climbed by an

average of 86% throughout the region, doubling in eight countries, and tripling in two, with a significant increase of 75% in the population of the extremely elderly (aged 80 and above). The most pronounced aging will occur in the highly developed countries, while lower-income countries will generally have significantly lower median ages. The population paths of China and India — the region's two major powers — will likely follow two different paths, with China largely facing the situation of highly developed nations, with a median age of 41 in 2030, and India belonging among the less-developed nations, with a median age of 31. For the next two decades, India will therefore continue to benefit from its 'demographic dividend', a situation in which the majority of the population is of working age and the enhanced productivity of the labor force increases economic growth.⁵ Even with a slowdown in population growth rates, the increase in the absolute number of people will still be significant.

The combination of shrinking and aging populations will cause the labor pools in the highly developed Asian countries to decline over the next 20 years, impeding economic growth. On average, the working-age population will decline by 10%, with Japan suffering a staggering 15% loss. In other words, these countries will need to increase their labor productivity by approximately 10% to 15% in order to maintain their current level of production. These developments will likely provide further impetus to regional and global competition for both high-skilled and low-skilled labor migrants who will increasingly become a 'scarce commodity', especially in China and the highly developed countries. Moreover, the combination of declining mortality and fertility rates could drastically affect the current rudimentary Asian social welfare system, which has been based on informal family support networks, with major implications for traditional family structures and the quality of life of the elderly.

Some Asian countries will face unnatural gender imbalances. At present, Asia has a surplus of nearly 43 million males between the ages of 15 and 34, and by 2030, this figure will increase to 65 million. To put this in perspective, in 2030 the Asian gender imbalance of young adults will be nearly four times higher than that in the rest of the world. In large measure, the imbalance is being fueled by China and India as a result of societal preferences, screening technology, and government natal policies that have combined to severely distort the natural birth ratio in these countries. There

is a common Indian saying that equates having daughters to ‘watering your neighbor’s garden on account of dowry costs.’⁶ In India, the gender imbalance will continue to grow until 2025–2030, at which point India will have a surplus of 15 million young adult males.⁷ The national sex birth ratio in China has risen to 120 males per 100 females (or 14% above average).⁸ China will continue to add males to its population until it will have a surplus of 24 million in 2030–2035. Other Asian countries (among which are Afghanistan, Pakistan, Bangladesh, Indonesia, the Philippines, and Vietnam) will experience similar problems, although of a lesser magnitude. Some researchers refer to surplus males as ‘bare branches’, implying that these men will bear no fruit; instead, without any prospects of a wife and family, they could potentially be a major source of civil unrest.⁹ These growing gender imbalances could have important implications for socio-political stability, in addition to affecting the composition of the future labor force.

Asia will become increasingly urbanized. Over the next 20 years, Asia will experience a major population shift from rural areas to urban centers. High levels of economically driven rural-urban internal migration, along with natural urban growth, will create an additional 750 million urban residents in Asia by 2030,¹⁰ which will bring the total urban population to 2.3 billion, making up 51% of the regional population. Due to their sheer size, China and India will account for the majority of this growth. The Chinese urban population will increase by 42%, creating 269 million new urban inhabitants, whereas India’s will grow by 61% and add 225 million new urban residents. The remaining growth will mainly come from the less-developed countries, adding 182 million to Asia’s urban population. Furthermore, the majority of urban growth will occur in cities with fewer than 750,000 inhabitants.

On average, less-developed countries will see a greater increase in their urban populations than will the middle- and high-income countries (10% and 31%, respectively), and new urban residents in less-developed countries are more likely to be concentrated in megacities. The United Nations (UN) projects that less-developed Asian countries will receive 32 million of the region’s 48 million new megacity inhabitants and that Lahore, Pakistan, will emerge as the newest megacity in the region. Urban populations generally have better access to such facilities as healthcare and education, and overall, urbanization is now considered to be a positive development. However, the less-developed Asian countries, in particular, could

increasingly face the prospect of urban unrest if the rate of urbanization in these countries outpaces the state’s ability to supply the appropriate infrastructure (i.e., housing, sanitation, transportation, and policing).

Meanwhile, the ethnic diversity of Asia will continue to increase through 2030. This rise will, to a certain degree, stem from differences in the fertility rates among ethnic groups. Migration will also play a substantial role. The geographic distribution of the supply of (and demand for) labor will encourage labor migration. Accordingly, Thailand, Brunei, Malaysia, Singapore, South Korea, Japan, and the Chinese special administrative regions (SARs) are all expected to be net receivers of immigrants.¹¹ However, xenophobic sentiment in the highly developed Asian countries could curb the flow and limit increased diversity. Recently, Singapore elected to reduce its dependence on low-skilled foreign laborers.¹² Japan remains reluctant to immigrate its way out of its aging crisis,¹³ but both countries still intend to court highly skilled foreign workers.

	IMF ADVANCED ASIA	CHINA	INDIA	IMF EMERGING ASIA
POPULATION GROWTH	None to Limited	Limited	High	High
URBAN GROWTH	Limited	Moderate	High	High
AGE STRUCTURE	Aged	Aged	Young to Middle—Aged	Young to Middle—Aged
GENDER IMBALANCES	Moderate	High	High	High
MIGRATION STATUS	Net Receiver	Net Sender	Net Sender	Net Sender

FIGURE 2. OVERVIEW OF ASIA’S ‘DEMOGRAPHIC DRAGONS’: POPULATION GROWTH, URBAN GROWTH, AGE STRUCTURE, GENDER IMBALANCE, AND MIGRATION IN CHINA, INDIA, AND EMERGING AND ADVANCED ECONOMIES AS DESIGNATED BY THE INTERNATIONAL MONETARY FUND (IMF)

STRATEGIC QUESTIONS FOR EUROPE

- As Asia's demographic trajectories and economic growth fuel its demand for labor, how will this affect Europe's ability to attract labor migrants — both low-skilled and highly skilled?
- How will the different age structures of Asian countries affect future economic development in Asia as well as Europe? Specifically, how will rapidly aging countries in East Asia (Japan, South Korea, China) deal with this demographic shift? How will younger countries, such as India, benefit? What will be the implications for issues such as international migration, access to scarce knowledge, and outsourcing?
- What will the international financial and economic implications be if Asian countries decide to invest their accumulated reserves domestically to increase social expenditures for their graying societies?
- Demographic shifts in the region will very likely also contribute to shifts in the location of production. In the medium term, China may no longer be the factory of the world. How will this shape global lines of manufacturing and distribution? Can Europe use this to its advantage and increase Europe's freedom of action?

