

# Old wine in new skins? Experiences from adopting voluntary agreements in Chinese state-owned enterprises

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## Abstract

The Chinese national government has put energy efficiency and pollution control at the heart of its 11<sup>th</sup> five-year plan (2005-2010). However, implementation of national policies at the local level is notoriously poor in China. In order to tackle this problem, voluntary agreements were signed between local Environmental Protection Bureaus and 14 mostly state-owned companies from different energy-intensive sectors in Nanjing, Xi'an and Kelamayi in the context of an ongoing EU-funded pilot project. In Nanjing, for instance, agreed targets are in the range of a 3-5% reduction in energy intensity by 2009 over a 2007 baseline. The pilot agreements are informed by Dutch experiences with long-term agreements on energy efficiency (LTA/1989-1999) as European best practice, but have been significantly adjusted to Chinese circumstances. Much emphasis was put on process management applying a cooperative approach throughout. Each enterprise put together a so-called Energy Action Team for voluntary agreement development and implementation. This helped to create a sense of ownership in the companies and assigned clear responsibilities. Energy Action Teams conducted Energy Potential Scans in cooperation with a Dutch expert to identify energy saving potentials and possible measures to realize them. On this basis, achievable targets were agreed and a detailed action plan was developed. A first evaluation is scheduled for April 2009. By lifting industry on a more equal power level with government authorities, voluntary agreements showed to be an effective policy instrument

to overcome traditional institutional constraints to environmental policy implementation at the local level in China.

## Introduction: Industrial Energy Efficiency in China

China is by now the biggest CO<sub>2</sub> emitter (MNP, 2007; IEA, 2007) and the second largest energy consumer (IEA, 2007) in the world. Still China experiences serious energy shortages, while suffering from local air pollution (OECD, 2007) not least due to a 76.4% reliance on coal in primary energy terms. This dire situation has prompted the Chinese government to put energy efficiency at the top of the agenda. Highest levels of Government have set an energy intensity reduction target of 20% and a pollution reduction target of 10% by 2010 against a 2005 baseline in the 11<sup>th</sup> Five Year Plan (FYP), 2006-2010. The coming into effect of the amended energy conservation law in April 2008 has further increased the pressure to improve energy efficiency on all levels of government, as well as on state-owned enterprises. Chinese national environmental policies have long been characterised by a top-down regulative approach. Despite recognition of environmental problems on higher levels, implementation at the local level is notoriously poor (Yang, 2004). This issue has also been recognised by the Chinese leadership, which is now striving for "institutional innovation" and new policy mechanisms – also mentioning voluntary agreements amongst those instruments that need to be strengthened (NDRC, 2007a: 31).

In this context, transfer of policy innovations from industrialized countries is considered and foreign experiences with voluntary agreements are taken into account (see for example

