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A Grand Chinese Climate Scheme

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A GRAND CHINESE CLIMATE SCHEME

Summary

This article analyses Chinese climate policies and initiatives and argues that China can, and should, be seen as a climate ‘champion’ that has the potential to change the current market situation both for carbon credits and clean energy technologies. At COP15, China made an ‘unconditional’ commitment to reduce its carbon emission intensity by 40-45% below 2005 levels by 2020, thus breaking away from its traditional stance of non-commitment in global climate negotiations.

While the boldness of this emissions intensity target is debated, it is clear that it stands to radically change China’s approach to, and benefit from, the CDM. Specifically, it can no longer be assumed that China will find it beneficial to export its CERs – indeed she is well positioned to withdraw her credits from the market. Such a move would serve a double purpose: it would help China meet its domestic intensity target by jump-starting a domestic Chinese carbon market; and it could create a credit shortage in the global carbon market, particularly if China can convince her allies in Brazil and India to follow suit, thus forcing particularly Europe to increase investments in renewable energy technology to replace emissions reductions that so far, through the CDM, have been created abroad. As China over the past few years has developed a significant renewable energy industry, she would, by withdrawing the credits, expand the market for her own technology.

Yet another thought-provoking development is that state-owned Chinese developers have already expanded their activities in the African renewable energy sector by entering cooperation agreements with local power corporations and implementing hydro and other renewable energy projects. From here China could continue to be engaged in supplying CERs to a primarily European market, where she has in this scenario herself induced a credit shortage that may send carbon prices soaring and lead to a scramble for CERs from African CDM projects. With her own financing and technology, and cooperation agreements with African governments, China could thus remain a major indirect supplier of CERs, at far-higher CER price than those currently attracted by projects in China. The fascinating thing about this scenario is that China is now in a position to make almost all of this happen on its own.

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All views and assumptions made in this paper is the sole responsibility of the author.

INTRODUCTION

Frequently accused in Western media of hiding behind other developing countries so as to avoid committing to any quantitative carbon emissions reductions, China has earned a reputation within developed countries, rightly or wrongly, as an obstacle to progress in climate negotiations, most recently at COP15 in Copenhagen in December 2009. China has been an important player in earlier Conferences of the Parties as well and has drawn headlines on the same agenda item: an unwillingness to accept quantitative emissions reductions despite consistently iterated requirement by developed country Parties based on the fact that China during the past decade has developed into the world's largest emitter.

But in that particular respect, on Chinese emissions reduction, COP15 was a turning point. While all procedural traditions during COP15 were turned up-side down and negotiators found themselves in unfamiliar waters with their heads of state ultimately involving themselves in text drafting, China took an unprecedented step in announcing an emission reduction target of its own. Ambitious or not – and this article shall argue that the Chinese commitment is quite ambitious – it changes entirely the picture of a China counting itself among victimized developing countries.

While China indisputably like other developing countries is a victim of earlier times' greenhouse gas emissions to which she has contributed little, China is just as rightly the largest contributor to future emissions. Nevertheless, negotiators may not have expected such a sudden shift in the Chinese position – and evaluators of the outcome of COP15 seem to have chosen to focus on the Chinese obstruction to the development of the final document, the Copenhagen Accord, the process of which is well recorded¹ (while officially disputed by China). But the possible perspectives that the Chinese unilateral commitment opens are yet to dawn on the global climate community depending on the plausibility of the scenario that is presented in this paper. It must be emphasized that the scenario is only one among many possible paths for China, which may or may not include one or more of the elements presented in the following.

¹ Per Meilstrup: "Kampen om Klimaet", People's Press 2010

CHINA CONSTRUCTIVE

While Copenhagen and COP15 already seems a distant past and preparations for COP16 in Mexico City later this year are well underway, the significance of Copenhagen is gradually dawning on us all as national mitigation pledges are being submitted to the UNFCCC Secretariat in response to the Copenhagen Accord's requirement. According to the 'pledge tracker'² published by UNEP 42 Annex I parties have submitted quantified economy-wide emissions targets for 2020 and 40 non-Annex I parties have submitted NAMAs for inclusion in the Accord's Appendices. Of the 40 non-Annex-I parties, 18 have pledged some sort of quantitative emissions reduction, leaving only about 20% of world emissions, or about 10 Gt CO₂e without some sort of limitation.

Thus, the Copenhagen Accords may not be as toothless as was initially thought, though it still fails to provide long sought certainty of a global climate policy framework. And the Chinese obstruction to it may not signal a Chinese unwillingness to participate constructively. However, the Chinese definition of 'constructive' may differ from that of those who wish to have the Chinese committed quantitatively in a global climate deal.

Looking at the Chinese actions on the ground there is no doubt that 'constructively' to the Chinese means to promote a regime that benefits the Chinese economy. To maintain a high level of growth remains at the centre of Chinese economic policy. The Chinese State Information Centre indicated in September 2010 that "a slowdown in gross domestic growth to 8% and acceleration in consumer inflation to as high as 5% could be acceptable over that period", referring to the 12th 5-year plan 2011-2015³. By any standard this is still a remarkable level of growth in which heavy industry remains a prime driver. This is not to say that the Chinese are not concerned about the climate. In 2006, NDRC (The National Development Reform Commission) established the National Leading Group on Climate Change, with representatives from 10 national ministries⁴, supposed to advise the

² see <http://www.unep.org/climatepledges/>

³ <http://en.21cbh.com/HTML/2010-9-28/CPI.html>

⁴ among these the ministries of Science and Technology, Environment, Energy, Water Resources and Agriculture, and the Chinese Academies of Science and of Agricultural Sciences

government on climate issues. The Group drafted the main parts of China's National Climate Change Programme, released in June 2007, which emphasized the challenges that are facing China as a result of a changing climate. The plan was launched with a vow to "blaze a new path to industrialization"⁵. It contains large sections on mitigation efforts⁶ that encompass

- 1) Constitution and amendment of laws and regulations that are favorable to GHG mitigation, e.g. *Energy Law of the People's Republic of China*, the *Coal Industry and Electric Power of the People's Republic of China*,
- 2) Intensification of preferential policies to develop and utilize clean and low carbon energy.
- 3) Strengthening of research and formulate energy strategy program.
- 4) Preparation or improvement of a national energy program and special programs for coal, electricity, oil and natural gas, nuclear energy, renewable energy and oil
- 5) Improvement of China's capability in sustainable energy supply and clean development of energy.
- 6) Implementation of the *Renewable Energy Law of the People's Republic of China* in a comprehensive manner.
- 7) Development of supportive regulations and policies, preparation of national and local programs for renewable energy development, identification of development objectives and integration of renewable energy development into assessment indicator systems for the construction of a resource-conservative and environmentally-friendly society.

