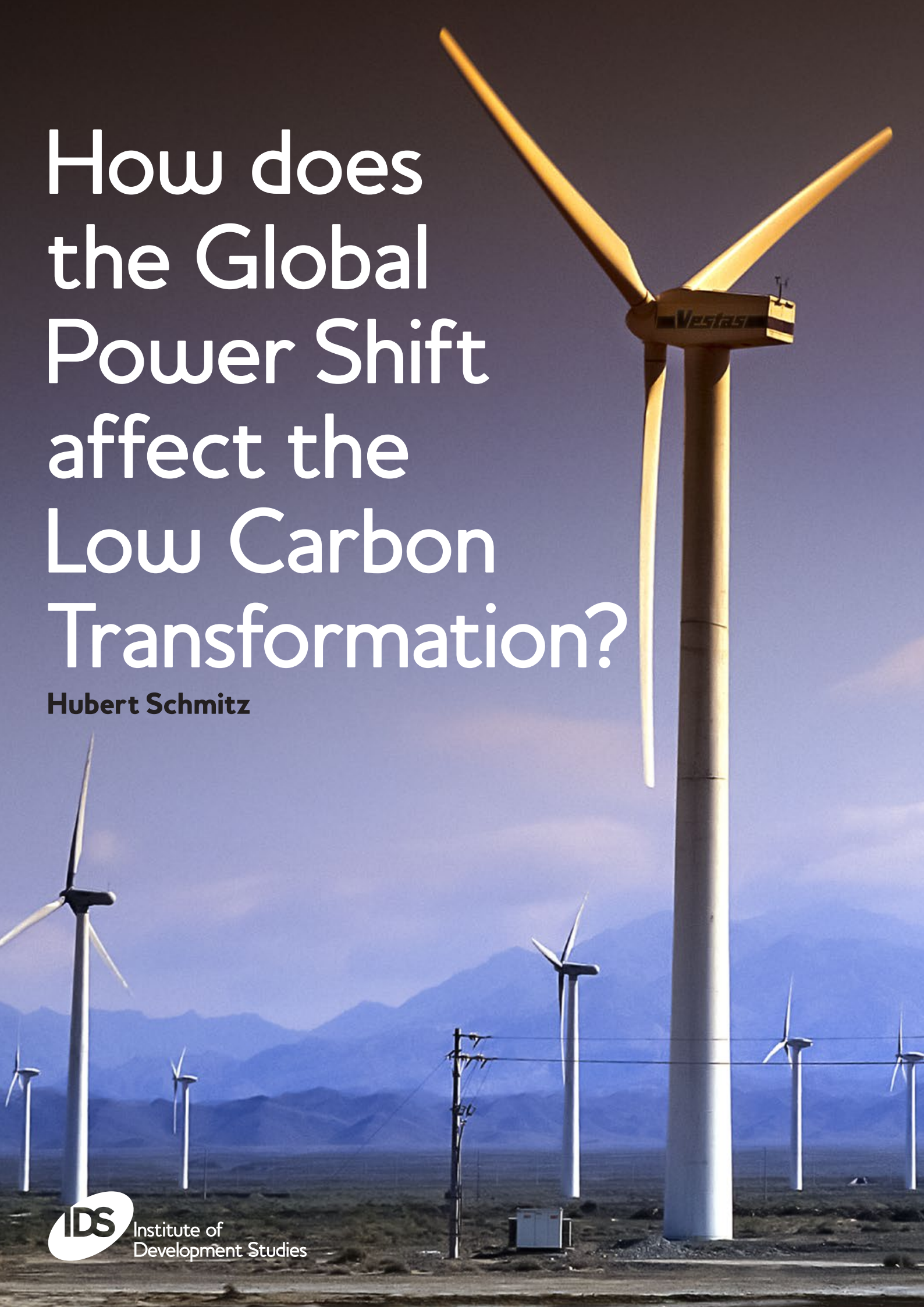
How does the Global Power Shift affect the Low Carbon Transformation?

Hubert Schmitz



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Front cover
Towering electricity generating turbines on a wind farm on the outskirts of Urumqi, Xinjiang Province in China. They are powered by wind coming off the distant Altai Mountains.

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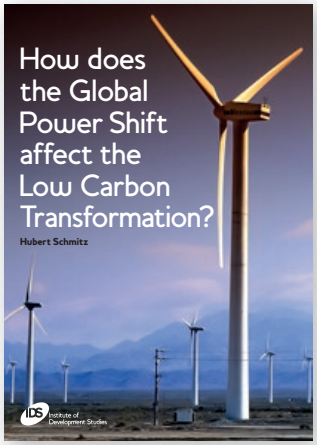

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Introduction

▲ Maintenance workers fix the blades of a wind turbine at Guazhou wind farm near Yumen, Gansu province.

Two transformations are likely to dominate the first half of the twenty-first century. One is the shift in economic power from the West (North America and Western Europe) to the East (China and the East Asian production system). The second is the transition from a high to low carbon economy. The first shift is at an advanced stage; the second at an early stage. The purpose of this paper is to discuss how the first shift affects the second.

