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China, the EU and possible ways forward:

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Jennifer L. Morgan

Director, Climate and Energy Security, E3G

Summary

Energy situation in China and the response

Climate situation in China and the response

EU-China interdependencies

Ideas for a way forward

Overall Trends



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- 22 provinces with very different circumstances
- 20 million farmers become urban residents each year – 60% of population will live in cities by 2020
- Chinese cities and towns are expected to absorb about 300 million people from rural areas in 20 years. Equivalent to entire US population
- 800 million live in poverty
- Stability is a top priority for the government
 - Efforts to slow economic growth

China's growth is exposed to a series of challenges:



- **To sustain economic growth** – It has been estimated that GDP growth of below 7% per year would be a destabilising factor for the Chinese economy and society.
- **To maintain social stability** –
 - China needs to address **unemployment** and inequality. Currently unemployment is estimated to be between 150 –170 million, which is around 23%.
 - **Equity** – the inequality gap between rich and poor, rural and urban citizens and west and east is causing an increase in tension within Chinese society. The collapse of the healthcare system, pension provision and social support especially in rural areas is adding to this inequality.
 - **Migration and urbanisation** - between 300 to 500 million people will migrate to the cities over the coming decade - the biggest migration wave seen in history.
- **To obtain environmental stability** – China loses at least 7% of GDP p.a. due to environmental degradation
- **To establish effective energy and natural resources management** – China's recent GDP growth is creating continuing scarcity of energy and natural resources

- **China is exporting food scarcity**
 - In 1995 China went from net exporter to net importer of grain.
 - China's overnight emergence as a leading importer of grain, second only to Japan, is driving up world grain prices, promising to raise food prices everywhere.
 - If China's grain use continues to rise, by 2030 it will need to import some 369 million tones of grain, an amount roughly twice this year world grain exports.
 - Seafood consumption is also rising. If China, with 1.3 billion people were to consume seafood at the same rate as Japan, it would need 100 million tons per year, the current annual world catch.
- **China is exporting water scarcity**
 - Within the region China is over-exploiting and consuming water in an inefficient way
 - Globally China is increasing the import of water intense products, such as soya from Brazil



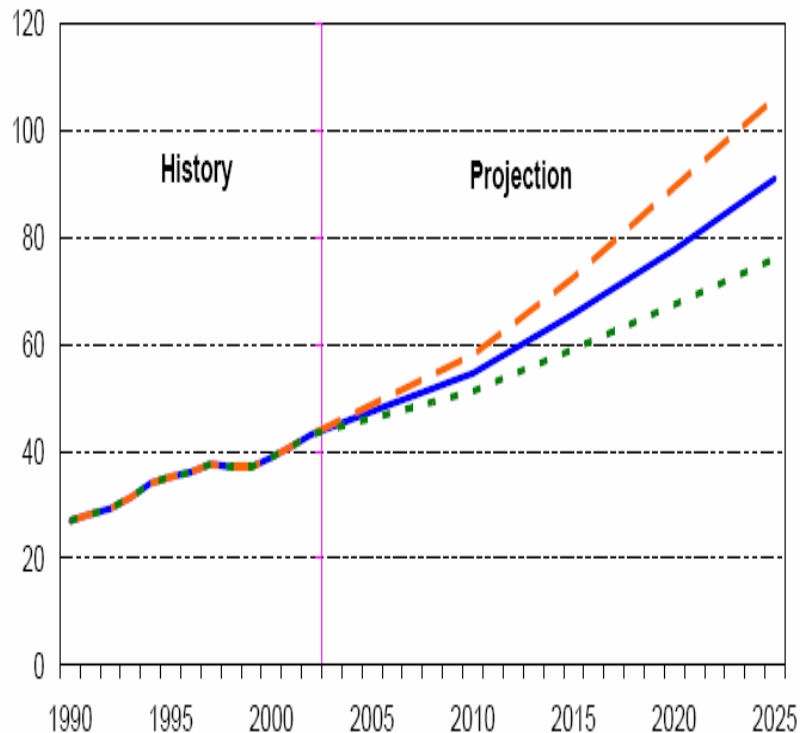
- 2006 105,000 MW of new power generation installed=Germany's total electricity consumption
- 6 million Chinese work in 24,000 mines, 2 billion tons of coal last year and 45% of total global production
- 16 of 20 cities with worst air pollution in the world are in China
- 500,000 people/year die from the impacts
- 30% of the land suffers from acid rain
- Able to build an 800 MW power block in 18 months

China's energy demand will increase additionally when China's internal consumption rises.