5 RESOURCES

A booming economy, a growing population, as well as urbanization and industrialization are rapidly transforming Asia. Increased economic development in conjunction with shifting consumption patterns has caused Asian demand for natural resources to rise swiftly — a key driver of increasing global resource demand. Over the past decade, it has, at times, been difficult for the global supply to meet rising global demands, creating tight supply-dominated global commodity markets characterized by significant price volatility. The growing Asian demand for resources has four key consequences for the supply chain of commodities:

Increasing scarcity and faster exhaustion of cheap resources may lead to increases in the prices of the particular resource, itself, other resources, and related manufactured products. As demand for resources grows at a faster rate than supply, prices increase. The interdependent nature of resources and their importance in the manufacturing of other products are leading to increases in the price of both resources and related products. Technology, for instance, facilitates the substitution of resources, which causes price increases in one commodity to spill over to others. An example of this is food prices, which increasingly reflect the price trends and levels of oil, since agricultural commodities are used for biofuels.¹⁴

Concerns about supplies are growing at the global and regional level. Due to the importance of resources for future development, there are growing concerns over supplies. In Asia, resource scarcity is increasingly perceived as a security issue, resulting in more assertive resource diplomacy on the part of states. This thwarts the improvement of international resource management, and often, both directly and indirectly, hinders European access to resources.

Global supply chains and trade streams are being remodeled. Asia's expanding share in global demand is leading to Asian buyers having increased importance in resource markets and to a remodeling of global supply chains and trade streams. Asian growth is changing the global geography of resource extraction and consumption, and Asian markets for end-products are becoming ever more important.

Climate/environmental hazards are likely to continue. On the one hand, the increased use of resources contributes significantly to short- and long-term environmental problems at every stage of the process of resource extraction and utilization, from wellhead to waste disposal. On the other hand, the growing scarcity of resources and increases in price are a powerful incentive for resource conservation and sustainable use.

Energy, minerals, and food and water are needed to sustain Asia's economic and population growth and to ensure its security in the long term. The dynamics in each of these areas are both independent and interrelated.

ENERGY

Asian energy demand is increasing dramatically, driven by China and India. Whereas global energy consumption increased by 23% between 1990 and 2005, energy demand in non-OECD (Organisation for Economic Cooperation and Development) countries grew much faster: over 27% (and over 69% in China).¹⁵ China is the main contributor to the rise in global energy demand, as it has recently overtaken the United States as the world's largest individual energy consumer.¹⁶ In India, by 2030, energy demand is expected to be almost 2.5 times the amount of 2007, as it grows at a steady rate of 3.4% per annum.¹⁷ Both China and India remain heavily dependent on coal.

Asian energy imports will increase. Asia's thirst for energy will increasingly transform Asian states into net importers of energy sources. This was already evident in 2006, during which Asian and Pacific countries imported two-thirds (68%) of their oil, bringing to the fore their import dependency on oil resources. Oil dependency is most extreme in the highly industrialized economies of the region, including Japan and Singapore, Taiwan and South Korea.¹⁸ Overall, Asian-Pacific import dependency will rise to 80% in 2020. China, India, Japan, South Korea and Taiwan already belong to the region's top importers of primary energy sources since the 1990s.¹⁹ In 2006, China

imported 3.5 million barrels per day (mb/d), accounting for 40%–50% of its total oil demand.²⁰ It is estimated that in 2030 China will import at least 13.1 mb/d, causing its share of imports to rise to 80%.²¹ Despite domestic energy supplies, India will soon become the 3rd largest net importer of oil²² in the world. Gas imports of China and India are also expected to rise to 40% of consumption by 2030, as natural gas consumption increases at an average rate of 6.8% p.a.²³ Traditional oil exporters Indonesia and Malaysia are also currently transforming into net oil importers.²⁴

The involvement of Asian governments in the energy sector is likely to become stronger. Increasing dependence on external sources and the rising scarcity of cheap resources has led to a strong perception of energy supply as a security issue. Asian importers are increasingly active in securing access to energy sources worldwide and in building secure supply routes to decrease their vulnerability. This is particularly evident in Africa, where China has established a presence in many resource-rich countries in order to guarantee the long-term, stable supply of raw materials and energy for its industrial sector. The rapidly growing presence of China in Africa is at least in part related to the fact that, unlike Europe and the US, China does not impose political conditions of good governance and human rights before entering into economic relationships.²⁵ The so-called conditionality-based approach of Europe and the US (i.e., connecting energy agreements to a human rights agenda) is in stark contrast with the non-interventionist stance of China.

MINERALS

Driven by China and India, demand for Asia's mineral resources will increase dramatically. Similar to the situation of oil, the rise of Asian demand is a key driver of the global growth of demand for minerals. Many trends in mineral resources are the same as in energy, but an important difference is that Asia is an important region for the production and export of minerals. China is both a mineral-importing and mineral-exporting state, currently holding the main reserves of a number of essential minerals (see figure 3). Critical mineral reserves are located in a large number of states with weak and unstable regimes, e.g., in Africa. Meanwhile, the involvement of the public sector in mineral resources is likely to continue and may increase. As a result of growing concerns over mineral supplies for its industry, the Chinese government is imposing ever-tighter export restrictions on rare earth minerals.²⁶

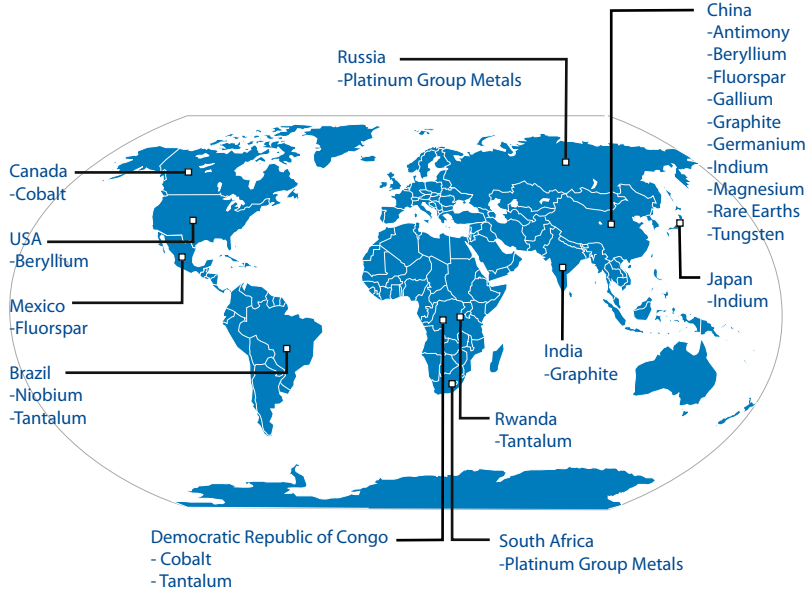


FIGURE 3. CONCENTRATION OF THE PRODUCTION OF CRITICAL RAW MATERIALS²⁶

LAND, WATER, AND FOOD

Agricultural land and water are necessary resources for food production. Both land and water resources are under heavy pressure, as the availability of resources becomes scarcer and the demand for food products rises. Population growth, urbanization, industrialization, and recreation compete for land and water with food production. At the same time, demand for food is exploding as more people become increasingly affluent and change to a more Western lifestyle, consuming larger amounts of animal protein. As a result, Asian food imports will grow rapidly. According to the Food and Agriculture Organization (FAO), global food production needs to double between now and 2050 and Asian demand is a main driver.²⁷ Despite the fact that most Asians have higher levels of nutrition now than 25 years ago, absolute numbers of people suffering from malnutrition in Asia remain high. South Asia accounts for the biggest share in malnutrition: in 2006 in India alone over 250 million people were undernourished, among

whom many were children. Competition over access to and distribution of land and water will continue and probably increase. Eventually, Asian water scarcity may lead to a decrease in economic growth. On the positive side, Asian countries have taken important steps in moving from autarkic food-production systems to regional integration of food markets (e.g., through the establishment of trade agreements that abolish tariffs and through collaboration on research and development (R&D)).