Stern (2006) famously called climate change the greatest market failure of all time. Indeed, there is agreement that bringing about the low carbon transformation requires strategic intervention by the state. The problem is that the prospects for such intervention look bleak – at least in the West. Most Western states are either politically paralysed or financially bankrupt, or both. In contrast, the 'Rising Powers', in particular China, have 'entrepreneurial states' (Mazzucato 2011), declining levels of internal indebtedness and increasing foreign exchange reserves. What does this mean for the low carbon transformation? Will it make the transformation faster and cheaper? There are early signs that this might happen. For the past three years China has been the world's number one investor in renewable energy and India has had the highest recent growth rate (BNEF 2012). This suggests an accelerating influence on the part of the rising powers. There is also a cost reducing influence; China has slashed the price of solar panels and pushed down the price of wind turbines. The problem is that China (and to a lesser extent the other rising powers) is also responsible for most of the recent increases in carbon emissions.

> "CHINA HAS PUSHED DOWN THE PRICE OF WIND TURBINES."

So there is no easy answer to the question of how the global power shift affects the low carbon transformation. In fact the question is not answerable in a rigorous sense for two inter-related reasons. First, the transition from high to low carbon economy is influenced by many factors, so there is an attribution (and time lag) problem. Second, both the shift in power from West to East and the transition from high to low carbon growth have several dimensions and sectoral variations. Such methodological problems need to be acknowledged but would not be an excuse for running away from the question.

This paper grapples with the question by concentrating on the Europe–China relationship and by exploring two dynamics, one economic and one political. On the economic side, it asks how the global power shift affects the cost and speed of the transformation and the distribution of the gains between Europe and China. On the political side it asks how the power shift affects the formation of transformative alliances and the likelihood of accelerating the transformation. In order to address these questions, Section 2 investigates the global wind energy industry and the changing power balance between Europe and China in this industry. Section 3 then broadens the canvas; it shows how unpacking pathways and drivers of change can help us to get a grip on the political economy of the low carbon transformation in China and Europe. I will argue that it provides an analytical basis for more optimism than currently prevails in the climate change debate.

1 China's rise in the wind power industry and its effects

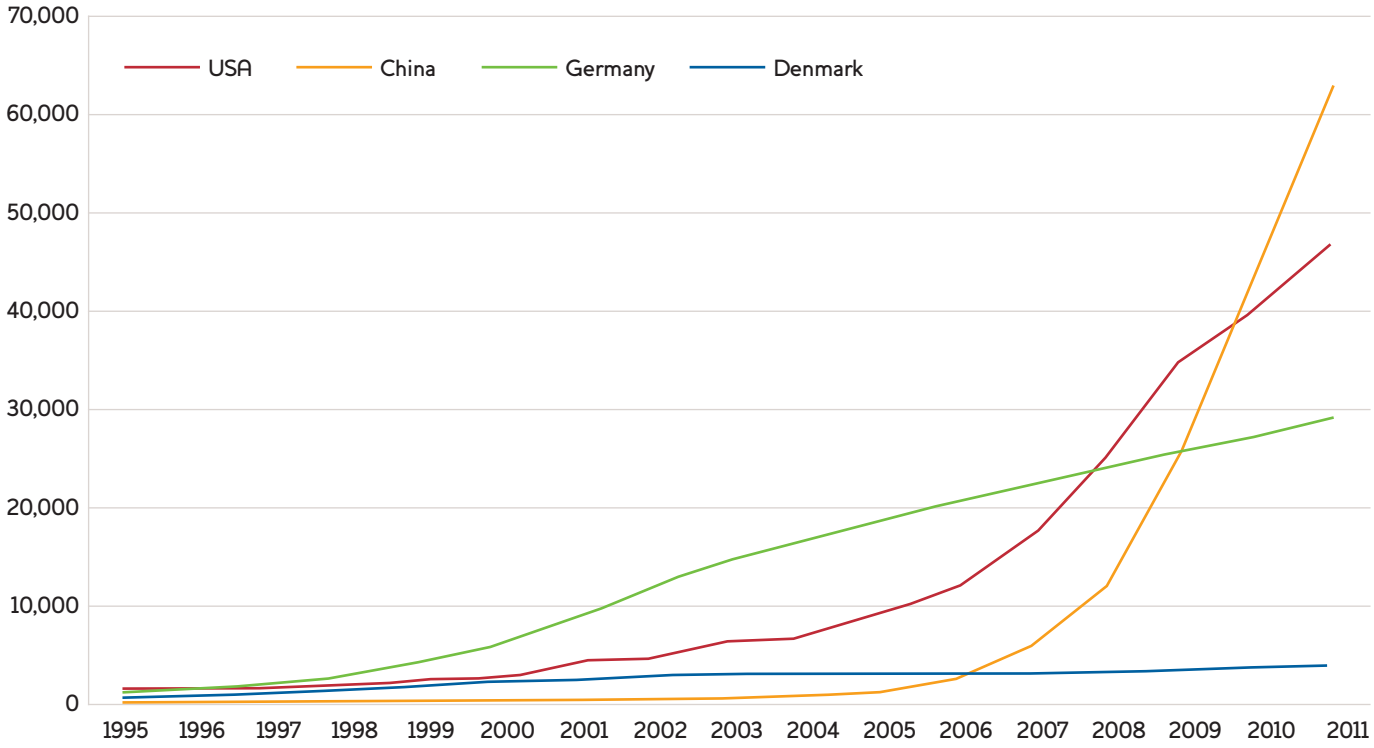
For most of the first decade of this century there was a strong view in European government and business circles that the green economy provided a chance to re-establish European industrial eminence. We know now that – while Europe remains a technological leader in most low carbon sectors – China has been able to catch up quickly such that it has become the world's biggest producer in some of these sectors, notably solar panels and wind turbines. This section shows this for the wind energy industry, drawing on research conducted jointly with Rasmus Lema, Axel Berger and Hong Song (Lema *et al.* 2011, 2012). It suggests that China's rise is not just due to the shift in production power from West to East, and that it exerts influence on the global industry through a number of other corridors. It then asks what the implications are for the high to low carbon transition.