- The average Chinese person consumes only 10-15% of the energy an average US citizen uses, but with the economy developing at high speed many analysts expect this gap to be significantly reduced over the next 30 years.
- Currently, Chinese consumption of goods is well below the 65% norm of most major economies. However, it is rising rapidly, particularly in electronic product categories. China leapt into second place in the global marketplace for technology, media and telecoms in 2004 and is expected to take the lead by 2010.
- The predicted growth in the Chinese automobile market alone would result in doubled demand for fuel energy by 2025, two thirds of which will be imported.

Total energy consumption 1990 - 2025



- In 2003 China accounted for 12.3% of the total world energy consumption
- China is experiencing an increase in energy demand. 13 years ago China was Asia's biggest exporter of oil, it is now the second largest importer
- Oil imports increased by more than 30% in both 2003 and 2004 and China is now the second biggest oil importer after the USA

— Reference Case — High Economic Growth Case ■ Low Economic Growth Case

China's energy demand affects its relationship with countries, regions and the international system, and is becoming a source of international tension

- **China and Africa**
 - China is satisfying its energy demand with imports from autocratic regimes:
 - 60% of Sudan's oil is exported to China
 - 25% of Angola's oil is exported to China
 - China invests in Burma, Nigeria and other unstable states to secure its energy supply
- **China and the USA**
 - China and the USA are direct competitors in the world oil market. Their relationship is deeply influenced by China's increasing energy demand
- **China and the EU**
 - The EU and China have a common interest in Russia's gas, which once turned into competition could be exploited as political leverage
 - EU and China compete as consumers within the global oil market
- **China and the UN**
 - China's non-interference policy is linked to its energy needs
 - China's appetite for oil also affects the position it adopts within the UN Security Council – for example its stance on Iran

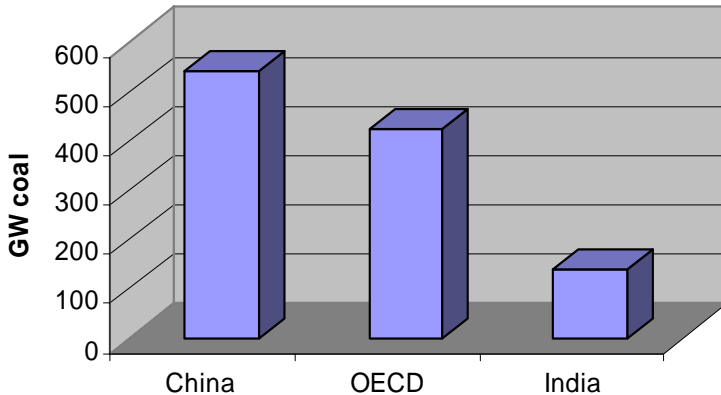
China's energy consumption currently satisfies Europe's consumer demands



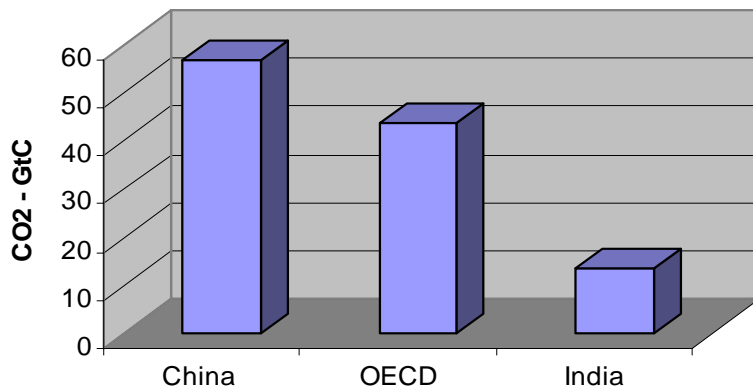
- Industry and manufacturing account for two thirds of China's total energy consumption.
- China's economy is export driven. Around 70% of China's GDP is for export and goes to satisfy the US and the EU markets. It is our consumption which is shaping China's energy demand.
- China's export to the EU is steadily increasing