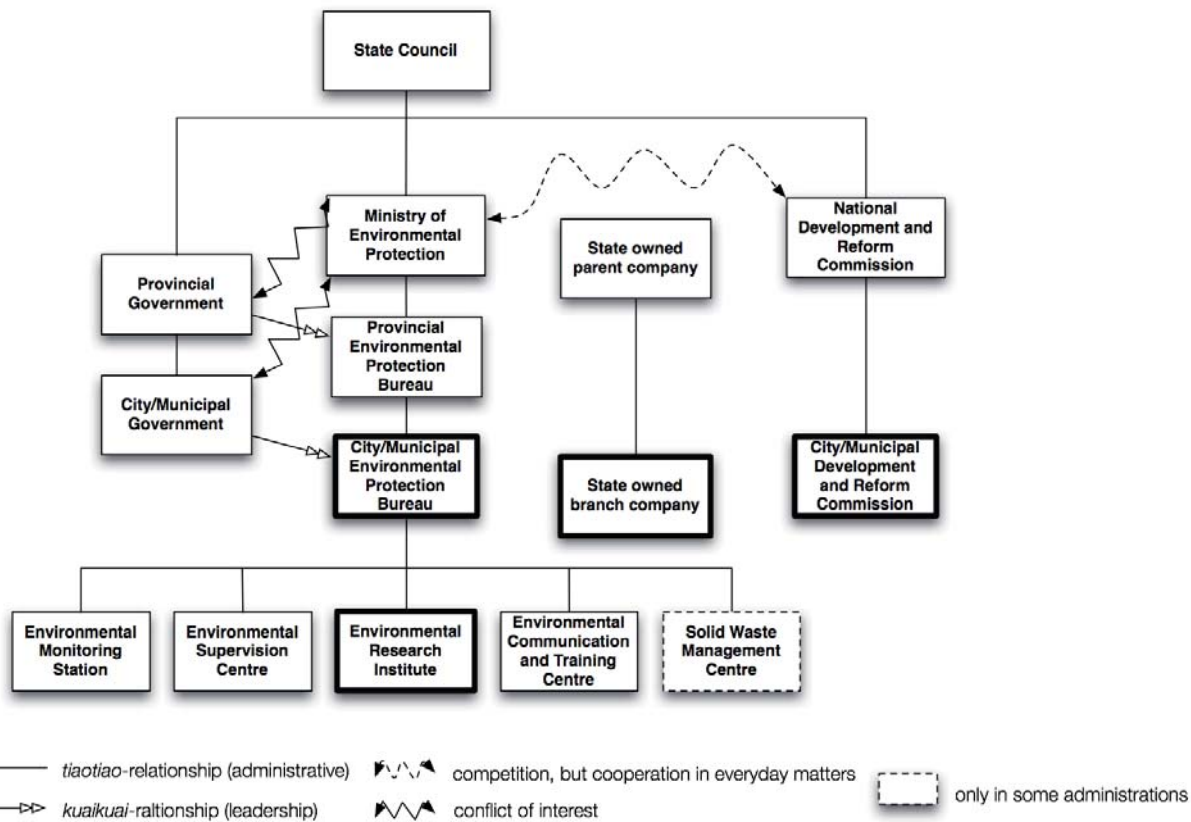


Figure 1. Simplified Institutional Set-up. Source: adapted from Eichhorst and Bongardt (in press)

Price et al., 2003) and adapted to local circumstances. Pilot projects involving foreign expertise play an important role in adapting policies to the Chinese context. As only few pilot projects exist so far, experiences from Nanjing, Xi'an and Kelamayi, where voluntary agreements were signed between energy-intensive enterprises and local Environmental Protection Bureaus (EPBs), can significantly inform the future development of voluntary agreements throughout China. Consequently, this paper explores the institutional setting for the emergence of voluntary agreements and the more specific drivers of the actors involved, as well as the agreed targets and procedures including a section on the possibilities to finance voluntary agreements through the Clean Development Mechanism to give a comprehensive overview of our pilot action. By this means, this paper is an attempt to contribute to the urgent need to explore new instruments for environmental management in China focusing on actor constellations and management aspects of voluntary agreements at the local level.

### Background: Institutional setting

Local EPBs implement national environmental policies and programmes that are designed by the Ministry of Environmental Protection (MEP), formerly the State Environmental Protection Administration (SEPA) (Ma and Ortolano, 2000), as well as local environmental policies. Energy efficiency, however, falls within the responsibility of the National Development and Reform Commission (NDRC), which is responsible for energy and economic policies. Hence, at the local level normally Development and Reform Commissions (DRCs) are in charge

of energy policy. A similar vertical relationship exists between local branches of state-owned companies and their parent companies on the national level (see figure 1). For instance, national state-owned companies require their local branches to achieve often very ambitious energy efficiency requirements.