STRATEGIC QUESTIONS FOR EUROPE

- How should Europe respond when the security of its energy supply could be affected by rising import dependency, limited possibilities for diversifying the energy portfolio, and the growing importance of national oil companies (NOCs) that increasingly shape world energy markets?
- How feasible is the conditionality-based European approach towards countries that supply energy in comparison to the non-interventionist stance taken by Asian states? Should Europe continue to fight for market liberalization while others assertively secure future supplies? Or are there in fact ways to reconcile the conditionality-based approach with secure access to resources?
- To what extent will increasing mineral scarcity and price volatility damage Europe's economic competitiveness and well-being, undermine its position in the global innovation landscape, and affect its military preparedness?
- Member states of the European Union (EU) remain divided over resource security in general, and energy and mineral security in particular, and tend to opt for bilateral agreements with supplier countries. Should the EU develop and adopt a joint resource-policy framework approach? Will joint resource-policies be sufficient for EU member states to decrease dependency?
- In light of global increases in demand for food products, driven to a large extent by growing demand from Asia, should Europe reassess its agricultural policies and use its agricultural production and export potential as a strategic asset?

6 ECONOMICS

The world is witnessing a new phase in the process of globalization, which, until recently, was dominated by the Western world. The new globalization, which has especially taken off since the recession of 2008/09, is characterized by a shift of the economic center of gravity of the world towards Asia. Western countries have suffered badly from the crisis and will likely be dealing with its fallout for years to come. Government borrowing in the EU and the US expanded rapidly during the years of the crisis, and financial austerity (IMF administered or not) will be the norm in the near future. At the same time, Asian economies sailed through the recession almost unscathed. For the first time in history, Asian governments, especially China, rolled out large stimulus packages. Having learned their lesson from the 1997 Asian financial crisis, governments in the region accumulated gigantic financial reserves that allowed them to pursue expansionary policies. While, on the whole, Asian growth is good news for the world (especially for the hundreds of millions of Asians who no longer live in poverty), the emerging economic world order will have major implications for Western and Asian countries alike.

Asian countries, China in specific, are increasingly assertive in pursuing their interests worldwide, particularly in Africa and Latin America. Some see the rise of Asia as a major threat to Western countries that have experienced job losses not only in manufacturing, but to a large degree also in high-skilled jobs. Others emphasize the economic opportunities created by increasingly affluent markets of more than two billion people in China and India. The unprecedented economic growth in Asia has been powered by five key drivers: the liberalization and opening of markets, an abundance of low-cost workers, sound macro-economic policies, a key role of governments in the economy, and 'catching up' with the West through the application of science, technology, and innovation. For the future, a number of important trends and issues will determine the course of economic development in Asia.

Asian economies will continue to go through a process of structural transformation. Since the late 1970s, most Asian economies have opened up domestically, regionally, and globally. Internal market liberalization has been accompanied by integration in regional Asian trade and investment agreements, by the emergence of global production networks, and through the integration of Asia in the world economy (e.g., through membership in the World Trade Organization). Asian integration in the world economy, based on the outsourcing model, has been facilitated to a large extent by the decreasing cost of transportation and communication and by low commodity prices in the period 1985–2005. As the ‘catching-up’ phase of many Asian economies is coming to an end and as Asian economies are now firmly integrated in regional and global systems, the period of relatively easy gains is over. For the future, this will require new sources of growth and new approaches to managing more sophisticated markets. Two important structural changes that Asian economies will need to go through are, first, a continued transition from (low-productivity) agriculture to (resource-intensive) manufacturing and to (often high-skilled) services. Second, Asian economies will need to make the transition from an export-based economic growth model to a model based on domestic demand.

Asia’s export-oriented growth model has been mainly sustained by the insatiable demand in the West for Asia’s low-cost, high-quality products. A long-term economic slowdown in the US and Europe will affect Asian growth rates, but might also provide incentives for Asian companies to become even more competitive and thus facilitate the transfer away from an export-led model. Currently, many Asian states have adopted specific elements in their stimulus programs to support further diversification, but recently adopted policies in China, for instance, could have a negative effect on the growth of domestic demand.²⁹

In the near future China will have to deal with higher labor costs. The export-oriented growth model was based on an abundance of low-cost workers. China (specifically the Coastal Zone with around 60% of industrial output) has developed into the ‘workshop of the world’, based on vast supplies of low-skilled and semi-skilled labor originating from the central and western regions. However, recent research indicates that China is fast approaching a situation in which the supply of excess rural labor is exhausted and where industrial wages and inflation increase rapidly.³⁰ The

result of the fast pace of aging of the population, most prominent in China and Japan, is a smaller proportion of the population of working age. In addition, rising demands for improvement of labor conditions in China will result in significant wage increases in years to come, which will spur the transition towards an economy based on domestic growth. In this transformation process, however, income inequalities are also growing, potentially threatening social cohesion.

India, on the other hand, is a much younger country than China, and will reap the economic benefits of the demographic dividend for a much longer time to come than will China and other East Asian countries. In addition, incomes in India and other South Asian countries are much lower than those in East Asia, which will help some South Asian states, such as India, to catch up with the rapidly growing economies in East Asia.

Sound macroeconomic policies will be crucial in providing a solid basis for future economic growth. Most Asian countries are following sound macroeconomic policies focused on price stability, improvement of fiscal and monetary management, and manageable ratios of debt to gross domestic product (GDP). Future developments will depend on effective management of exchange, interest, and inflation rates so as to facilitate sustainable, stable, and efficient economic growth. In response to the global recession of 2008/9, Asian countries rolled out large fiscal and monetary stimulus packages to combat the sharp downturn in economic activity. As a result, Asian economies are quickly recovering from the recession. In the process, new policy challenges have emerged, most notably the undervaluation of the Chinese Yuan against the US dollar, which is seen by some as a form of 'blatant protectionism'³¹ and which is being addressed, to some extent, by the recent decision by the Chinese authorities to allow the Yuan to float within a rather narrow band. Whether the US dollar will hold on to its value and its role as the reserve currency in the world financial markets is highly relevant for China, in particular, in the light of its enormous accumulated reserves of over US\$ 2.4 trillion.³² Managed inflation and positive nominal interest rates will be needed to avoid asset bubbles and to protect the value of bank deposits held by low-income families.