1.1 The significance of China's internal market

China's rise as a wind energy producer is closely related to the size and growth of its wind energy market. The global demand for wind energy is shifting to the East. Europe and the US have long been the dominant markets in the global wind power sector but by 2010 more than half of newly installed wind power capacity was added outside these traditional markets. China has been the main driver of this development. Within only half a decade, China has managed to build the largest market for wind power in the world (see Figure 1.1).

This rapid expansion is mainly a result of favourable government policies. These policies have created an internal market for wind power which would not have developed otherwise: the cost of generating wind power is still higher in most Chinese locations than that of fossil-fuel based energy. The main law supporting the shift towards wind energy was the Renewable Energy Law adopted in 2005 and amended in 2009. Its aim was to increase the share of renewable energies, wind in particular, in China's energy mix as well as to support the domestic renewable energy industry (Li et al. 2010). The amendment of 2009 requires grid companies to purchase a certain proportion – specified by further regulations – of renewable energy and empowers government agencies to enforce this target through a penalty system.

Figure 1.1 Cumulative installed wind power capacity, 1995–2010 (MW)



Source: Earth Policy Institute (2010) and WWEA (2011)

1.2 The rise of China as a wind power producer

For most of the first decade of this century, European firms dominated the global wind turbine industry but China has caught up rapidly and is now number one producer in the world. One of the reasons why the Chinese wind turbine industry has been able to develop so fast is that firms have grown out of other segments of the diverse industrial base. The leading firms emerged out of large heavy machinery manufacturers and utility firms that had capabilities in key fields related to manufacturing as well as in large-scale project management relevant for deployment. Almost all segments of the wind power value chain have been localised in China. There is now an effective supply base catering to all elements of the manufacturing value chain.

> "ALMOST ALL SEGMENTS OF THE WIND POWER VALUE CHAIN HAVE BEEN LOCALISED IN CHINA."

The speed and depth of this build up was fostered by public policies. In addition to the demand-side support policies of the Chinese government, the 'local content' requirement played an important role. This policy, enacted in 2003, facilitated the localisation of large parts of the value chain.

The rise of China as a wind turbine producer has led to a change in the pecking order of global lead firms. The period of most rapid change was 2005–2010. Table 1 shows the size and speed of change. While there was no Chinese firm in the top 10 in 2005, there were four by 2010. The leading Chinese firms Goldwind (2006), Sinovel (2007), Dongfang (2009) and United Power (2010) made their way into the top-ten list during this period. This meant that the Chinese wind turbine industry collectively had higher sales than those of any other nation by 2010.

What does all this mean for European firms? Maintaining a strong presence in China has been a priority for leading foreign firms, since they expect continued demand in future, even though the market is crowded at present. There is also agreement in general and among Chinese policymakers that China will need to give more emphasis to quality as the sector matures, and that European firms will play an important role in raising quality and reliability.

While the European and Chinese turbine manufacturers compete head-on, European suppliers of components and services often cooperate with Chinese turbine manufacturers. Some European suppliers have established subsidiaries which provide small, specialised components and services in fields such as electric control systems, hydraulics, oil filter systems and gears. These suppliers are growing more important as the Chinese manufacturers seek to upgrade the quality of their products. In a few cases, there are also alliances for producing large components; for example the European blade supplier LM is working with Goldwind, Sinovel, Dongfang and Envision. Thus, in contrast to European turbine producers, many European component suppliers are gaining market shares in China.

In summary, the combination of a rapidly growing market in China and a slowly growing market in Europe has forced the traditional leading European makers of turbines and components to concentrate their efforts on the Chinese market. While Chinese regulations continue to favour Chinese firms, European firms in China have been able to grow more in the area of components than in the complete turbine market.