Instead of providing detailed implementation guidelines, MEP has always encouraged local innovation so that in some cities only informal contracts between EPBs and managers of enterprises were put in place. These informal rules of behaviour form part of the institutional framework of environmental management in China (Ma and Ortolano, 2000) and reflect a consensus-oriented interaction between authorities and (state-owned) industry. They could perhaps even be interpreted as an informal prototype of voluntary agreements. EPBs operate under the control of local government via so-called *kuai-kuai*-relations. They receive most of their funding from local government, which also holds the power to appoint or remove EPB directors. Whereas EPBs are concerned with implementing MEP policies on environmental protection, local governments' priority remains economic development securing employment and revenues. EPBs thus find themselves in a difficult situation, basically implementing national environmental regulations within the leeway given to them by local government. This conflict of actors' orientations hampers the effective implementation of environmental policies, because, being dependent on local governments, EPBs cannot be expected to regularly act against their will (Jahiel, 1998). However, Nanjing is a special case in that it holds the Environmental Model City status, which is awarded to those cities that achieve higher environmental

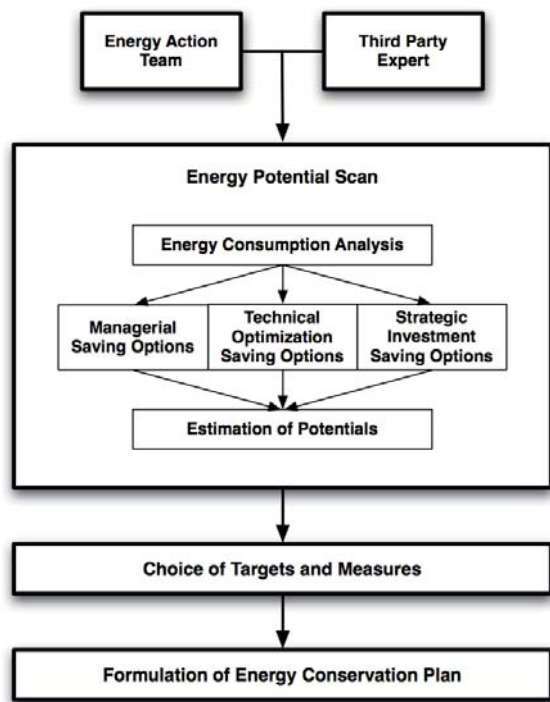


Figure 2. The Process of the Energy Potential Scan.  
Source: own illustration.

standards than generally required. Since this award represents a gain in social status (*mianzi*) for the local government, it is a real incentive to achieve better environmental quality.

### Case study: Voluntary Agreements in Nanjing, Xi'an and Kelamayi

Pressing environmental concerns, as well as environmental education of one of the experts from Nanjing Environmental Protection Bureau (EPB) lead to the idea of transferring good practice from Europe to Nanjing, Jiangsu Province. The Dutch energy agency, the main implementing body of voluntary agreements in The Netherlands, was also interested in disseminating good practice results to China and applied for a grant in the AsiaProEco programme by the European Union. After a first project phase (2004-2005) under AsiaProEco I, in which a feasibility study on voluntary approaches for urban environmental management was conducted in Nanjing and a model for voluntary agreements for Chinese local governments was developed (Nanjing EPB, 2005), the European Union decided to fund a three-year demonstration project with 14 companies from Nanjing, Xi'an and Kelamayi. Voluntary agreements were signed between the three local Environmental Protection Bureaus and 14 mostly state-owned companies from different energy-intensive sectors (steel, power generation, cement, refineries, breweries, petrochemical). In order to test synergies of voluntary agreements with other instruments to improve energy efficiency, the possibilities to use the Clean Development Mechanism (CDM) as finance mechanism were also explored in a sub-activity of the project. In the following sections, the drivers for voluntary agreements, the contents (targets and procedures) of the agreements and the possibility to finance implementation through the CDM are discussed in more detail.