While many Asian countries have sound macroeconomic management, others will continue to be plagued by weaknesses such as unsuccessful monetary and financial management, excessive government debt (e.g., Japan), protectionist tendencies, lagging investment in infrastructure, and the inability to switch to a more diversified economy.

The role of governments in the economy will need to evolve to reflect the requirements of a more sophisticated economy. Despite a reputation for openness and small government, as exemplified in the 'market-friendly' view of the Asian state, there is also a conception of the 'developmental Asian state' in which governments play a big role in markets. Overall, it can be said that Asian governments (starting with Japan in the 1950s) have played a key role in the catching-up process, both at the macro and the micro level. Many governments in Asia (China foremost) play a key role in sectors of the economy that are considered vital to the national interest, which includes everything from agriculture to energy to airlines. Both inward decisions and outward decisions regarding foreign direct investment (FDI) require government approval, and nominally private companies receive direct 'guidance' from government agencies. As Asian countries gain in economic prominence, their model of state-led development is becoming more dominant.³³ Many governments (in Asia, Africa, and Latin America) have found inspiration in the so-called 'Beijing consensus', which combines conditional economic liberalization with political authoritarianism. The dominant role of government in the economy is unlikely to change soon. As the *New York Times* says, 'Once eager to learn from the United States, China's leaders during the financial crisis have reaffirmed their faith in their own more statist approach to economic management, in which private capitalism plays only a supporting role.'³⁴ However, whether governments can still play an effective role in industrial policies and in managing markets as economies grow and become more sophisticated is a key issue for the future.

Asia is moving up the value chain through science, technology, and innovation. Asia is determined to move from a dependent catching-up phase to leadership in global production and innovation networks. Since 1999, China's spending on R&D has been growing at almost 20% per year, and advanced states like South Korea now spend more on R&D as a percentage of GDP than many European countries. These trends are likely

to continue in the future and will contribute to China overtaking the US as the world's largest economy sometime around 2025, with India becoming a top-four world economy. Other Asian economies, most notably Japan, are also significant drivers of Asian economic primacy.

Asian economies are characterized by high levels of resource dependency.

The Asian growth model, based on resource-intensive manufacturing and on shipping products across the globe has, in the last 20 years, benefitted enormously from low commodity prices and decreasing costs of transportation. With the growing scarcity of oil and minerals and a growing demand for food, access to and prices of resources will be a key issue for both future economic growth and political stability. The expected price rises will be disadvantageous for Asia's resource-intensive economies and might prompt a shift towards the use of green technologies and towards services.

The rapid growth of Asian economies poses a number of strategic questions to policymakers and business executives in Europe.

STRATEGIC QUESTIONS FOR EUROPE

- How can Europe reinvent itself in the wake of the rise of Asia? Which policy measures can Europe implement to stimulate economic growth and avoid falling further behind Asian growth rates?
- As European production will face increasing competition from Asia in high value-added sectors, what new sources of competitive advantage vis-à-vis Asia can Europe identify? These will include sectors linked to Europe's affluent mature and aging markets, such as cure and care, and traditional sectors, such as up-market food products, design, creative industry, tourism, and lifestyle. How can European companies develop more effective strategies to cater to the needs of a rapidly growing Asian middle class?
- How will European welfare states be affected by the rise of Asia? To what extent will increasing international economic competition force Europe to make adjustments to its social model? How will some rapidly aging countries in Asia deal with this issue and the need to build safety nets for aging populations?
- The European market capitalist model contrasts with the Asian state capitalist model characterized by strong government support for trade

and investment by national corporations. At an international level, this type of economic diplomacy allows Asian state-backed corporations to operate more effectively than their European counterparts. How can Europe devise the necessary and effective means to support its corporations?

7 SCIENCE, TECHNOLOGY, AND INNOVATION

Asia's impressive economic performance over the last few decades is reflected in the rise to prominence of its science, technology, and innovation (STI) sector. Five key trends are powering the STI revolution in Asia: growing Asian investments in R&D, the integration of Asia in global production and innovation networks, the Asian acquisition of technology-intensive companies, the outsourcing of R&D to Asia, and the emergence of global Asian knowledge elites. Nonetheless, the problem remains that overall conditions for R&D in Asia still leave much room for improvement.

Rapid growth in R&D investments will continue across the region. Since 2006, China has been in the world's top four R&D countries. Research intensity (the percentage of GDP spent on R&D) has grown rapidly and, for several Asian countries, now exceeds European numbers (table 1). This growing discrepancy is likely to become more pronounced in the coming years because leading Asian countries have ambitious plans to expand both public and private investment in R&D. Most European countries struggle to maintain their R&D expenditures and will continue to do so in the near future, following the 2008/9 recession.

FDI is increasingly used as an instrument for the technological upgrading of Asian economies. Both the economic and technological rise of Asia started with the outsourcing of production of simple goods in the 1980s. Using so-called original equipment manufacturing (OEM) arrangements, Asian companies produced goods under strict licensing agreements to detailed specifications. In a new stage — original design manufacturing (ODM) — Asian manufacturers have become deeply involved in the R&D and design of products such as laptop computers. Based on competitive advantage, Asian companies are now fully integrated in global production networks. As companies increasingly compete on the innovativeness of their products, instead of on price,³⁵ we are now witnessing a global

COUNTRY / REGION	R&D INTENSITY	R&D EXPENDITURES
EU ²⁷	1.9	237,001
NETHERLANDS	1.63	9,686
FINLAND	3.91	6,850
GERMANY	2.63	65,622
UK	1.88	34,144
CHINA	1.44	35,614
INDIA	0.8	n.a.
SOUTH KOREA	3.21	24,589
JAPAN	3.44	110,116
USA	2.76	270,660

TABLE 1. RESEARCH EXPENDITURE AND INTENSITY IN SELECTED COUNTRIES/REGIONS IN MILLIONS OF EUROS (2007–2009)

innovation race and the emergence of global innovation networks.³⁶ Attracting FDI in high-tech sectors is an important instrument in Asia's catching-up strategy with the West and allows Asian firms to learn about new technologies. This occurs in aircraft and high-speed train manufacturing and a host of other industries, offering Asian companies the opportunity to expand their capabilities. The measures taken by Asian governments are targeted to stimulate foreign investments in key industries (through tax breaks, for example) in order to reach technological independence.

Outward FDI is increasingly used by Asian companies to access specific technologies and assets. The takeovers of Volvo by Geely of China, Jaguar Landrover by Tata of India, MG Rover by Nanjing Automobile Group, Arcelor by Mittal of India, and Corus by Tata Steel of India fit that picture. It is very likely that this trend will accelerate as cash-rich Asian companies look for acquisition opportunities worldwide. Important technologies may end up in Asian hands, potentially leading to a future situation in which Europe is dependent on Asian licenses and patents.