Table 1.1 Global top ten turbine manufacturers 2005 and 2010

2005			2010		
Company	Share	Origin	Company	Share	Origin
1. Vestas	27.9%	EU	1. Vestas	14.8%	EU
2. GE Wind	17.7%	US	2. Sinovel	11.1%	CN
3. Enercon	13.2%	EU	3. GE Wind Power	9.6%	US
4. Gamesa	12.9%	EU	4. Goldwind	9.5%	CN
5. Suzlon	6.1%	IN	5. Enercon	7.2%	EU
6. Siemens	5.5%	EU	6. Suzlon	6.9%	IN
7. Repower	3.1%	EU	7. Dongfang Electric	6.7%	CN
8. Nordex	2.6%	EU	8. Gamesa	6.6%	EU
9. Ecotécnia	2.1%	EU	9. Siemens WP	5.9%	EU
10. Mitsubishi	2.0%	JP	10. United power	4.2%	CN
Others	5.0%		Others	17.5%	

Note: World market shares
Source: BTM (2006, 2011)

◄ A worker assembles wind turbine rotors at Gansu Jinfeng Wind Power Equipment Co. Ltd. in Jiuquan.

1.3 Is China becoming an innovation power in the wind industry?

One of the main conclusions from the previous section is that China is catching up with the old leaders in wind power. Whereas China needed 20 to 30 years to reach a world-class level of production in other sectors such as electronics (Ernst 2009), it was able to close the gap in wind power *production capability* in only ten years. The question of whether China is also building up significant *innovation capability* in this sector is controversial. Some argue that China relies on licensing from abroad and question whether China can innovate on its own. Our research suggests that the build up of Chinese innovation capability is now proceeding fast (Lema *et al.* 2012).

International technology transfer has been an important source of technological capacity in wind turbine development in China. The option of drawing on the established design and engineering capabilities of overseas firms has been a key to the Chinese success story (Lewis 2007 and 2011). Licensing agreements have been an effective means of gaining a foothold in the industry and have established a basis for innovative improvements of the transferred technology.

In the last few years, technology transfer has shifted from traditional mechanisms (e.g. FDI, trade and licensing) to joint design and R&D collaboration (Lema and Lema 2012). At the same time, European lead firms have begun to shift their own innovation activities to China. For example, Vestas opened its first Chinese R&D centre in Beijing in 2010 to undertake work in areas such as high voltage engineering, aerodynamics, new material and software development.

Chinese turbine manufacturers have adopted innovation strategies that combine internal development with heavy reliance on sourcing external knowledge from Europe (Lema and Lema 2012 and Lewis 2011). The organisational decomposition of the innovation process seems to have played a major role in this process (Schmitz and Strambach 2009). The European lead firms collaborate with small turbine design houses and other engineering firms and it is these highly specialised smaller firms that have made their technologies and services readily available on the market. This has opened up opportunities for engaging in turbine design licensing and R&D collaboration with Chinese firms. However, the change was also driven from within the Chinese companies, particularly by acquiring European firms and establishing R&D subsidiaries in established knowledge clusters. This strategy seems to have been effective, helping Chinese companies to build up their innovation capabilities quickly.

1.4 Financing power: strategic advantage?

We deal with Financing Power last because it is the area least explored up until now – but it could well represent China's main strategic advantage. The investment requirements in wind energy are high, and the time horizons are long. Being able to finance such investments is critical.

Project finance may become an important element of China's 'mode of entry' into foreign markets. While the Western firms are 'strapped for cash', the Chinese government and Chinese companies are flush with funds. Sinovel, for example, has a US$ 6.5 billion line of credit from government-owned Chinese banks

(Zeller and Bradsher 2010). Other firms also have strong relations with Chinese financial institutions and have secured significant lines of credit for the purpose of expanding sales outside China. China Exim Bank has injected capital into Ming Yang and Goldwind to support its expansion into the US and the EU.

This opens up the possibility of an export model that has not been directly utilised by European firms – the twinning of wind farm project finance and turbine exports. Chinese manufacturing firms are thus indirectly providing credit to projects that would perhaps otherwise not be financed by financial institutions in export markets – due to the modest record of Chinese turbines to date. This financing element may thus help Chinese firms to get a foot in the door in the US and European markets. Future research will need to show how relevant such project financing is. The relevance of supplier credit for China's competitiveness in the wind-power sector is a particularly acute issue at the current time when much of the Western world is suffering from a credit crunch.

The differences in financing power might also help explain differences in governmental action. In order to promote the uptake of renewable energy, governments have provided financial incentives through feed-in tariffs and other instruments. In Western countries, governments have come under severe pressure to reduce such incentives in the course of prioritising financial austerity. This has slowed down the growth of Western markets while Chinese markets have continued to grow rapidly (though unevenly between sectors). Since the Chinese market is not a level playing field, this has benefited Chinese industry above all. The relevance (or not) of this differential in the government's financial room to manoeuvre is an important issue for future research.

1.5 Implications for the low carbon transformation

There is little doubt that China's rise as a major competitor in the wind energy sector has exerted a down pressure on costs. By 2010 the price gap between European and Chinese turbines was in the order of 27 per cent (BNEF 2010: 9) and it has grown further since. Whether this price differential has accelerated the deployment of wind energy is hard to tell. While price plays a big role, buyers also consider reliability and adaptability to local conditions. These are areas in which European producers are stronger.[1]

While it is too soon to tell whether China's rise in the wind energy industry has had a major effect on the low carbon transformation globally, it is clear that the employment and income benefits from investing in the low carbon industry are no longer concentrated in the West. Such benefits are being reaped increasingly by China.