- just to mention the first few items on the agenda. While it does mention international cooperation:

⁵ Mr. Ma Kai, head of NDRC, in his launching speech June 4th 2007

⁶ the document is available at <http://www.ccchina.gov.cn/WebSite/CCChina/UpFile/File188.pdf>. points 1-7 is a circumscription of text on the strategy's pages 30-31.

8) Through legislation and other approaches, domestic and international economic entities will be guided and encouraged to participate in renewable energy development and utilization, and clean energy development will be pursued

- it mentions only briefly the Kyoto Protocol, stating the obligations of the developed countries and further pointing out that the Kyoto Protocol does not prevent regional cooperation on climate change. It does mention, though, that “China is ready to strengthen international cooperation of addressing climate change, including cooperation of clean development mechanism and technology transfer, to join efforts with the international community to tackle global climate change” (p.25).

These were still early days in the Chinese response to climate change and the Chinese embarking on the CDM⁷. Little was known about the market mechanics and as a precautionary measure China had already, when issuing its final CDM regulation in December 2005, imposed a restriction on CDM projects requiring them to be in Chinese majority ownership. While this was probably not intended to be in conflict with the upcoming climate change strategy it undoubtedly contributed to the fact that so far the economic benefit to the Chinese of the Kyoto regime is limited to the value of Certified Emissions Reductions (CERs) from Clean Development Mechanism (CDM) projects that almost exclusively have been initiated and financed by the Chinese themselves. The net value of this contribution to the financing of the projects may amount to 10-15% on average⁸ – or it may be considerably less if calculations are based on reality.. Reality in this regard is that in addition to the restriction in ownership of the underlying assets in CDM projects, the Chinese CDM project approval structure⁹ early on added a clause in the national approval letters limiting the amount of credits approved from any given project

⁷ In fact the climate policy document had already been finalized in February 2006, but was held back from publication for five months

⁸ This is an overall and general estimate that is crucially dependent on the time horizon over which calculations are made. Importantly, it excludes industrial gases projects where internal rates of return are several hundred percent and thus pay-back times normally only a few months. While these projects represent up to half of China’s CER production, they only make up 37 projects of which only 13 are major generators of CERs

⁹ The Chinese Designated national Authority quickly arrived at a level of 50-70 CDM project approvals at each of the monthly DNA board meetings

to match the expected CER generation up to and including 2012 – plus a few extra credits in case the projects were performing better than expected. Despite projects being delayed considerably in the validation and registration process and credits production therefore may succeed much later than expected, there is no doubt about the intention behind the limitation of CER export in the approval letters – an intention that is easily enforced towards CDM project owners that in any case, for maybe 80-90% of the projects, are government entities. Thus, there are in practice no approvals for export of Chinese CERs post-2012. From this basis, financial contributions are more likely 3-5%, a miniscule contribution for which the Chinese, obviously, are themselves responsible.

The Chinese in all likelihood did not introduce these measures to limit the potential economic benefit of CDM – they did so to retain control of a market that they – and frankly no one at the time – knew the potential of. It turned out that the Chinese developers seemingly did not pay any attention to the limitation of the contribution. The Chinese CDM market boomed practically overnight and made China the main source of CERs in a matter of only two years. The fact that few project owners knew the mechanism and were instead approached by consultants who offered to share the benefit if they could get the projects registered naturally contributed to the boom. It was not a sudden investment boom; it was a sudden registration boom. Since then, the Executive Board for the CDM has attempted to limit the flow of Chinese projects by amending principles of additionality and surrender Chinese projects to reviews, but with limited success¹⁰. As it stands, China is now the source of more than 60% of the CERs expected in the market. The obvious result is that China holds significant market power.

At COP15, China made a commitment to reduce its carbon emission intensity by 40-45% from 2005 to 2020, ‘unconditionally’ - a commitment the boldness of which is still debated. Some believe it corresponds to business as usual, others that it will be difficult to achieve. The fact of the matter is that it was already conceived and announced in November 2009 as a target for the 12th five-year plan commencing in 2011. It is therefore a well-established domestic goal, the achievement of which naturally remains to be seen. The Chinese track record of fulfilling particularly the environmental goals that have been part of

¹⁰ The Executive Board has targeted Chinese hydro projects for unwarranted use of capacity factors and wind energy projects for amending feed-in tariffs in anticipation of carbon revenues.

the 5-year plans since the 10th from 2001 to 2005 is not as convincing as in other areas¹¹. On the other hand, those provincial governors who overheard the threat of severe career consequences if the 20% intensity target for the 11th 5-year plan was not met in their province, are now shutting down power supply even to their local industry in a last attempt before the 11th 5-year plan expires to meet the targets that turned out to be meant seriously by the central government^{12, 13}.

Compared to achievements by other – developed – countries it is not trivial. Denmark made it a hallmark in its campaign for an ambitious climate deal in Copenhagen to emphasize the Danish achievement of 70% economic growth over 25 years with no increase in emissions. That corresponds to 35% over 15 years, the same as the Chinese ‘commitment period’. What Denmark made a demonstration case is thus a less impressive achievement compared to the Chinese ambition. Needless to say it was even achieved at a considerably more moderate pace of economic development of about 2% p.a. – and with obvious options of exporting emissions through outsourcing of labour and energy intensive industries – an option that the Chinese cannot afford for domestic policy reasons, if it were indeed an option at all.