The outsourcing of R&D to Asia is on the rise. This includes the transfer of entire laboratories, subcontracting to Asian research organizations, and through collaborative R&D projects. Asia is gaining global prominence in R&D outsourcing, offering better conditions, such as cheaper research opportunities brought about by low labor costs for qualified R&D personnel,

tax incentives, and fewer legal restraints. Most Asian states have invested heavily in R&D parks and industrial development zones to attract investors. Leading in R&D outsourcing are the information and communication technology (ICT), pharmaceutical, and biotech industry sectors. Companies like GE Healthcare and Siemens have moved parts or all of their R&D activities to Asia. Singapore, for instance, is one of the top R&D locations in medical and biotechnology. All major ICT companies have R&D facilities in India and China. Possible obstacles to the expansion of European outsourcing are significant costs in adapting the local human resources to meet Western standards, and problems with protection of intellectual property rights (IPRs). Western companies therefore remain reluctant to outsource core elements of R&D procedures. Still, it is estimated that outsourcing to India and China is 30% to 60% cheaper than in either the EU or the US.³⁷ With R&D capability in Asia rising rapidly, R&D outsourcing to Asia will continue to grow despite uncertainties over human resources, fraud, and unclear property rights.

Asian knowledge elites increasingly leave their mark on the world knowledge landscape. Chinese and Indian citizens are found among the world's top multinationals, high-tech companies, and universities. The brain-drain from developing countries to the developed world is still ongoing; however, at the same time, a reverse brain flow back to Asia is emerging, as economies grow and business and research environments improve, luring both nationals and foreign researchers. Governments and companies from Asian countries are now actively trying to encourage nationals to return by offering incentives such as tax breaks.

Conditions for research and innovation in Asia still leave much to be desired. Despite the fact that state-of-the-art research facilities are opening up all over Asia, conditions for research and innovation are often problematic. Allegations of industrial espionage, infringement of IPRs, and outright fraud emerge from time to time — a problem that is seen by some as being fuelled by an appraisal of research and innovation from a techno-nationalist perspective. In techno-nationalism, research and innovation are driven by nationalist sentiments to serve the greater national good. In cosmopolitan innovation, representing the opposite end of the spectrum, innovation is based on international collaboration.³⁸ These issues may be of a temporary nature, marking a transition phase in the process of

development towards a more open and competitive STI environment. Asian companies are now building up major patent portfolios themselves, which is providing a powerful incentive to the enforcement of IPRs. And, as Asian scientists increasingly publish in international peer-reviewed journals, the quality and transparency of research will need to improve as well.

STRATEGIC QUESTIONS FOR EUROPE

- How can Europe develop a more assertive STI investment strategy to prevent falling further behind the US and, increasingly, Asia in an economic situation where the prospects for greater European R&D expenditures in the near future are small?
- How can Europe attract R&D human capital and research centers? Can it use its large, sophisticated domestic market to do so? How can Europe protect its labor force and economy against a future shift of high-technology production chains to Asia?
- How can Europe effectively cooperate with Asia in key areas such as green technology, high-tech industries, services, etc.? What are the opportunities for cooperation on major global challenges, such as climate change, aging, urbanization, etc.? What will Europe have to offer to rapidly growing Asian science, technology, and innovation systems?
- To what extent do Asian (techno-nationalist) models of R&D and innovation differ from European models, which are said to be more open and cosmopolitan? What are the implications for competition and collaboration between Asia and Europe?

8 POLITICAL STABILITY

Economic liberalization and unprecedented levels of economic development in Asia have not been accompanied by any significant political reform of what are predominantly authoritarian systems. Despite overall political stability in the region, the lack of political accountability and participation, along with communal tensions, may pose a challenge to the political stability of Asian states. Despite tremendous cross-regional diversity, some key issues across Asia can be distinguished:

The political landscape of Asia is expected to remain diverse. Generally four types of political regimes can be discerned in Asia: democracies (i.e., South Korea and Japan), anocracies (flawed democracies, e.g., in India, Indonesia, and the Philippines), hybrid democracies (e.g., Singapore and Cambodia), and autocracies (e.g., China and North Korea).³⁹ While multi-party systems have been introduced — in name — in several states, they often remain largely ineffective in practice. The executive bodies continue to remain powerful compared to Western liberal democracies despite a slow trend towards the general strengthening of the legislature vis-à-vis executive bodies. The judiciary remains relatively weak in the majority of Asian states, while the military continues to be an important player in the system. Moreover, the so-called 'Beijing consensus' of conditional economic liberalization in combination with political authoritarianism, is making headway in states such as Vietnam and Laos.⁴⁰ Yet, a growing number of Asian countries are rated as free or partly free by the NGO Freedom House.⁴¹

Cronyism and endemic corruption are persistent plagues across the region. The persistence of patronage networks as a basis for politics continues to prevail in many Asian states. Political parties ranging from Japan's LDP to China's CCP suffer from cronyism, ineptitude, and corruption.⁴² Pakistan, Cambodia, Bangladesh, Sri Lanka, Thailand, the

Philippines, and others are plagued by similar problems. Asian countries generally score low on a number of World Bank indicators for good governance and corruption, which include both 'petty' forms of corruption, as well as so-called 'state capture by elites.'⁴³ A number of big corruption scandals, among which is most notably the Chinese 2008 milk scandal, underscore the potential risks posed by corruption to national health and well-being among other things.

A remarkable rise of civil society has been witnessed in some parts of the region. The significant increase in secondary and tertiary education enrolment rates among populations in general, combined with the proliferation of modern information and communication technologies, has spurred a vibrant discourse on a range of societal issues. Informal channels provide a forum to voices expressing discontent, which not only challenges the political leadership, but also hosts pro-government voices expressing nationalist sentiment (see, for instance, the patriotic internet picture '2008 China – Stand Up!', which received millions of hits on the website Sina, the Chinese version of YouTube (figure 4).⁴⁴



FIGURE 4. SCREENSHOT OF THE WEBSITE SINA, FEATURING THE PATRIOTIC INTERNET PICTURE '2008 CHINA – STAND UP!'

Ethnic rivalries, sectarian conflicts, and secessionist movements continue to threaten political stability. Ethnic, religious, and regional minorities are subject to discriminatory practices — both open and covert — in many Asian states, often contributing to or directly causing increased political instability. In many cases, identities overlap because ethnic minorities often share a different religious outlook from the rest of the population. Sectarian conflict continues to cause problems in countries such as India, Indonesia, Pakistan, and the Philippines. Many countries, among which are China and India, are also plagued by secessionist movements, which employ methods ranging from public diplomacy to outright violence.

STRATEGIC QUESTIONS FOR EUROPE

- What does the global shift of power mean for the traditional themes in Western foreign policy (e.g., promotion of human rights and democracy)?
- What should be the role, if any, of the European public and private sector in countering corruption in Asian countries? In light of the increasingly important role played by civil society, can European states and the EU tailor their strategies to specifically target sub-state groups in order to promote their own policy agendas?