So far, the biggest influence in the wind energy sector comes from China's market power. Western firms seek to operate in the large Chinese market, but have had to yield to government-imposed conditions which favour Chinese producers. Benefiting from this protection, Chinese enterprises have been able to invest and learn very fast, attaining a level of producer power which has brought about major changes in the top ten international turbine makers.

While the combined impact of Chinese market and producer power is already visible, the lead firms are also beginning to exert influence through their innovation and financing power. We cannot, however, conclude that China's advances are or will all be at the cost of Western companies. Press headlines which emphasise competition or conflict between Western and Chinese companies often fail to capture the complexity of the current situation. While competition among lead firms is increasing, there are also prospects for growth of inter-firm collaboration along the value chain (Lema *et al.* 2011). China, Europe and the world can benefit from such collaboration in order to reduce technological complexity, drive down costs, improve quality, and make wind power a more effective energy option for the world.

More generally, this section has shown that much can be learnt from adopting a sectoral approach (even if further disaggregation by stages in the value chain is sometimes needed). A series of such sectoral studies (for example, for solar energy, electric vehicles, energy saving building materials, and other sectors) would be very useful in order to understand how the global power shift affects the low carbon transformation and the inter-country distribution of low carbon benefits (in terms of low carbon jobs). Such studies would probably show big sectoral differences in the extent and speed of power shifts and transitions. Our hunch is that – in spite of sectoral differences – the changes observed would be in the same direction in the sense that China: (a) accounts for an increasing part of the global green economy; (b) lowers the costs of going green, and; (c) speeds up deployment of green technology.

The main problem with this kind of sectoral approach is that it would not tell us much about the forces which work against the low-carbon transformation, in particular the fossil-fuel and related industries. Broadly speaking for each billion of low carbon investment there is a trillion of high carbon investment – in West and East. Up-to-date sectoral studies of these fossil-fuel and related sectors would of course help – in particular if one could compare investment, technology and emission trends. But slicing up the real world in terms of sectors would probably not provide us with the killer insights needed to understand the forces which bring about and oppose the low carbon transformation. The next section therefore experiments with an approach which seeks to achieve just that.

2 Experimenting with a political economy approach

This paper seeks to understand how the shift of economic power from West to East influences the low carbon transformation. Stirling (2009) and Leach *et al.* (2010) stress that there is a diversity of 'pathways to sustainability'. For an initial step we suggest distinguishing between the **carbon transformation from below and above.** But we can go further and unpack the process using the categories in Table 2.1.

2.1 Drivers of the low carbon transformation

Over the last decade, most attention has been given to the left side of the table (read it vertically). The ambition was to bring economic development within the planetary boundaries by pursuing an approach which was **top down**, had a **global** scale, was (supposed to be) led by the **North**, and driven forward by **public actors** that recognised the need to mitigate **climate change**. This global governance approach has failed, as shown by successive climate conferences (COPS) and the sustainability conferences in Rio. Given the questions driving this paper, we need to recognise that the shift of economic power from the West to the East has made it more difficult, rather than easier, to reach a global deal on reducing carbon emissions. The West is responsible for the accumulation of carbon emissions of the past, whereas China is responsible for most of the recent increases in carbon emissions. This struggle between historic and current responsibilities is at the heart of the deadlock in global negotiations.

In the meantime however, progress was made on the right side of the table: using **bottom up** approaches and relying on **local** initiatives in which **civic actors** play a major role. There are many examples in the West, in particular at City level (OECD 2010); but in China, too, local initiatives have played an important role (Harrison and Kostka 2012). An important difference between the political dynamics in China and Europe concerns the role of the civic sector. Whereas in Europe, NGOs were influential in promoting the climate change agenda and contributing to practical ways forward, they have been comparatively weak and have had less influence in China.[2] This comparison, however, only captures half the picture. In Europe, civil society has played a dual role role in the low carbon transformation, promoting it on the one hand and slowing it down on the other (Schnelle and Voigt 2012). There has been considerable local resistance to the establishment of new wind farms and of transmission lines. 'Not in my backyard' (NIMBY) initiatives – in spite of their micro origins – can have considerable macro effects. In contrast, public authorities in China have been able to push through their projects with scant consideration to local opposition.[3]

> "AN IMPORTANT DIFFERENCE BETWEEN THE POLITICAL DYNAMICS IN CHINA AND EUROPE CONCERNS THE ROLE OF THE CIVIC SECTOR."

At the **national** level, substantial progress was made in both Europe and China, with governments implementing green industrial policies and the private sector making big investments in renewable energy and other low carbon technologies. The two European countries with the biggest progress are Denmark (wind energy) and Germany (solar and wind energy). Spain, Britain and other European countries have also promoted the development and deployment of low carbon technologies. However, progress made at the national level risks running out of steam. While most of the investment comes from the private sector, subsidies from the public sector are essential in this early stage of the low carbon transformation. This public support has come under attack with arguments that the public sector (or the tax payer) cannot afford such subsidies, and that regaining financial solvency has priority. Arguments that fostering new green industries

Table 2.1 Accelerating the low carbon transformation

Approach	Top Down			Bottom Up
Level	Global	National		Local
Location	North	Rising Powers		South
Actor	Public	Private		Civic
Motive	Climate Change	Energy Security	Competitiveness	Green Jobs

helps to promote growth, jobs and public revenue are drowned out by opposing forces. Political paralysis prevails in much of Europe (and USA). This, in a nutshell, is the European situation, even if there are variations between countries and regions.