In 2007, the Chinese emission intensity was about 1.9 tons of CO₂ per 1000 USD of GDP¹⁴. Assuming 8% annual GDP growth and no change in emission intensity up to 2020, the Chinese GDP will have grown to 9300 billion USD and emissions to a staggering

¹¹ China’s 11th 5-year Plan, English version published 5 March 2008 (Approved by the State Council of the People's Republic of China on 22 November 2007): p.2: “There is no breakthrough in some in-depth environmental issues that should have been addressed during the ‘10th Five-Year Plan’ period. There is no fundamental change in the inappropriate industrial structure and extensive economic growth mode. There are also such problems as environmental protection lagging behind economic growth, poor or inflexible mechanism, insufficient input and capacity. The phenomena of no strict observation of laws, little punishment to lawbreakers, poor law enforcement and supervision are still very common.” www.chinaenvironmentallaw.com/.../the-national-eleventh-five-year-plan-for-environmental-protection.doc

¹² See Bloomberg’s at <http://www.bloomberg.com/news/2010-09-06/china-s-largest-steelmaking-province-shuts-furnaces-on-power-supply-limits.html>. The result is that local industry is looking for alternative sources of supply, including own generation by diesel generators – see footnote 11.

¹³ <http://sg.news.yahoo.com/rtrs/20101028/tap-china-power-diesel-c3bb44c.html>

¹⁴ Xinhua news reported on 24th January 2008 that GDP by the end of 2007 stood at 3.43 trillion U.S. dollars. The Carbon Dioxide Information Analysis Centre (CDIAC) collected information in 2008 to produce an inventory of emissions per country, reported to the UN, which puts Chinese emissions at 6,538.4 MtCO₂e in 2007.

17700 million tCO₂e. Reducing the emissions intensity by 45% would leave emissions at about 9700 million tCO₂e – hence a difference of 8000 million tCO₂e that China has to reduce. To compare, total EU-27 emissions stood at 4200 million tCO₂e in 2005¹⁵ – in pure numbers, therefore, the European challenge is modest compared to the Chinese. But to use the Japanese allegory when comparing the American economy to the Japanese in terms of emissions, China is a dripping wet towel while Europe is a wrung out one. Compared to the Chinese 1.9 tCO₂e, the EU-27 emission intensity is about 0.26 tCO₂e per 1000 USD of GDP.

Therefore, the question is how much of the intensity reduction, China will get ‘for free’, i.e. how much will fall due to natural changes in the composition of GDP. This is illustrated by the forecasts presented in the 2010 Human Development Report for China¹⁶. Here, the business as usual forecast is 11,400 million tCO₂e by 2020, while the ‘emission control scenario’ projects emissions to be 3200 million tCO₂e lower. The overall structure of the economy is not expected to change. About 30% of China’s emissions will continue to stem from production outsourced from western economies¹⁷. Industry will deliver the lion’s share of GDP while the service sector is less prominent with about 40% (compared to Europe’s 70% from the service sector¹⁸). In any case China will have a harder time outsourcing its emission intensive industries – there is no second China to outsource to. –. Emulating the European and US practice over the past decade or more is therefore less of an option – and neither in congruence with Chinese industrial policy, which needs to accommodate employment opportunities for a large¹⁹ uneducated rural population that make their living as migrant workers in the Chinese industry. Instead, efficiency gains are the main source of reductions in the business as usual scenario. For the past 5 years national programmes for the 1000 most polluting corporations have focused on reducing

¹⁵ http://globaldata.enerdata.net/nrd_web/site/

¹⁶ <http://www.undp.org.cn/pubs/nhdr/nhdr2010e.pdf>, p.53

¹⁷ <http://www.wwf.se/source.php/1121075/Ciimate%20impact%20of%20Swedens%20import%20from%20China%20and%20India-Final.pdf>, WWF: “The import of CO₂ emissions from China and India”, Appendix 1

¹⁸ http://en.wikipedia.org/wiki/Economy_of_the_European_Union,
http://en.wikipedia.org/wiki/Economy_of_the_People's_Republic_of_China

¹⁹ estimated to be about 150-200 million people

among others greenhouse gas emissions, and the programme is slated for expansion. Programmes for early retirement of inefficient coal-fired power plants have been implemented (showcasing the blowing-up of a significant number of old boilers) and super-critical highly efficient power plants are increasingly being built – and submitted for CDM registration²⁰. Not to mention the significant expansion plans for practically all renewable energy technologies (see later).

To what extent these existing activities are part of the business as usual scenario or are counted as additional initiatives under the emission control scenario's 3200 million tons reductions is not entirely clear, particularly not in the near term to 2020. However, it is an unavoidable consequence of the Chinese intensity pledge that any carbon credit exported – be it CERs or other voluntarily standardized emissions reductions – must be subtracted from the Chinese emissions accounts. While this may or may not put the particularly Chinese/US disparity on international monitoring of emissions in another perspective, it will inevitably constitute double counting, if Chinese reductions are used both to meet the Chinese domestic intensity target and at the same time are counted in e.g. the European accounts. And if properly counted and accounted for, suddenly, exporting CERs will have an immediate and direct effect on the Chinese ability to meet its own domestically adopted intensity target. Suddenly the Chinese CERs have a value within the Chinese economy. Having adopted the 40-45% emission intensity reduction target it is therefore indeed questionable if China is going to be a major supplier of CERs to the global post-2012 carbon market. It is much more likely that China will retain these CERs for domestic consumption. The CDM will truly become the Chinese Development Mechanism.