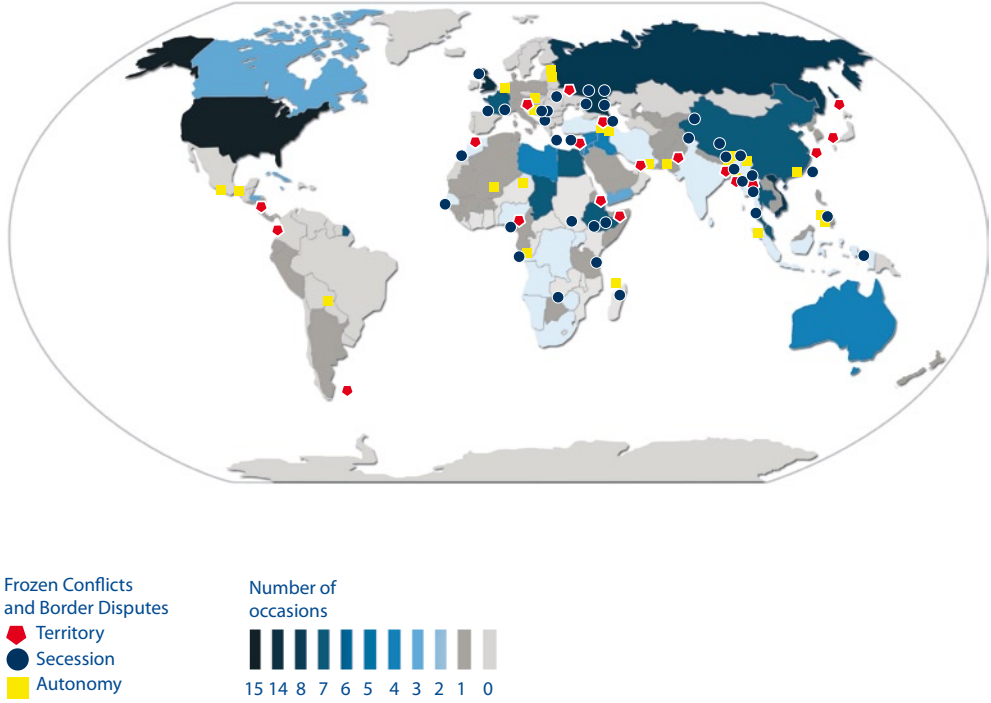


FIGURE 5: FREQUENCY OF MILITARY ACTIONS BY STATES (1946—2007) AND BORDER AND FROZEN CONFLICTS⁴⁵

9 INTERNATIONAL RELATIONS AND INTERNATIONAL SECURITY

The Asian continent as a whole is moving to the center stage of international politics. Key players, most notably China and India, are starting to pull more weight in a nascent multi-polar world order. Yet, the emergence of an Asian-dictated *Pax Pacifica* is beyond the horizon for the foreseeable future. Meanwhile, Asia continues to suffer from a plethora of ethnic, religious, ideological, border, and frozen conflicts, which continue to jeopardize regional and global security.

Asia counts a significant number of frozen conflicts and unresolved border disputes that could erupt into full-blown conflict (figure 5). These long-lingering animosities between key regional powers and challengers together provide for an explosive mix, which could, at a moment's notice, literally change the face of the Asian landscape. Most important among these are the Sino-Indian rivalry, the Pakistani-Indian conflict over Kashmir, the US-China conflict over Taiwan, competing claims over a number of islands in the East and South China Sea, and simmering tensions at the Korean peninsula amidst a continuing standoff over the nuclear program of North Korea.

In this context, China has been assuming a more active role in both regional and global affairs, relying on mercantilist foreign policies and active resource diplomacy. China has actively resorted to the targeted use of FDI, relying on its sovereign wealth funds (i.e., the China Investment Corporation) and state-owned corporations in order to strengthen its economic ties with the 'near' (neighboring countries) and the 'far abroad' (in which Africa is a key region). Political and security objectives are embedded in Chinese foreign economic policies, which is a phenomenon not confined to China itself, but one that is widely observed across the Asian continent. Furthermore, China has stepped up its participation and leadership in such regional organizations as the Shanghai Cooperation

Organization (SCO), Asia-Pacific Economic Cooperation (APEC), Asian Development Bank (ADB), South Asian Association for Regional Cooperation (SAARC), the Regional Forum (ARF) of the Association of Southeast Asian Nations (ASEAN), and ASEAN + South Korea, China, and Japan (ASEAN+3). It was also one of the key contributors to the US\$ 120 billion liquidity fund that was established under the Chiang Mai Initiative after the financial crisis of 2008.⁴⁶ China is providing formal and informal leadership on a number of regional and global issues, as is apparent in its role in the Six Party talks on North Korea's nuclear program. China also played a key role — if not a very constructive one — in the final drafting of the Copenhagen declaration on climate change.⁴⁷ It has also had a three-ship People's Liberation Army (PLA) navy task force in the Gulf of Aden since 2008 to protect the international sea lines of communication from pirate attacks.⁴⁸ To put this in historical perspective, this is the first time since 1432 that the Chinese navy has roamed beyond its regional waters!

Security of supply lines will be of vital importance to the continuous economic growth of regional powers. Both the Pacific and the Indian Ocean are center stage of a rapidly evolving maritime build-up with established and emerging powers positioning themselves to gain control over strategic footholds in the two oceans. The PLA regularly conducts military exercises in the resource-rich South China Sea, which have already led to several military encounters with the US Navy.⁴⁹ China occupies a number of islands that are also claimed by other countries, including the Philippines and Vietnam. Meanwhile, the US holds on to an extensive regional military presence in the Pacific with large military bases on the island of Guam and in South Korea and Japan. Despite occasional domestic political upheavals and demonstrations against US military forces in South Korea and Japan, their presence was recently extended against the background of developments in the regional security situation (e.g., North Korea's nuclear program). In the Indian Ocean, China, the US, and India are committed to expanding their respective maritime presence. China, within its 'String of Pearls' strategy — which involves securing access to the Indian Ocean, expanding its maritime presence and strengthening diplomatic relations with countries from the Persian Gulf to the Strait of Malacca — is building naval bases in the Maldives and the Seychelles and is investing in military port infrastructure in Pakistan, Sri Lanka, Bangladesh, and Myanmar.⁵⁰ India is constructing a naval base in the Maldives and has