In contrast, China continues to storm ahead. Its government is not encumbered by national or foreign debt and it has the ability to act. A good example of its 'entrepreneurial state' (Mazzucato 2011) is the support for the solar energy industry. When European demand for Chinese photovoltaic panels declined in 2009, the Chinese government quickly launched a programme pushing up the deployment of such panels within China (Fischer 2012) in order to ensure that the build-up of this new industry could continue. The government is also providing substantial resources for developing new low carbon technology.

A vertical reading of Table 2.1 thus helps to categorise existing approaches: global top down, local bottom up and national-level initiatives (mainly top down but building on bottom up support). On their own, none of them will achieve the low carbon transformation. Most observers would agree that these approaches need to be combined and that multi-level governance is needed. But which force can bring this about? Recall that this is the first transformation in history that has to be achieved with purpose and against a deadline. In other words, the task of accelerating the process takes centre stage. But where can this acceleration come from?

> "THIS IS THE FIRST TRANSFORMATION IN HISTORY THAT HAS TO BE ACHIEVED AGAINST A DEADLINE."

Here we turn again to Table 2.1, in particular the last two lines which focus on the range of relevant actors and the motives of these actors. Analysis of these actors and motives needs to take four critical steps: (1) recognise that no single actor has the resources to bring about the low carbon transformation; (2) recognise that within government, within civil society and within business there are actors seeking to block or slow down the green transformation; (3) attention needs to focus on supportive alliances across these categories; and (4) including actors with different motives helps to understand and accelerate the low carbon transformation. The transformative alliance becomes the central concept. The next section suggests that this is a critical step to take, first for understanding what goes on within countries and second for seeing new possibilities of joint action between countries.

2.2 The transformative alliance

Bringing about the green transformation requires resources of different types: expertise, money, organisational capacity, and legitimacy (one could add leadership). These resources tend to be distributed over a range of public, private and civic actors. It is therefore useful to concentrate on alliances between actors in government and business and civil society. Who then can be considered a member of such alliance? Is the deciding criterion motivation or action? While it is tempting to let motivation count and opt for an alliance of the like-minded, this is a limiting step to take. There is a range of actors that can support the low carbon transformation through their action (such as investing, providing expertise, lobbying) but their motives for doing so can differ greatly. The bottom line of Table 2.1 suggests several motives other than mitigating climate change: securing energy, building competitive green industries, and fostering green jobs. In other words, there is a potential for alliances that include actors whose priority is not ecological sustainability. This can be a 'game changer' in the dynamics of the transformation. It is supported by historical research which shows actor groups with differing intentions advancing the change in a specific direction (WGBU 2011:85 drawing on research by Osterhammel).

Such alliances seem to have been important in both China and Europe. In Denmark, for example, the experimentation with wind energy received substantial support from politicians and business leaders concerned with energy security – in the wake of various oil crises. Actors with environmental motivations played a role at the start and increased in importance over time but they were never sufficient. Actors motivated by the chance to build a globally competitive hub (for providing wind energy solutions and creating highly paid jobs) have played a big role. In China, such alliances were equally if not more relevant. China's massive investment in renewable energy was not driven primarily by concerns with global climate change but by concerns to secure energy and ambitions to build new competitive sectors. Research in progress – conducted jointly with Chinese researchers – indicates that these were major concerns in both Chinese government and industry.

The relevance of alliances is confirmed by the research of Harrison and Kostka (2012) on the local politics of climate change in China and India. 'In both countries the ability to build and sustain coalitions is central to the effectiveness and sustainability of climate change policy. For various reasons, state strategies in China and India have focused on the need to bring different parties with otherwise divergent interests on board to build a coalition in favour of climate mitigation measures' (Harrison and Kostka 2012: 5).

The composition of such coalitions is likely to vary, depending on the specific policy or project in question, but economic interests concerned with securing energy and building new competitive industries tend to be major players. While not surprising in itself, it questions the discourse which pitches economic growth against environmental sustainability – so popular in many parts of the world (Dubasch 2009).

Policies which foster structural transformation promote rather than hinder economic growth.

This is not to suggest that there are only winners. Far from it. Some stand to lose from the transformation. In the early stage of the low carbon transformation, the losers might even outnumber the winners. Whatever the numbers, they are agents of resistance and they need to be analysed in the same way as the agents of change. The opponents also seek alliances. The opposing forces are not necessarily against de-carbonisation as such but they are fighting for their jobs and/or protecting their assets which are tied to fossil fuel and related sectors. Recent history suggests that they are fighting with all means at their disposal – as shown for example in the attempts to discredit scientists showing connections between rising carbon emissions and climate chaos (Blasberg and Kohlenberg 2012).