As it stands, China is looking to generate about 340 million CERs annually by 2012 if 90% of all Chinese projects currently under validation are registered (not counting any future projects, despite a steady flow of about 50 projects per month from China). Obviously this only corresponds to a minor share of the Chinese need for reductions. The amount of CERs might only be a modest contribution of maybe 15% of China's target. But it is decisive in other respects: The total Chinese CER production compares grossly to the European CER demand in the 20% reduction scenario as adopted in the European Energy

²⁰ at least 8 Chinese ultra-supercritical coal fired power plant projects were under validation by October 2010 according to UNEP/Risoe's CDM Pipeline

and Climate Package in December 2008, and for which Point Carbon in 2009 estimated the accumulated EU credit demand from 2008 to 2020 to be about 3300 MtCO₂e²¹. At this level of commitment, the Package prohibits inclusion of CERs from CDM projects registered after 2012 – with the important exception that CERs from projects in Least Developed Countries remain eligible with no restrictions. At the time, Point Carbon equally estimated the EU credit demand in the conditional 30% reduction scenario possibly to be adopted in case other major emitters adopt comparable commitments²² and arrived at 4500 MtCO₂e. In this scenario the above restriction on credit supply is lifted. Since then the financial crisis has reduced these numbers considerably and it is therefore conceivable that the Chinese CER production may in fact edge towards the demand in a 30% scenario²³.

Thus, to illustrate the ambitiousness of the Chinese commitment, the Chinese investments in CDM projects from 2004 to 2010 would contribute 15% of the Chinese reduction commitment from 2005 to 2020, while it would correspond to about 50% of the European ambition over the same period.

THE TRUE CHINESE CARBON MARKET

To meet this end, i.e. retaining CERs for domestic consumption, the early policy of not approving the export of CERs beyond 2012 comes in handy. There are no foreign buyers whose rights would be violated. Another policy that comes in handy is not only the 51% Chinese ownership requirement of CDM project, but also the fact that Chinese CDM projects are predominant in state ownership – estimated to be about 90%. Thus, as no foreign property rights to credits are violated by restricting the export of CERs beyond 2012, and even that the large majority of project owners would only shift their carbon

²¹ <http://www.ceps.eu/system/files/PresCDM2b.pdf>

²² It is currently being debated among EU member states if the EU as a whole should adopt the 30% reduction commitment unconditionally

²³ See general evaluations in http://ec.europa.eu/clima/documentation/eu/docs/2010_05_26_communication_en.pdf

revenues from one state account to another²⁴ – it would be a non-controversial move by the Chinese government simply to retain the credits for domestic use.

It is further the practice in China, not observed anywhere else in the CDM system, that the project documents that are approved by the Chinese DNA, are *not* the UN Project Design Documents; it is a Chinese format that grossly (and only grossly) follow the UN template, but of course is in Chinese. In this way, the Chinese developers, as well as the Chinese project consultants, are already familiar with a domestic system – the use of which incidentally has been financed by foreign buyers of Chinese CERs, as it is customary (and overseen by the DNA) that CER buyers entertain the cost of developing project documentation.

Thus, the Chinese CDM administration early on has been conscious about remaining in control. But if the intention in a post-2012 world is to retain the CERs for domestic use, what about the lost revenue? After all, China possesses 60% of the world's CERs, about 340 million CERs annually by 2012 at a price of about 9 euro per CER on average. That amounts to 3 billion euro annually – surely not a trivial amount? Compared to the Chinese investments of about 100 billion euro²⁵ undertaken to create this income, however, it makes up only 3%, or less than the financing cost, and significantly less than the depreciation of the underlying assets. Also by comparison, China posted a 16.9 billion USD surplus (12 billion euro) for September 2010 alone, which on an annual basis leaves the CER value at about 2 percent of the Chinese trade surplus. Compared to the Chinese government's reserves, the CER revenues are not worth mentioning at all.

Further, with a global climate regime still not in sight, and with the less than ambitious unilateral pledges submitted in support of the Copenhagen Accord²⁶, there are significant dangers of over-supply of credits in the market. Such estimate is based on a natural

²⁴ This is, naturally, a significant simplification of the Chinese state corporation system.

²⁵ estimated on the basis of investments affiliated with projects as indicated in the CDM Pipeline published by UNEP/Risoe, see <http://cdmpipeline.org/>. All projects, including those that have been unsuccessful in registration, are included in the estimate.

²⁶ 'Ambitiousness' is of course a relative term, but the Pledge Tracker on UNEP's website document that the pledges submitted are a far cry from the pledges needed to achieve the equally adopted maximum 2° temperature increase target as stated in the Copenhagen Accord.

reluctance by the US to send yet more dollars to China at prices of 15 USD per ton of CO₂. At the recent meeting in Tianjin in October 2010 little official progress was made towards a global agreement on climate change and the disparity between the US and China remained on measurement and reporting of actions. Under the surface, however, as reported by One Earth²⁷, “is an expanse of cooperative projects in and outside government that are expressly designed to help China and the U.S. use energy more efficiently, develop new technology, and lower carbon emissions.” In this setting technological cooperation seems to replace carbon accounting and the idea of buying off-sets. That does not exclude domestic cap-and-trade systems to which there is reference in the Kerry-Lieberman climate bill²⁸, but there are no reference to CDM or other international crediting systems rendering it implausible that the US will become an off-taker of any ‘for-compliance’ credits from CDM projects – let alone that a climate bill in itself currently seem to have less priority in the American senate²⁹.