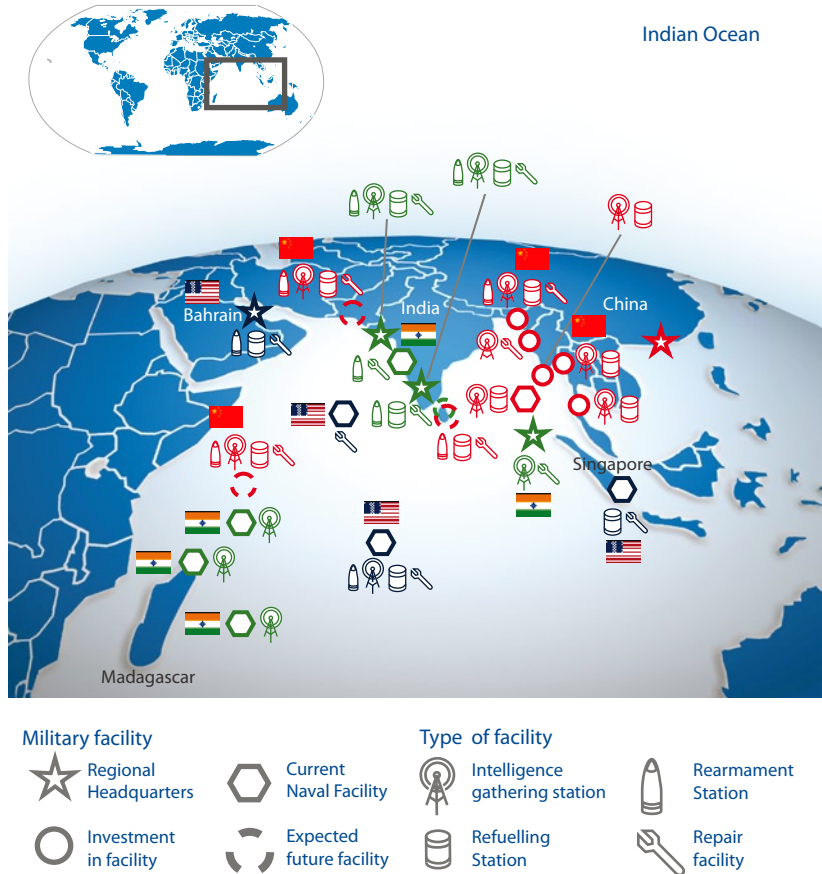


FIGURE 6. MARITIME INFRASTRUCTURE OF INDIA, CHINA, AND THE UNITED STATES IN THE INDIAN OCEAN

expanded its monitoring facilities in the southern Indian Ocean.⁵¹ The US, meanwhile, relies on its well-developed blue-water capabilities and on its naval base at Diego Garcia (see figure 6 for an overview).⁵²

While bilateral agreements give way to the emergence of regional multilateral frameworks, the latter sometimes remain paper tigers. Despite the surge of multilateral initiatives, it is only within the context of ASEAN and within the ADB that real intergovernmental and regional

cooperation is taking place; cooperation within APEC often remains limited to exchanges at the diplomatic level. Prevailing norms of national sovereignty and non-interference are important in hindering the growth of a more effective regionalism. Meanwhile, Asia's economic ascent is not reflected in the makeup of international bodies. While China is a member of the United Nations Security Council and China and India are part of the Outreach 5 (O-5) of the Group of Eight (G8), they have not yet succeeded in significantly increasing their voting shares in multilateral financial institutions, such as the IMF and World Bank, despite efforts to increase their financial contribution – and thereby their quota on which voting shares are based.⁵³ However, the recent April 2010 increase in China's quota in the World Bank might indicate growing political support for reform among status quo powers.⁵⁴

Asian states increasingly conceive soft power as both a goal in achieving their grand strategies and an instrument to do so, and invest considerable effort in public diplomacy. Important instruments in public diplomacy are cultural institutions, cultural export products, and people-to-people interactions. China uses public diplomacy to ease the fears among neighboring states of its ascension as a regional hegemon. Chinese policies, such as 'smile diplomacy', 'harmonious society', and 'harmonious world', have been actively targeted towards ASEAN states, Africa, and Latin America. At the core of its public diplomacy apparatus is the establishment of over 200 Confucius Institutes, where promotion of the Chinese language and culture takes place. Public diplomacy has contributed to the spread of distinct Chinese ideology and policies, such as the Beijing consensus, against the background of the recent financial and economic crisis, which has contributed to the de-legitimization of the Western liberal democratic and capitalist system.⁵⁵ Other states, too (South Korea, for instance), use cultural institutes to increase their influence both in- and outside of the region. Such public diplomacy may also take place without governmental interference, as is illustrated by the importance of the Indian entertainment industry, where Bollywood movies and Indian TV channels and TV series form an important export product.⁵⁶

STRATEGIC QUESTIONS FOR EUROPE

- How should European states deal with the re-emergence of mercantilist foreign policies and resource nationalism? Should they seek to create a level playing field for European corporations to compete against state-backed corporations?⁵⁷ Or should they continue to promote the old, liberal world economic order?
- How can the European Union develop an effective strategy to shape the Euro-Asian relationship? How can Europe adapt international decision-making bodies and adjust voting procedures so that these reflect a new power distribution on the one hand, while on the other hand, European states do not entirely lose their say in the regulation of international affairs?
- How should Europe position itself with regard to the many frozen and border conflicts in Asia? How can it contribute to the development of effective strategies to prevent these from erupting?
- In light of current developments in the Indian and Pacific Oceans, how can the EU develop an effective maritime grand strategy to safeguard its interests around the globe?
- What should a successful European public diplomacy strategy look like? One that effectively promotes European interests abroad?

10 CONCLUSION: HOW CAN EUROPEAN STATES USE SOFT-POWER INSTRUMENTS TO PROMOTE THEIR INTERESTS?

To most Western observers, the current rise of Asia is a recent and astonishing phenomenon. To others, who take a longer-term historical perspective, the rise of Asia represents a restoration of the times in which Asian countries ranked among the world's advanced nations, i.e., before isolationism, the effects of the industrial revolution, and colonialism turned India and China into some of the poorest countries in the world.⁵⁸ From that perspective, it is not so much the current rise of Asia that is so astounding, it is, rather, its steep decline in much of the 19th and 20th centuries that requires explanation. Still, most Western governments, companies, and citizens are ill prepared for the changes that are taking place in the world and that will shape the 21st century.

This report presents these changes from a number of different angles: population, resources, economy, political stability, science and technology, and international security. It seeks to elicit some of the key issues for Asia and for European countries in addressing each of these dimensions. However, these six dimensions cannot be studied in isolation; rather, each dimension is linked to all the others. An understanding of the interconnectedness of these drivers is needed to make sense of some of the changes that will take place in the coming decades.

Figure 7 shows the six dimensions and presents some of the developments at the interfaces of each pair of dimensions. It is at this level that many questions remain unanswered, providing a basis for the further development of a research and policy action agenda that the 'Strategy & Change' program will address in the next few years.

In conclusion, we highlight five of the key interface issues that demonstrate how tightly the dimensions are related – issues that require additional work to arrive at a better understanding of the interests and priorities of European and Asian countries, as well as of possible conflict, competition, and cooperation.