To return to our overall argument, focusing on alliances is essential for understanding and fostering the low carbon transformation. Such alliances are best seen as vehicles for bundling diverse interests for a particular purpose such as influencing legislation, policies, or projects. In order to be effective, analytical and political work needs to deal with both agents of change (prospective winners) and agents of resistance (prospective losers).

Putting such alliances centre stage is not sufficient. We need to be able to distinguish between alliances of different types. At one end there is the **strategic alliance** based on joint action. At the other end there is the mere **alignment of interest** without co-ordination between the parties. Both can be transitional (short term) or enduring (long term). All types can be instrumental in overcoming (or causing) collective inaction.

2.3 The future

The question driving this paper is how the low carbon transformation is affected by the global power shift from West to East. For most of the last 40 years, China's economic transformation was driven forward by an alignment of interests favouring rapid economic growth. In recent years, environmental concerns have received increasing attention, in particular in central government. However, this cannot explain the massive recent investment in renewable energy. Our ongoing research suggests that concerns with securing energy for consumers and enterprises and building new competitive industries were also major drivers. In other words, the analysis of alliances is highly relevant for understanding recent changes in China.

As regards the future, the question is whether this low carbon alliance will be strong enough to curtail the planned expansion in coal-fired power plants. This will probably depend on the linkages between industry and the Central Committee of the Communist Party. A research project showing the formal and informal links which members of the Central Committee have with the fossil fuel and renewable industries would tell us a lot about the future of China … and the world.

While we can only dream of conducting such research, we can anticipate that China's rise in the low carbon industries will have an effect on the low carbon alliances in Europe. Because of the strong competition from China, some European firms have pulled out of the solar power industry. Siemens is the most prominent example – widely reported in the media. Competition from China has also contributed to the problems encountered by Vestas, Denmark's iconic wind power company. Vestas is increasingly sourcing services and material inputs from abroad and might even be taken over by an Asian firm (Interviews and Press Reports). While still world number one, it has become less Danish. The point to be made here is that it becomes more difficult to strengthen the low carbon alliance in Germany, Denmark or other European countries if most of the resulting jobs arise in China. What is excellent for the world – namely cheaper technologies from China – might only be a second best for European countries that seek to produce the new technologies. In other words, growing green power in China might weaken green alliances in Europe – if the dominant narrative is one of competition and zero sum games.

> "FOCUSING ON ALLIANCES IS ESSENTIAL FOR UNDERSTANDING AND FOSTERING THE LOW CARBON TRANSFORMATION."

Alliance thinking could however help to build a very different narrative – one which does not set green China against green Europe but green versus brown irrespective of location and passport (green meaning low carbon and brown standing for high carbon). This would be especially important for progress in the global governance arena. Twenty years of global climate negotiations have yielded very little because the debate was conducted in terms of developed versus developing countries, established versus emerging powers, USA versus China, Europe versus China, etc. The governmental representatives of these countries or blocks of countries worked with narratives which pitched them against each other – even though decomposing the picture would immediately show that there are considerable alignments of interests and conflicts of interest across the (blocks of) countries which they claimed to represent. A big industry consisting of the media, research centres and NGOs bought into these false narratives and prolonged the agony.

Alliance thinking of the kind proposed here suggests a practical and more promising way forward: selective agreements among those who concentrate on the opportunities rather than the cost. The free rider dilemma, which holds back the global negotiations, is a cost-induced dilemma. Focusing on opportunities

does not mean ignoring this dilemma but opens up new ways of thinking and acting. A 'coalition of the willing and winning'[3] can trigger new political and economic dynamics. Current attempts to forge an international 'low carbon club' (Messner and Morgan 2013) might be one way of putting this approach into practice. A low carbon club built around a China–Europe axis would be a powerful way of pulling the global debate out of its near-paralysis. For the time being however it remains – what Germans would call – *Zukunftsmusik* (music of the future). Turning it into reality would require a narrative built around the proposition that the opposition from high carbon sectors does more harm than competition within the low carbon sectors.

To conclude, raising investment and advancing collective action for the low carbon transformation has been difficult at all levels: global, national and local. Progress is held back partly because the units of analysis are mis-specified. The debate continues to pitch public against private (or civic) sectors, developed against developing countries, or rising powers against sinking powers. Actors supporting (and opposing) the low carbon transformation can be found in each of these categories. The analytical and practical challenge lies in identifying and forging alliances across these divides. Such focus on alliances offers the best hope we have to accelerate the low carbon transformation *within* West and East and *across* the divide.