The Chinese-Japanese relation in emissions reduction is equally developing along lines more technologically oriented. In August 2010 the two countries entered another agreement (in addition to 76 already existing agreements on environmental cooperation) that spell out that ‘the two sides will conduct pragmatic cooperation in the areas of clean development mechanisms, energy-savings, energy efficiency improvement, new energy, renewable energy, clean coal technology, methane recovery and utilization, carbon capture and storage, adaptation to climate change and technology development and transfer³⁰. Linking the CDM with cooperation on a number of key technologies suggests that to the extent that it is in play, it will be part of a package that involves technological cooperation – a demand iterated and reiterated by Chinese negotiation teams since COP12 in Nairobi in 2006 requiring that technology transfer be a core part of a future climate policy architecture. By introducing such conditionality in its cooperation agreement

²⁷ <http://www.onearth.org/onearth-blog/talk-of-tianjin-climate-conference-china-and-us-are-electrifying-the-car>

²⁸ The Kerry-Lieberman bill, p.668 (<http://greenhellblog.files.wordpress.com/2010/05/kerry-lieberman-bill.pdf>)

²⁹ see e.g. Thomas Brewer’s evaluation in the Oxford Energy and Environment Comment October 2010, http://www.oxfordenergy.org/pdfs/comment_02_09_10.pdf

³⁰ NDRC spokesman quoted in People Daily, see <http://english.peopledaily.com.cn/90001/90776/90883/7121144.html>

with Japan³¹, China remains in full control of conditions to be met before CERs may be exported. And with such conditionality it is unlikely that the ambitious 25% Japanese reduction target by 2020 is to be achieved on a platform of Chinese credits³².

It is also in full compliance with the Chinese submission from April 2009 to the UNFCCC³³ that Nationally Appropriate Mitigation Actions (NAMAs) must be supported by new, additional, adequate, predictable and sustained financing. Earlier Chinese statements have more categorically rejected NAMAs as a source of crediting and recent analysis of particularly Brazil, South Africa, India and China (the BASIC countries) positions on NAMAs³⁴ reveal that Brazil and China remain in opposition to crediting of NAMAs. The full text of the Chinese submission should make it abundantly clear that China does not intend to continue to be the world's supplier of carbon credits based on its own initiative and financing as is the case for all current CDM projects. Future crediting will have to involve the buyer much more decisively in the provision of technology and financing.

Absence of American and significant Japanese demand constrains the CER market to the EU, which has already secured the legal foundation for such credits. The total CER generation by 2012 based on the currently known projects as recorded in the UNEP/Risoe CDM Pipeline is about 950 MtCO₂e³⁵. Compared to a 'global' market only consisting of the European Emission Trading System this signifies a considerable credit overhang. In the 20% scenario, the EU ETS would off-take less than 50% of the generation – in the 30%

³¹ As the Agreement text has not been published the level of formal conditionality cannot be assessed. Such detailed terms and conditions, however, are likely to evolve as such general cooperation agreements are implemented

³² The Japanese emissions in 2007 were 1,250 million tCO₂e and the Japanese pledge of 25% reduction by 2020 would immediately correspond to 300 million tCO₂e – an amount which the financial crisis has reduced to some extent.

³³ See "China's submission on elements to be included in the draft negotiating text of LCA", 24th April 2009, paragraph 2(f): "Nationally appropriate mitigation actions by developing countries in the BAP shall be supported and enabled by technology, financing and capacity building from developed countries. Such support shall be new, additional, adequate, predictable and sustained. Relevant supporting mechanism shall also be developed as channels for providing technology, financing and capacity building support for nationally appropriate mitigation actions by developing countries." <http://unfccc.int/resource/docs/2009/awglca6/eng/misc04p01.pdf#page=63>

³⁴ Asselt van H; Berseus J; Gupta J; Haug C in "Nationally appropriate mitigation actions (NAMAs) in developing countries: Challenges and opportunities", <http://www.pbl.nl/en/publications/2010/Nationally-appropriate-mitigation-actions-in-developing-countries.html>

³⁵ according to the UNEP/Risoe CDM Pipeline newsletter October 2010

scenario of course somewhat more. In any case, the Chinese would see CER prices tumble post 2012 and hence face the, by now easy, choice of not selling the credits, thus of course not generating any revenue; - or actually selling the credits, but still generating only a meager revenue from a depressed carbon market overflowing with credits – while only helping Europe achieve its commitment at a bargain.

Choosing not to sell, however, would not leave the Chinese with no gains. First of all, China would retain the credits from about 2500 projects³⁶ the documentation of which (not to be confused with the underlying assets) has all been financed by the present buyers of credits. Based on the existing project documentation – following Chinese standards – China can jump start a national emission trading system on a solid platform obtained for free and serviced by Chinese consultants that have learned the trade through contracts with developed country CER buyers. And with a national intensity target in place, China would benefit, just as European emitters have benefitted from the EU ETS, from such a market – and has indeed been preparing for it for a while. There is a rapidly rising expectation that China will indeed establish a carbon trading system, maybe even before 2012. In July 2010, China Daily reported that “The country is set to begin domestic carbon trading programs during its 12th Five-Year Plan period (2011-2015) to help it meet its 2020 carbon intensity target.” referring to a closed-door meeting chaired by Xie Zhenhua, deputy director of the National Development and Reform Commission (NDRC)³⁷ and China’s key negotiator in international climate talks. The Beijing Environmental Exchange, for instance, a state-owned enterprise, has been setting up trading structures for a couple of years, but also Shanghai and Tianjin have had carbon exchanges operating for a few years.

A Chinese carbon trading platform will probably bolster a national demand for technology that increasingly is being developed in China, both energy efficiency and renewable energy technologies³⁸. It will initially be isolated from other carbon markets and can adopt its own pricing policy, which would not support at price of 9 or 10 euro, but maybe rather a

³⁶ 2536 Chinese projects were recorded in the UNEP/RISOE CDM Pipeline in October 2010

³⁷ http://www.chinadaily.com.cn/bizchina/2010-07/22/content_11034422.htm

³⁸ This is a simple analogy to the traditional arguments for carbon trading scheme that are believed to spur investments in the cheapest possible reduction options. It is not given that traditional Chinese command-and-control could not achieve the same level of demand, though it might be less diverse if technologies are chosen top-down.

price of 10 RMB (a bit more than 1 euro). Anecdotally, a representative of a Chinese corporation showed up at the office of a London based carbon trading company in October 2010 wishing to buy Chinese Verified Emissions Reductions (VERs) from large hydro projects at the price offer of 1.2 USD – maybe evidencing trends to come³⁹.