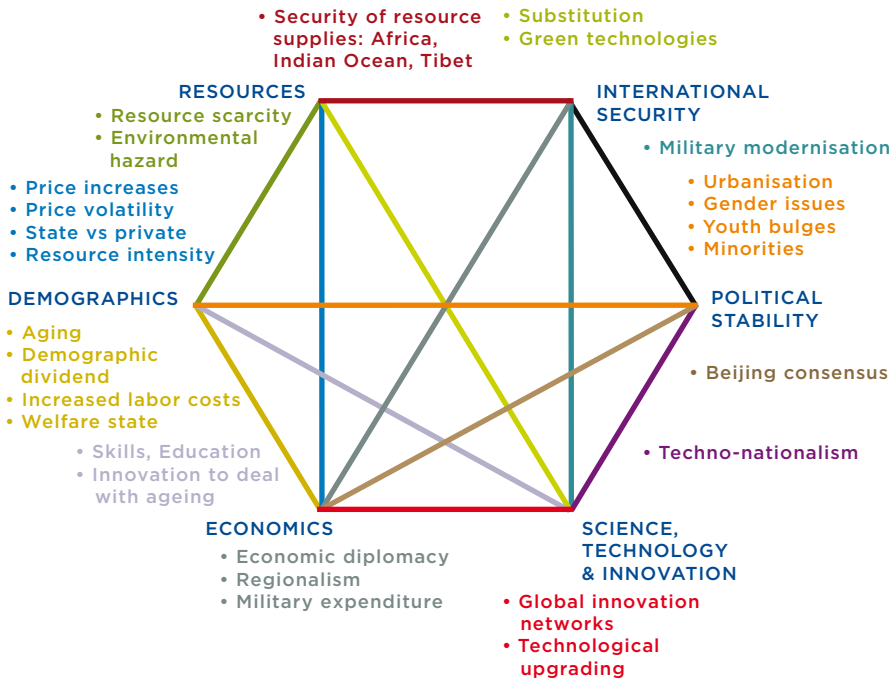


FIGURE 7. KEY DRIVERS IN ASIA'S DEVELOPMENT AND INTERACTIONS

Resources, resource scarcity, and secure resource access are key issues in economic and industrial development in the coming decades. Resources include everything from rare earth minerals to water. Competition with China (the main user of resources) over access to resources in Africa is a key issue in international relations, with significant implications for Europe's future capacity to produce and innovate. At the interface between resource scarcity and science, technology & innovation there are important innovation issues related to the development of green technologies and the substitution of scarce and expensive materials with lower cost materials.

Demographic shifts will be a key characteristic of the first half of the 21st century. While the global population will continue to grow, the rapid aging of societies in Europe and many countries in East Asia is without precedent. Technological and institutional innovation will be a key factor in addressing some of the problems related to aging: these include the development of new concepts of the welfare state, keeping older workers productive, ensuring inter-generational solidarity, dealing with migration and location of work, developing technologies to support older citizens, and exploring new modes of human-machine interaction.

Global innovation networks are emerging as a result of the relocation of production to Asia, rapid growth in R&D investment in Asia, and the acquisition of Western companies by multinationals from Asia. Facilitated by the internet and advances in logistics, it is possible to break down supply chains into ever smaller fragments that are often location independent. The future of global innovation is a key issue for European government, companies, and citizens alike.

Economic growth is a key instrument in domestic and foreign policy. Economic growth as a policy instrument in itself has taken center stage in the Chinese development model, known as the 'Beijing consensus', based on the idea that freedom and democracy are secondary to economic growth and the ensuing affluence and financial security for large parts of the population. In foreign policy, state-sponsored economic diplomacy has become an important mechanism to ensure access to key resources and to strengthen military and economic relations with other developing states, to the detriment of Europe's conditionality-approach.

Finally, safeguarding international security in the new multi-polar order of the 21st century merits our fullest attention. Keeping supply lines open and ensuring access to raw materials is only one piece of the puzzle in this endeavor. Upholding the stability of the international system requires that the many frozen conflicts in Asia do not erupt — a cause that will be furthered through effective cooperation between Asian and Western countries and the development of new international governance instruments for a time when the Beijing consensus might have replaced the Western liberal democracy that has characterized the era of the *Pax Americana*.

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ENDNOTES

- 1 In the context of this report 'Asia' refers mainly to the (emerging) economies of South, East and Southeast Asia, with an emphasis on China and India because of their overwhelming size. It pays little attention to Central and Southwest Asia and excludes the Middle East, Turkey and Russia east of the Urals, which is part of Asia in the geographic sense.
- 2 'Europe' refers to the EU27 and the five EFTA countries.
- 3 If not sourced, all data have been derived from the United Nations Population Division (see United Nations 2008 and 2009).
- 4 Caldwell and Caldwell (2005, p.43).
- 5 Bloom, Canning and Sevilla (2003, p. xi).
- 6 Sharma and Haub (2008).
- 7 '*The Pre-Natal Diagnostic Techniques (PNDT) Act and Rules*', available on the Medindia Health Network Website: www.medindia.net/indian_health_act/the_pre_natal_diagnostic_techniques_pndt_act_rules/list-of-acts.htm#ixzz0nuEiLa5O (accessed 13 May 2010).
- 8 China's gender birth ratios differ across the country. In the east where the policy is strictly enforced, the birth ratio can exceed 130, whereas in the west, liberal enforcement and a cultural distaste for abortion have kept the ratio much closer to normal (see Economist 2010).
- 9 Hudson and Den Boer (2007).
- 10 Iimi (2005, p. 97).
- 11 Ducanes and Abella (2009).
- 12 Beng (2010); Korea Times (2010); Barta and Venkat (2010).
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- 14 Chen, et al. (2010).
- 15 IEA (2007, pp. 16-18).
- 16 Watts, J. (2010).
- 17 IEA (2009, p. 76).
- 18 Wu, et al. (2008, p. 6).
- 19 Shell (2001, p. 53).

- 20 Hurst (2007).
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- 22 IEA (2007, p. 8).
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- 25 For an overview of the role of China in Africa, see Van Dijk (2009).
- 26 Kooroshy, et al. (2010).
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- 40 Center for Systemic Peace (2008a; 2008b, p. 2).
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- 43 Kaufmann, et al. (2009, p. 6).
- 44 Sina website: <http://you.video.sina.com.cn/b/12417440-1401913474.html> (accessed 13 August 2010).
- 45 Uppsala Universitet (2008); Heidelberg University (2008).
- 46 Adam and Clenfield (2009).
- 48 Erikson and Mikolay (2009).
- 49 England (2009).
- 50 Khurana (2008); Berlin (2004).
- 51 Cohen (2001, p. 252-256).
- 52 Sweijs, et al. (forthcoming).
- 53 Bretton Woods (2010).
- 54 Wroughton (2010).
- 55 Hsiao (2008).
- 56 Sen, et al. (2004).

- 57 The Directorate-General Trade of the European Commission is calling for state interference to protect critical mineral supplies (Tiess, 2010).
- 58 Arrighi (2007).

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