Coal Fired Stations by 2030



Lifetime carbon lock-in



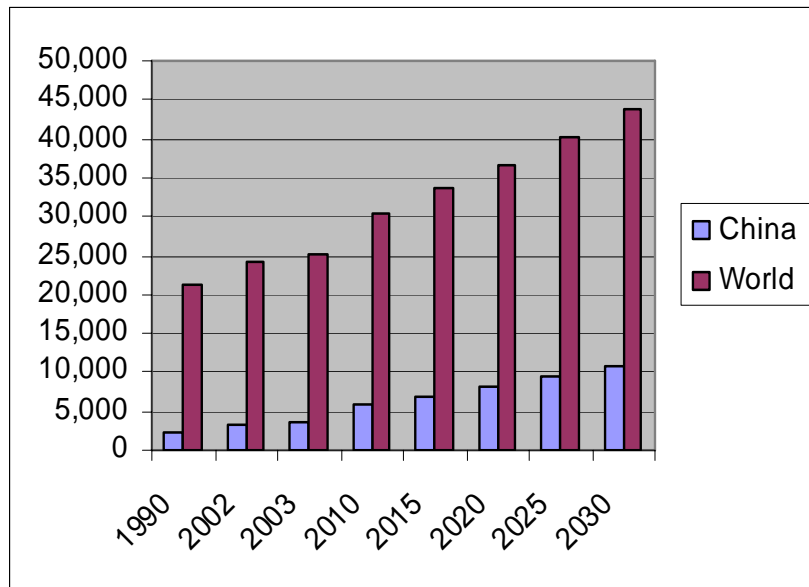
Source: IEA, WEO 2004

- In order to continue growing China needs to meet its increasing energy demand and at present sees no alternative but to use its huge coal resources

- China is currently installing new coal fired power capacity at a rate of 1GW or more every 4 days

- Coal fired power stations built in China in the next 25 years are expected to lock-in 145 GtC

- The planned additional coal-fired power stations to be built by 2012 will produce twice the amount of CO₂ than envisaged by Kyoto carbon reductions for the same period



Source: Energy Information Administration / WEO 2006

- In terms of carbon emissions China is currently in second place with around 12% of total world output and is expected to overtake the world biggest emitter – the US, before 2009.
- The International Energy Agency (IEA) forecasts that the increase in greenhouse-gas emissions from 2000 to 2030 from China alone will nearly equal the increase from the entire industrialized world
- In 2000 87% of China's carbon emissions came from energy use

Many factors could cause China's failure. Each of them is large enough to invoke a serious economic slowdown



- Increase in **unemployment, poverty, social unrest** may cause a reduction between 0.3 and 0.8% in China's annual growth rate
- **Economic effects of corruption** - Were corrupt practices in China to increase - as a result of plausible though not demonstrable recent trends, the result would be a reduction of about 0.5% in China's expected annual growth rate
- **HIV/AIDS and epidemic disease** - by 2020 deaths from HIV/AIDS in China could cumulate to over 20 million which associates with annual reductions in GDP growth between 1.8 and 2.2% in the period 2002 to 2015
- **Water resource and pollution** - A plausible but adverse scenario of tackling water scarcity would result in a reduction in China's annual GDP growth between 1.5 and 1.9% in the ensuing decade
- **Energy consumption and prices** – Energy price changes constitute a major risk for Chinese economy. A drastic contraction in global oil supplies by about 25% lasting for a decade would cause an average economic diminution between 1.2 and 1.4%
- **Possible shrinkage of FDI** - High rates of FDI may well continue in the future, but there are also not implausible circumstances under which this FDI might severely contract. Reduction of \$10 billion a year in FDI may be associated with an expected reduction in China's annual GDP growth between 0.6 and 1.6%

Key challenges China is seeing / understanding for itself



- Societal harmony
- “Control” of the provinces and local level – translates into difficulty implementing central government policies on regional and local levels
- Security of supply of energy (contracts with Africans (oil+), Indonesians (oil and gas), Malaysia (LNG))
- Moving from a manufacturing center of the world to a high tech center
 - Managing growth eg current taxes to slow down exports
 - Developing domestic industries in their own right eg wind industry
- Trade balance (linked with managing growth)
- Regional challenges
 - Redevelopment of the Northeast of China
 - Developing the Center to be a transportation hub of the country
 - Addressing poverty in the West where resources are rich (coal, solar, wind)
 - Addressing poverty in the South where hydro only real commodity to sell
- Aging population

The Energy Security Response



- 10% reduction in total pollutants
- 20% reduction in energy consumption per unit of GDP
- 30% reduction in water usage by industry
- diversifying energy resources and increase energy-efficiency till 2020 (in order to cover rising energy demand)

medium-term approach:

- hydro power plant capacity 110GW - 250GW (25% of total elect. capacity)
- nuclear power capacity: increase of 800% (5% of total elect. capacity)



- China's **Renewable Law** which came into force on 1 January 2006 seeks to increase the share of renewable energy in China's **energy mix** to 15% by 2020.
- New targets aim to obtain 6 GW of power from **wind energy** by 2010, and 30 GW by 2020, a boost that would leapfrog China to nearly twice the level of the installed capacity of the current world leader, Germany.
- China is the world's leader in existing installed **Solar Hot Water / Heating** capacity.
- Recently China introduced tax benefits for small cars following the EU standards.

Implementation challenges



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- China did not reach annual rate 4% in 2006, only 1.23%.
- SO₂ increased about 2% in 2006.
- The Chinese government will double its effort to realize the goals above in 2010. Pressure on local governments and industry to deliver.
- Coal is top issue in China energy, coal consumption in 2006 was 2.3 billion tons.

People's Congress 2007



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- The Prime Minister publicly admitted the default or failure of the last year's target on energy reduction and pollution control. He then made even stronger position to tell all local governments that the Central Government means business on these two targets.
- Instead of making annual targets, the Prime Minister changed the strategy, a lump sum targets for five years,
- Energy conservation and clean energy development, plus of course environment protection, was THE most talked issue during the meeting, from all the congressmen and congresswomen.
- It is anticipated that there will be tremendous pressure built on this agenda, nationwide

Climate Security

- First national assessment on climate change (Dec. 2006)
- Average temperature to rise by 1.3 - 2.1 Celsius by 2020
- More extreme weather events and natural disasters
- In 2006: 2700 casualties, 212 billion RMB economic losses

China is aware of its climate impact – it feels the consequences



- Glaciers in western China's Qinghai-Tibet plateau, known as the "roof of the world", are melting at a rate of 7% a year due to global warming. Statistics show that average temperatures in Tibet have risen by 0.9C since the 1980s. The Chinese Academy of Sciences predicts that the melting glaciers will eventually lead to drought, an increase in desertification and more sandstorms.
- Between 1990 and mid 2004 1.8 million people in China were affected by water / climate related disasters.
- Incidents of social unrest have increased steadily during the last decade in China to reach a total number of around 9000 in 2003. Environmental concerns are at the heart of the majority of them.
- There are estimates showing that China is losing between 8% and 15% of its annual GDP because of environmental damage.

The Climate Security Response

Understanding of the government



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- Different to U.S., Chinese government clearly recognizes climate change caused by man-made emissions.
- Chinese authorities seem to have a clear view on the damages by climate change
 - on the ongoing dramatic deterioration of the environment
 - the home-made causes of most of the problems
 - the failure to meet government's targets caused by their lack of implementation of appropriate measures
- China does not want to accept GHG caps but officially shows commitment to tackle the problem.
- A first National Plan on Climate Change is near to release
- Recent decisions are indicating a focus on internal Emissions Trading and CDM rather than on fixed caps



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EU-China Interdependencies

A stable and growing China offers higher returns on Europe's investments and is critical in securing the pensions of our aging population

- China (including Hong Kong) receives the **major part of of the FDI (Foreign Direct Investment)** made by EU companies to Far East Asia – 72% of the total inflow.
- FDI in Far East Asia are **more profitable** than FDI in other countries. Europe's FDI in Far East Asia in 2003 generated 12% of all EU revenues from FDI. China had a major role in that process.
- The **rate of return from FDI in China** is increasing: in 2003 it was 8%, while the average return on EU capital from investments in other countries in 2003 was 6%.
- It has been estimated that European wages in 30 years would be 16-40% lower if China fails to sustain its economic growth.

As the world's biggest market and the world's fastest growing economy Europe and China are main **trade** partners, which is beneficial for both sides

- Europe and China are currently each other's second largest **trade partners**. They are predicted to become each other's leading trade partners in the near future.
- The share of foreign-invested enterprises contributing to total Chinese exports increased from 16.75% in 1991 to 47.93% in 2000. A large percentage of the **profit realised by these exports flows back** to the major investors, including those from Europe.
- The overall trade balance in goods is negative for Europe at present, however the trade balance for **services** is positive.
- It is expected that when China's economy becomes more consumer based Europe will continue to **increase its service exports** and as two thirds of the EU economy is service based this sector offers strong possibilities for growth.