References

Betz, J. (2013) *The Reform of China's Energy Policies*, GIGA Working Paper 216, Hamburg: German Institute for Global and Area Studies

Blasberg, A. and Kohlenberg, K. (2012) 'Die Klima Krieger', *Die Zeit*, 22 November

BNEF (2012) *Global Trends in New Energy Investment 2012*, Frankfurt: Frankfurt School of Finance and Management

BNEF (2010) *Joined at the Hip: The US-China Clean Energy Relationship*, White Paper, New York: Bloomberg New Energy Finance

BTM (2011) *World Market Update 2010*, Ringkøbing, Denmark: BTM Consult

BTM (2008) *'Made in China' – Chinese Wind Power Market Assessment 2008–2012*, Ringkøbing, Denmark: International Wind Energy Development, BTM Consult

BTM (2006) *World Market Update 2005*, Ringkøbing, Denmark: BTM Consult

Dubasch, N. (2009) *Towards a Progressive Indian and Global Climate Politics*, Working Paper, Centre for Policy Research, New Delhi www.cprindia.org/workingpapers/2701-wp-1-toward-progressive-indian-and-global-climate-politics (accessed 02 May 2013)

Earth Policy Institute (2010) *World on the Edge – Energy Data – Wind*, Earth Policy Institute, www.earth-policy.org/datacenter/pdf/book_wote_energy_wind.pdf (accessed 2 October 2012)

Ernst, D. (2009) *A New Geography of Knowledge in the Electronics Industry? Asia's Role in Global Innovation Networks Policy Studies*, Honolulu: East-West Center

Fischer, D. (2012) 'Challenges of Low Carbon Technology Diffusion: Insights from Shifts in China's Photovoltaic Industry Development', *Innovation and Development* 2.1: 131-46

Harrison, T. and Kostka, G. (2012) *Manoeuvres for a Low Carbon State: The Local Politics of Climate Change in China and India*, Research Paper 22, Developmental Leadership Program; www.dlprog.org/ftp/ (accessed 20 February 2013)

Helm, D. (2012) *The Carbon Crunch*, New Haven and London: Yale University Press

Leach, M.; Scoones, I. and Stirling, A. (2010) *Dynamic Sustainabilities*, London and Washington: Earthscan

Lema, R. and Lema, A. (2012) 'Technology Transfer? The Rise of China and India in Green Technology Sectors', *Innovation and Development* 2.1: 23–44 http://dx.doi.org/10.1080/2157930X.2012.667206 (accessed 2 May 2013)

Lema,R.; Berger, A. and Schmitz, H. (2012) *China's Impact on the Global Wind Power Industry*, DIE Discussion Paper 16/2012, Bonn: German Development Institute

Lema, R.; Quadros, R. and Schmitz, H. (2012) *Shifts in Innovation Power to Brazil and India: Insights from the Auto and Software Industries*, IDS Research Report 73: 1–84 http://dx.doi.org/10.1111/j.2040-0217.2012.00073_2.x (accessed 10 December 2013)

Lema, R.; Berger, A.; Schmitz, H. and Hong Song (2011) *Competition and Cooperation between Europe and China in the Wind Power Sector*, IDS Working Paper 377: 1–45 http://dx.doi.org/10.1111/j.2040-0209.2011.00377_2.x (accessed 02 October 2012)

Lewis, J.I. (2011) 'Building a National Wind Turbine Industry: Experiences from China, India and South Korea', *International Journal of Technology* and Globalisation 5.3–4: 281–305

Lewis, J.I. (2007) 'Technology Acquisition and Innovation in the Developing World: Wind Turbine Development in China and India', *Studies in Comparative International Development* 42.3–4: 208–32

Li, J.; Shi, P. and Hu, G. (2010) *China Wind Power Outlook 2010: Chinese Renewable Energy Industries Association*, Global Wind Energy Council, Greenpeace

Mazzucato, M. (2011) *The Entrepreneurial State*, London: Demos

Messner, D. and Morgan, J. (2013) 'Germany Needs an Energy Transformation Foreign Policy', *The Current Column*, 7 January 2013, Bonn: German Development Institute

OECD (2010) *Cities and Climate Change*, OECD Publishing DOI: 10.1787/9789264091375-en (accessed 8 April 2013)

Schmitz, H. and Strambach, S. (2009) 'The Organisational Decomposition of Innovation and Global Distribution of Innovative Activities: Insights and Research Agenda', *International Journal of Technological Learning, Innovation and Development* 2.4: 231–49

Schnelle, K. and Voigt, M. (2012) *Energiewende und Bürgerbeteiligung*, German Watch https://germanwatch.org/de/download/4135.pdf (accessed 8 April 2013)

Stern, N. (2006) *The Economics of Climate Change*, Cambridge and New York: Cambridge University Press

Stirling, A. (2009) *Direction, Distribution and Diversity! Pluralising Progress in Innovation, Sustainability and Development*, STEPS Working Paper 32, Brighton: STEPS Centre

WBGU (2011) *World in Transition: A Social Contract for Sustainability*, Berlin: WBGU

WWEA (2011) *World Wind Energy Report 2010*, Bonn, Germany: World Wind Energy Association

Zeller, T. and Bradsher, K. (2010) 'Wind Power for Boston, Made in China', *The New York Times*, 16 December: B4

Endnotes

[1] According to previous research (Lema *et al.* 2011) and confirmed in ongoing research.

[2] More recently, however, environmental NGOs have grown in China and found opportunities to express their views (Betz 2013:21).

[3] Term used by Peter Newell in an insightful seminar on 'The Political Economy of Climate Change', Institute of Development Studies, University of Sussex, 14 February 2013.

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