EXERCIZING MARKET POWER

Yet, there is more to gain for China. Immediately after COP15, Chinese officials travelled to New Delhi to ‘coordinate’ their positions with India, Brazil and South Africa. What coordination means is not obvious at this point, but India – initially a fierce opponent to the establishment of CDM – and Brazil, not enthusiastic about the mechanism either, are natural allies for China in limiting or eliminating the CER-supply post 2012. As mentioned earlier, there seems to be at least a partial alignment of positions between China and Brazil on the question of crediting on the basis of NAMAs. Here, the Indian position currently seems to be marginally diverging⁴⁰. But India, similar to China and Brazil, has pledged an emission intensity target under the Copenhagen Accord⁴¹, which renders it subject to carbon accounting and subtraction of any exported carbon credits – formal or voluntary. India, therefore, should be making the same considerations as China. She will do so, however, on an entirely different economic background with an accelerating trade deficit of more than 100 billion USD for 2010-11⁴². India’s annual credit production by 2012 is estimated at 130 MtCO₂e, representing a value (at an estimated average of 9 euro/CER) of about 1.1 billion euro or 1.5 billion USD. Thus, while the sign is inverse the number is equally inferior compared to trade statistics.

³⁹ The identities of the involved parties is known to the author, but are revealed in confidence

⁴⁰ For India, if an action does not receive (foreign) support, it is not a NAMA.
<http://www.pbl.nl/en/publications/2010/Nationally-appropriate-mitigation-actions-in-developing-countries.html>

⁴¹ According to the UNEP Pledge Tracker "India will endeavor to reduce the emissions intensity of its GDP by 20-25% by 2020 in comparison to the 2005 level.", see <http://www.unep.org/climatepledges/Default.aspx?pid=49>

⁴² http://commerce.nic.in/tradestats/indiatrade_press.asp

China, Brazil and India combined represent a little more than 80% of the credit market. Hence, from facing a significant surplus carbon credit supply with tumbling prices as a likely consequence, these countries could reverse the projection by creating a shortage that instead would send the prices soaring. The prime beneficiaries of such a move would of course be those countries that remain suppliers of CERs from CDM projects. Among these are some highly developed CDM host countries, essentially South Korea, Malaysia, Mexico, Chile and Israel many of whom will either have taken on targets themselves (according to pledges already submitted⁴³), or risk becoming 'illegitimate' sources of credits in a market, where other less developed G77 members have restrained their credits export to make these become domestic actions per se. The five countries alone would take out half the remaining credits in the market. Ultimately, the prime beneficiaries is likely to become their fellow least developed countries that would see a significant increase in interest from developed countries in establishing emissions reduction activities here. The trend is already visible in Africa.

With carbon credits in short supply, developed countries and Europe in particular would see the foundation for its reduction target erode. Without the credits that are supposed to make up half of the European response to its self-imposed emissions reduction commitment, intra-European investments in renewable energy would have to increase. Thus, by removing its and its BASIC partners' credits from the market, China would create a larger market for renewable energy technology – technology that China is already a major supplier of and with such Government backing that the US Steelworkers have filed a petition, supported by a significant number of senators, under Section 301 of the trade law seeking the elimination of Chinese policies and practices that adversely affect U.S. producers and their workers in the clean energy sector⁴⁴. To support it, China has in recent years, and particularly since the coming into force of the PRC Renewable Energy Law in

⁴³ South Korea: "To reduce national greenhouse gas emissions by thirty (30) percent from the business-as-usual emissions by 2020". Mexico: "Mexico aims at reducing its GHG emissions up to 30% with respect to the business as usual scenario by 2020, provided the provision of adequate financial and technological support from developed countries as part of a global agreement." Israel: "Strive for target of 20% reduction of GHG emissions by 2020 below BAU." Malaysia: "With International Finance: Reduce the intensity of carbon dioxide emissions per unit of GDP in 2020 by up to 40% compared with the level of 2005.", see UNEP's Pledge Tracker at <http://www.unep.org/climatepledges>

⁴⁴ See Reuters article of 28th October 2010, <http://www.reuters.com/article/idUS320484190120101018>

2006, consciously promoted a rapid development of a domestic market⁴⁵ for most renewable energy technologies. In quantitative terms, China is by now an undisputed market leader in solar PV and biomass incineration. Particularly wind technology has been a Chinese priority with annual installed capacity addition of at least 10 GW, by now almost entirely based on domestic manufacture of wind turbines. From this strong domestic platform, China would be ready to supply the renewable energy technology for which she herself, by the retaining of CERs for domestic consumption, can create an imminent international demand. Not only is a crash of carbon prices avoided. The loss of revenue from CERs may be replaced by revenue from technology export instead⁴⁶.

The entire picture is so beautifully crafted that from game theoretical perspective one could wish there is one brilliant Chinese mastermind behind it all. That, however, is probably not the case. It is rather a result of Chinese cautiousness and careful consideration of national interests – cautiousness that Europe and others have lacked when founding its low cost reduction strategy on availability of carbon credits from a fragile, imperfect and unpredictable carbon market.

The most compelling thought is that no one could blame the Chinese for making this move as a malicious sabotage of the carbon market. It is a move that would obviously demonstrate the Chinese intention to make its contribution by using the credits from projects that they have themselves developed and financed – credits that Europe would happily have claimed to be a European effort – which it never was. There would only be one reaction possible: Wishing the Chinese welcome in the group of countries that commits itself seriously to combating climate change.

⁴⁵ For a thorough description, see Jack Su, Kevin H. Y. Tsen “China Rationalizes Its Renewable Energy Policy”, <http://www.mayerbrown.com/publications/article.asp?id=9407&nid=6>

⁴⁶ While India and Brazil may not have the same potential benefit in terms of technology supply, Indian Suzlon indisputably is one of the major global suppliers of wind turbines with a solid European presence, and Brazil has significant interests in supplying biofuels.