Europe's economy would benefit from China's innovative capacity



- China is deploying capital internally at such a rate that it is currently the cheapest and quickest place in which to **bring technologies to maturity**, which can then be deployed globally as well as in China.
- China's innovative capacity and the speed of technology turnover is reducing world prices for new technology. For example - with the development of wind turbine technology in China, the price is falling worldwide and is already down. The **price has come down** by around 20%.
- Foreign companies recognise the possibilities the Chinese economy offers them and have been racing to file patents in China since 2000.
- China is working to increase its Intellectual Property Rights protection.

Europe cannot afford for China to fail. There would be global consequences from a failing China, which would affect Europe



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- Europe would struggle to meet the **needs of its aging population** and maintain its prosperity if China fails to sustain its economic growth. A failing China would mean European tax increases to finance an aging population and would also mean reduced economic opportunities.
- Europe's efforts to prevent **climate change** would be seriously undermined by China's energy use.
- China would continue exporting **energy, water and food scarcity** all over the world including Europe.
- A failing China would increase **world poverty**. One fifth of the world population would be dragged back onto the poverty path.
- A failing China would threaten the **world security** by generating regional and global conflicts.
- The **international rules based system** would not be able to operate effectively without having a stable and engaged China.

China is receptive to the possibility of developing a deeper collaboration with the EU



- **Geopolitical conditions**
 - Both China and the EU are in favour of a multilateral world governed by the rule of law
 - China needs a powerful partner to increase its regional and international profile and Europe appears to be the preferred choice
- **Economic conditions** - The EU is China's biggest trading partner, one of the most important foreign investors and significant provider of aid money
- **Chinese officials**
 - Since 2003, the new leadership in China has created the first ever policy paper on a foreign partner – the EU
 - Europe's importance has been explicitly proven during negotiations for China's membership of the WTO and constant mediation within the international system in regard to US pressure for faster transition to an open market economy
- **Chinese citizens**
 - 63% of the Chinese believe that Europe has a positive influence on global affairs and are receptive to the possibility of China further developing its relationship with Europe.

Europe is still uncertain in recognising the importance of the EU-China partnership. However there are objective preconditions stressing the need for strategic engagement with China



- **Geopolitical conditions**
 - Europe needs an international rules based system with strong Chinese commitment
- **Economic conditions**
 - To face its own challenges Europe needs China to succeed economically
- **Brussels and the Member States**
 - Both have formally expressed their intentions to become strategically involved with China. However there is no coherent approach towards genuine strategic partnership
- **European citizens**
 - European citizens are among those who do not see China as having a mainly positive influence on the world.
 - The trend is that European citizens are among those losing trust in China's positive influence on the world. Two years ago, four countries expressed a positive view of China's influence. In 2006, only one remained – Spain.

Converging and competitive approaches to China undermine European effectiveness



- Duplication of Programmes and institutions
 - * UK: cooperation agreements: basic research, environmental protection, health, agriculture, meteorology, space and aviation
 - * France: research agreements: science and technology, environmental protection, health, space, nuclear energy, artificial intelligence, coal cleaning and electricity generation with wind power
 - * Germany: cooperation: optical technologies, environmental research, biotechnology, production technology, microsystems technology, marine and earth science and the preservation of cultural heritage.
- Possible pursuit of converging/diverging interests and strategies
- Competition among EU member states
- Missed opportunities to maximise national assets within the EU and maximise transfer of technologies, especially energy technologies.
- Vulnerability towards China's ability to 'pick and choose'

The way Europe engages with China could influence whether China becomes an opportunity or a threat



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China as an opportunity	China as a threat
China supports a rules based international system in alliance with the EU and is involved in peacekeeping and non-proliferation activities	A nationalistic China causes regional and global insecurity. China continues its non-intervention policy and trading in arms destabilising unstable regions
China is integrated within the world order operating predictably and without diplomatic conflict with the USA	China is in an open conflict with the USA causing a threat to world security
China establishes efficient and sustainable use of energy	China pushed by its increasing energy demand compromises on foreign policy and climate security
Significant achievement in climate security based on China's cooperation	China as a major CO2 emitter diminishes all EU efforts in this regard
China maintaining fast economic growth – a guarantee of Europe's prosperity	An economically failing China reduces Europe's ability to maintain economic prosperity, and would force millions of Chinese back into poverty

Europe and China face mutual challenges, which could create an opportunity for strategic partnership