NEXT STOP AFRICA

As compelling the above scenario may be other plausible scenarios could probably be drafted. Few carbon market actors have any interest in predicting a significant downturn in market value, in number of trades, in project development or in administrative burdens. Even China has no interest in lining out too clearly the possibility of a complete withdrawal from the international carbon market. There is still time for negotiators of a post-2012 climate agreement to invent new sources of off-sets essentially through REDD+, which currently seems to have little chance of entering the carbon market in the short term – but in face of serious credit shortage positions might change. Also continued eligibility of Assigned Amount Units from the Kyoto Protocol's first commitment period may fare more favourable in negotiations if other sources of credits are likely to dry out.

That said, however, there is yet more to suggest that China stands to gain on all fronts through a concerted effort to restrain carbon credit from the major suppliers, and it is therefore merited to explore further the wider aspects potentially involved. While there may be some unintended winners among the transition economy countries that would keep supplying CERs to the starving carbon markets and here benefit from soaring carbon prices, these are no threats to the industrial ambitions of the Chinese. They may even face partial exclusion from the European market following clauses in the European Climate and Energy Package if one or more European countries by observing the new carbon market structure find it less compliant with the intentions of the carbon market to buy from countries even better off than those that have voluntarily chosen to retain credits for own consumption. Or a Chinese, Brazilian and Indian withdrawal may simply see others follow suit, the likes of e.g. Argentina, retaining the credits as part of their Nationally Appropriate Mitigation Action.

The winners – intended or not – are the least developed countries, first and foremost the African continent. While again the deliberation with which this part of the picture has been painted by the Chinese may be doubted the impact of a Chinese climate related business strategy may have a very positive impact on climate action in Africa.

It is beyond discussion that China has ambitions in or for Africa. Which ambitions is far less clear. Interpretation of the Chinese presence and the Chinese actions on the continent must be read at face value. It is commonly accepted, though, that the Chinese approach to providing assistance to Africa in many ways is less interfering with local governance issues compared to the general western conditionality in terms of democracy, human rights and other rather political parameters. The Chinese assistance is infrastructure oriented – highways, harbours and railroads – and it is delivered on time as a complete Chinese package with workforce, materials and equipment. While this approach among government officials may be a liberating experience compared to other donor's administrative structures it is not always welcome among the local populations – and it is conditional in other respects. It has resulted in a Chinese dominance in exploration of minerals on the African continent to satisfy the growing demand for raw materials in the continuously growing Chinese industry.

In 2008, China held the China-Africa conference in Beijing with close to all African heads of state participating. One of the results was the China-Africa Fund with an initial capitalization of USD 1 billion for investment in Africa. Recently, another USD 4 billion was allocated, bringing the China-Africa Fund capital to 5 billion USD⁴⁷ – assumedly a far cry from the investments that China in a less public manner has invested in the African mining and transportation infrastructure, but nevertheless an amount that signals intent to also publicly making a name for itself as a donor and investor.

It is an obvious fact that Africa so far has been left out of the carbon market. Of the 2463 registered CDM projects (November 2010), 46 are in Africa and 17 of these in the country of South Africa. Reasons are legion: Lack of developers, insufficient project scales, poor investment climates and therefore lack of finance. Lack of access to technology is not a hindrance in itself, as developers and finance would employ any commercially viable technology, with or without carbon finance, if conditions are right. Apparently, and not surprisingly, conditions are not – at least not compared to other regions.

For this reason, Europe has already given a preferential status to carbon credits stemming from least developed countries in the sense that following the EU Energy and Climate

⁴⁷ <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aN4bX9aBcAec&refer=africa>

Package from December 2008 there is no limitation in eligibility of LDC-credits, neither pre- nor post-2012. While this gesture may provide comfort to climate investors when looking at the otherwise uncertain carbon market, it is unlikely to attract investors in itself. The European power utilities that would be the obvious candidates for investing due to their national commitments – which in the above scenario would now have to be fulfilled without access to cheap Chinese, Indian or Brazilian credits – remain unlikely investors⁴⁸. It simply does not comply with their missions and strategies compelling them to being national (at best European) energy suppliers. Most investors would also have to see the project investment in isolation. They only have limited possibilities to gain in other respects.

That, however, is not the case for the Chinese – as has already been recorded in the “infrastructure for raw materials” agreements. Here, cross-subsidization is an instrument that allows investment strategies that reach far beyond the individual projects and have spin-offs in other sectors – all to the benefit of the larger Chinese national economic interests. Despite poor investment climates the Chinese are therefore obvious candidates to employ their recently allocated billions to development of clean technology energy projects in an energy starving continent – naturally employing already mature Chinese technology in hydro power (there are 50,000 operational hydro power stations in China), solar heating (China constitutes 70% of the global market for solar heating, all domestically manufactured), efficient stoves (80% of all efficient stoves installed globally are in China, developed and manufactured in China), solar PV (90% of the global market is being served by Chinese manufacturers) and a host of other technologies that are applicable to the African context, simply because the rural Chinese context is quite similar. These technologies are obvious platforms for CDM project development, as stand-alone investments, or as programmes of activities under the CDM – a concept which is particularly designed to accommodate large scale roll-out of small-scale installations – and specifically intended for Africa.

Part of such a South-South technology deployment is also the know-how developed among Chinese consultants for CDM documentation. This goes for PDD development and

⁴⁸ S. Lütken, A. Michaelowa, “Corporate Strategies and the Clean Development Mechanism”, chapter 3 (Edward Elgar (c) 2008)

recently also for DOE⁴⁹ validation and verification services. When the CDM dries out in China – though continuing the parallel and institutionalized Chinese PDD format for a ‘domesticated’ CDM to fuel the isolated Chinese carbon market – the Chinese experts, trained by European donors, are ready to take on the jobs of documenting the emissions reduction projects that China and Chinese state-owned developers might develop in Africa – with own financing, own technology and with far reaching interests in other sectors.

But if finance is patient, the African energy sector may be an interesting investment proposition in itself. The first agreements between Chinese state-owned developers and African hosts have already been established. Already in 2009 Bloomberg reported that “The \$5 billion China-Africa fund backed by the government in Beijing was created to help Chinese companies invest in Africa. Shenzhen Energy Investment Co, partly owned by Huaneng Power International Inc., [together with] the fund may build a 1.03 billion Yuan (\$151 million) gas-fired plant in Ghana. Sinohydro Corp. won a contract this year to construct a hydropower plant in Kenya.”⁵⁰ The same article states that Africa needs to add about 13,000 megawatts of generation capacity annually until 2030, which is a rate three times quicker than the 10 years since 1998”. Obviously, there is a demand and few obvious investors to fill it. Chinese state-owned enterprises are among them.

Sino Hydro Corporation is currently also building wind farms as well as hydroelectric dams worth an estimated US\$3 billion not only in Kenya as mentioned above, but also in Ethiopia and Mozambique⁵¹. The Chinese solar PV sponsorship to the World Cup is well-known, supplied by Yingli Solar, but more decisively the Chinese Premier Wen Jiabao at a heads of state meeting in Sharm el-Sheikh, Egypt in 2009 pledged to build 100 clean-tech projects on the continent, covering solar power, biogas, and hydro power facilities in a three-year action plan for the enhancement of Sino-African cooperation⁵².

In addition, the value of carbon credits from renewable energy projects developed in Africa is significantly more appealing in a credit constrained world than would be the case, if

⁴⁹ Designated Operational Entity

⁵⁰ <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aN4bX9aBcAec&refer=africa>

⁵¹ ‘How China is Powering Africa’s Growth’, American Foreign Policy, 24 September 2009, <http://afpprinceton.com>.

⁵² <http://knowledge.insead.edu/economy-China-Africa-relations-100303.cfm/>

China and allies kept supplying credits to the international carbon market. Thus, the Chinese government stands to win on two fronts by retaining the Chinese (and Indian and Brazilian) CERs for domestic use: It will on the one hand generate additional demand for its renewable energy technology in Europe; and on the other hand it will increase the carbon value of its renewable energy investments in Africa. By moving into Africa as developer and owner of such assets, China would not only benefit the African host countries (and earn political credit in the process), but essentially benefit its own state-owned developer companies by securing significantly higher prices on carbon.

EUROPE REVISITED...

It seems that China could be winning on all counts and stands to lose nothing. And while the above scenario may seem speculative chances are that this grand scheme could be grander still. Speculations have been vented that China is preparing to pursue the development of solar thermal power in the Sahara. The perspectives in such a move are based on impressive plans originally drafted in Europe and promoted by a number of organizations and companies⁵³. The European Super Grid is based on extensive development of solar thermal power in Sahara and large wind bases in the North Sea and other areas in Europe with good wind resources – all connected through a supergrid. The perspectives are an emission-free European energy system by 2050. Currently one of the few suppliers of such solar thermal technology is Spanish Abengoa which has been pursuing options in the Chinese market for a few years. It claims, however, that the solar resources in China for this kind of technology are sparse and concentrated in the southernmost regions of the country. Nevertheless, Physicsworld.com reported in 2009⁵⁴ that the Beijing Laboratory of Solar Thermal is going to build a 1.5 MW plant in Dahan, just outside Beijing, to be inaugurated by the end of 2010. This is the first, but surely not the

⁵³ see <http://www.supersmartgrid.net/>

⁵⁴ <http://physicsworld.com/cws/article/news/38411>

last installation of its kind in China as is witnessed by the interviews in the sector that Chinadialogue has undertaken in August 2010.⁵⁵

The perspective in this move is first of all to emerge as a supplier – and in future maybe a leading supplier – of yet another renewable energy technology the supplier base of which is currently thin and where the intervention by an efficient Chinese construction industry could reduce costs and boost market uptake. While Chinese geography does not allow optimal exploitation of this technology domestically, Sahara is an ideal location. Here, such projects may be developed as CDM projects in some of the Saharan LDC states supplying CERs to a starving European carbon market⁵⁶. But the very long term perspective could see China supply more than CERs. Already being at the forefront of power transmission technology implementation in China there are obvious opportunities in realizing the plan that Europe has drafted and become a supplier of power across the Mediterranean – to a European continent that has committed itself to emissions reductions, but lack the decision power to follow through decisively.

THE CLIMATE WINS

The most important point is that if China realizes its power and the advantages embedded in fostering the scenario presented above, not only China stands to win – also the global climate will benefit. If China and its allies retain CERs that would otherwise have been used to offset European emissions, offsetting is marginalized and Europe would have to undertake its own investments. If the Chinese investment programmes continue undisturbed – and there is nothing to suggest the opposite – all retained credits would lead to additional investments; investments to be undertaken in Europe. This means a net gain for the climate. It also means that the European market (not the carbon market) may regain its position as a technology driver. With the currently less ambitious emission

⁵⁵ <http://www.chinadialogue.net/article/show/single/en/3783-Battle-of-the-solar-systems>

⁵⁶ Or the already excellent Chinese relations with Sudan may be exploited in yet another dimension (Sudan is also an LDC)

reduction targets, the industry may not be sufficiently challenged and the market is left to second tier suppliers catching up. On the other hand, if Europe spurs its technology suppliers the Chinese manufacturers may have a harder time catching up. But so much the better for driving technological development that ultimately shall provide the solutions to meet the climate challenge.

Thus, a simple move by the Chinese that eliminates a looming overhang of carbon credits entails a number of significantly larger benefits to be realized. It

- Helps China meet its own emission intensity target
- Helps China create a market for its own technology
- Increases project development in Africa
- Accelerates investment and technological development in Europe, and
- Benefits the global climate

No other country or institution has the power to combine domestic and global interests in the same decisive way. It can be done unilaterally and needs no global consensus. It should be met with acclamation from all parties. And China would truly have stepped up to the plate and beaten the developed countries at their own game – the climate game.