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Strong alignment ↑	<ul style="list-style-type: none"> •Demography •Energy •Water •Equity 	<ul style="list-style-type: none"> •Climate Change •International rule of law multilateral world •Drugs/ Organised Crime •Illegal immigration
	<ul style="list-style-type: none"> •Human Rights •Democracy •Taiwan, Tibet •Intellectual Property Rights 	<ul style="list-style-type: none"> •Unstable countries •Humanitarian Intervention •Democracy promotion •Human Rights protection
Weak alignment	National	Global

Key conclusions



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- Europe's engagement with China will, to a large extent, determine whether China becomes an opportunity or a threat
- To make use of the opportunity China provides and to shape the development of China, Europe's approach needs to be:



Strategic not tactical



Proactive not reactive



Presented as a single voice not addressing individual MS ambitions



Targeting long term interests not short term commercial benefits



Aiming at cooperation as well as competition

Options for engagement



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- Start from energy security and move to climate security
- Initiatives that address Chinese priorities and worries
- Consider governance challenges and develop ideas to address them
- Rational discussion about intellectual property rights
- Expectations Management in Europe

General elements/ideas



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- Support to China to meet the 20% efficiency goal
- Support to China to meet the renewables goal
- Focus on the regions that are of interest both to China for development reasons to Europe for learning and later development issues
 - Redevelop the Northeast.
 - Pursue renewables implementation in the West to address those issues
 - Transportation initiative in the Center linking up the hubs

General elements/ideas



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- Inclusion of a provincial and local level of support to address implementation challenges
- Exploration of a trade relationship in low carbon goods
- Utilise the fact that new cities going up all the time and recognition that cannot follow same path as eastern China. OECD to develop a big idea for a 21st century industrial park/city/community that could be showcased at the Shanghai Expo in 2010
- European funding for full CCS portion of the pilot

Options for engagement in climate



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- Not national caps but quantified contributions
 - Policies and measures
 - Sectoral contributions
- Build upon national targets
 - Efficiency, renewables, cars
- More ambitious international = more positive incentives
- Incentives could include
 - Increased carbon credits
 - Technology cooperation

Building Capacity



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- Measuring, monitoring for inventories and tracking
- Projections work
- Implementation experience
 - Local and provincial level not just on legislative initiatives but also on IPR issues

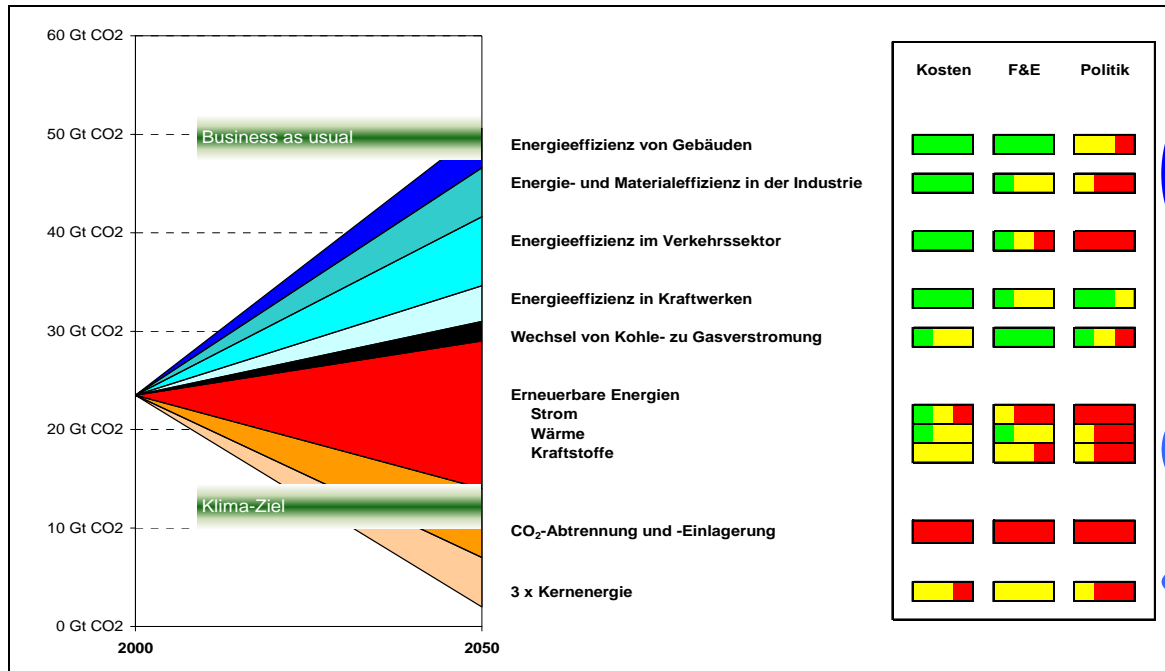
Technology cooperation



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**Mehr als eine Option notwendig
Auswahl von Optionen möglich**

Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology



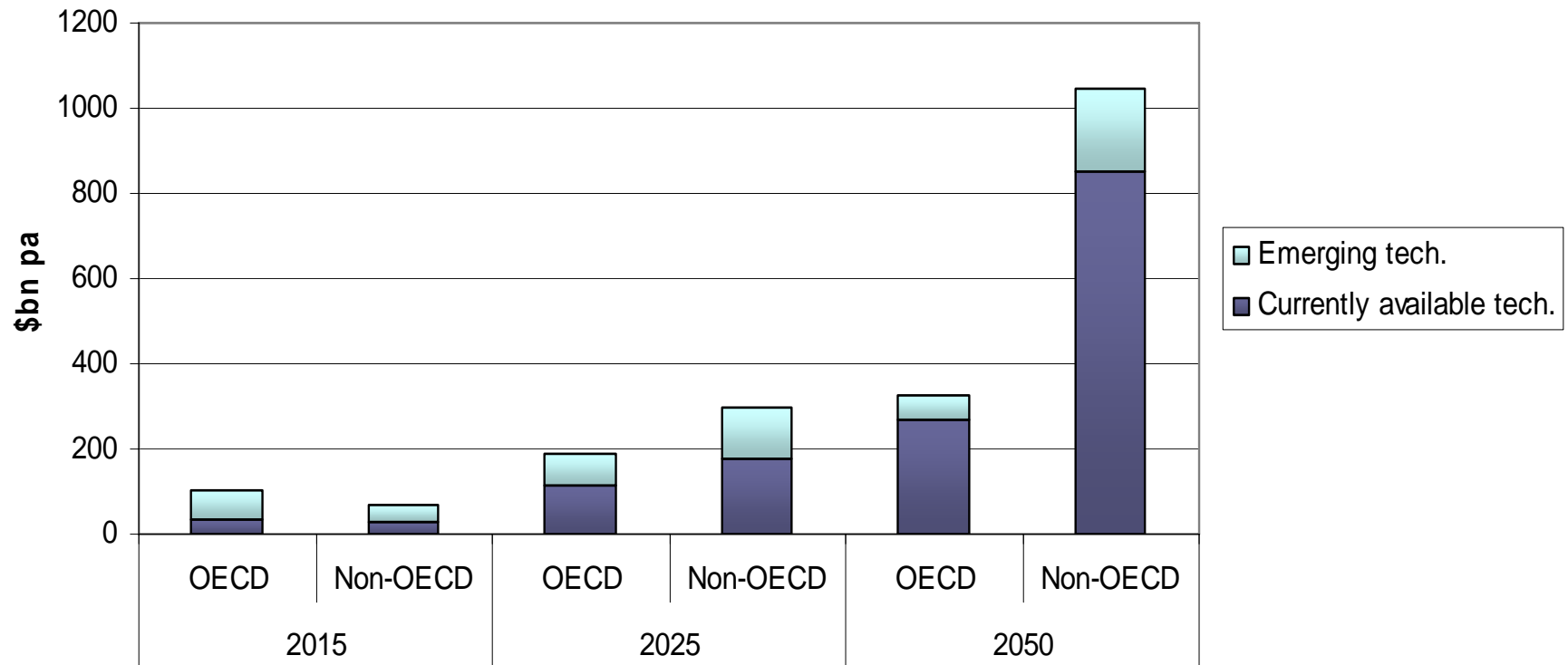
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emerging

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www.oeko.de

Currently available vs emerging



Scale of investments



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Non-OECD \$bill/year 50% OECD support	2015	2025	2050
Currently available (carbon price)	12	87	433
Emerging component (beyond carbon price)	23	61	87
Total	35	147	520

Conclusions



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- EU-China interdependencies on energy and climate security are significant.
- Start with energy concerns in specific regions and sectors and move to climate security.
- Support the government's current targets and encourage to go beyond through incentives and capacity building.