### DRIVERS FOR VOLUNTARY ACTION

European research on voluntary agreements showed that drivers behind voluntary agreements are not only related to environmental problems but also to policy design within a given institutional framework and policy culture (Mol et al., 2000; Dalkmann et al., 2005). The analysis<sup>1</sup> of the three pilot cities shows that the rationale behind voluntary agreements in China is essentially the same as in the EU – employing a flexible instrument to overcome complex environmental problems that are not easily tackled by regulation. However, two main drivers have been identified that are specific to the Chinese situation: (1) Overcoming the implementation gap of the 11<sup>th</sup> five-year plan and (2) closing the power divide between government and industry (see Eichhorst and Bongardt (forthcoming) for a detailed discussion of drivers).

Firstly and in contrast to many voluntary agreements in the EU, due to the different institutional and political setting in China, voluntary agreements are not applied in order to avoid regulation but to implement the ambitious national targets. This only turned out during the project lifetime. In the beginning of the project during a feasibility study in 2004 (Nanjing EPB, 2005), more ambitious environmental protection was the aim of the EPB in Nanjing. The introduction of the 11<sup>th</sup> five-year plan and its target to reduce energy intensity by 20% from 2005 until 2010, however, put ambitious mandatory targets in place that were subsequently broken down to the provincial level. For Jiangsu Province the target was set at 20% equal to the national level. So, voluntary agreements are now used to ensure implementation of provincial targets. Furthermore, the recently amended Energy Conservation Law, which introduced the achievement of energy intensity targets into annual performance evaluations of local cadres, as well as requirements by parent companies pose a permanent threat of underperformance both for local administrations and companies. Using negotiated agreements as implementation tool also lessens the need for additional threats and incentives. Nonetheless, participating companies are offered prioritised access to environmental funds and increased reputation through an Environmental Company award, which showed to have a strong motivating power. The environmental fund is financed via pollution fees collected by EPBs; its money is spent on projects that improve environmental performance in industry.

Secondly, in contrast to EU experiences, where the more or less equal playing field of industry and national government is seen as one success factor of voluntary agreements (Mol et al., 2000), for instance in the Netherlands, government is much more powerful than industry in China. Nevertheless analysis of the empirical data from Nanjing revealed that instead of hampering voluntary agreement development, closing the power divide represents a major driver for industry to enter into voluntary agreements. The cooperative approach of voluntary agreements gives industry more say in target setting than traditional top-down policy making and lends an ear to industry concerns, while at the same time supporting enterprises in their

1. The analysis is based on empirical findings from interviews with industry and government representatives involved in the pilot agreements in Nanjing, as well as representatives of national government, a foreign development agency and NGOs. A total of 14 semi-structured interviews with local companies, decision-makers and experts on the national level were conducted for this case study in summer 2007 (Eichhorst and Bongardt, forthcoming).

**Table 1. EPS results from the petrochemical sector showing energy efficiency improvement potentials by category and payback time (PBT)**

	PBT < 1 year	PBT 1-5 years	PBT > 5 years	Total
Category A: Technologically proven in this industrial sector	1%	1%	1%	3%
Category B: Technologically proven in other industrial sectors	1%	2%	2%	5%
Category C: R&D pilot option still to be demonstrated	1%	2%	2%	5%
Total	3%	5%	5%	13%

**Table 2. Overall targets agreed by 14 companies in Nanjing, Xian and Kelamay**

Total Annual Energy Saving	10–18 PJ (3-5%)
Total Annual Reduction of CO <sub>2</sub> -emissions	1.1–2.0 Mt (3-5%)
Total Annual Reduction of Waste Water	62–93 Mt
Total Annual Reduction of Solid Waste	0.26–0.45 Mt
Reduction of SO <sub>x</sub> and NO <sub>x</sub>	3-90%

implementation. This new partnership approach, increasing the acceptance of energy efficiency and environmental improvements, has the potential to overcome both the institutional and policy barriers to implementation by developing new spaces of communication and dialogue between EPBs (environmental protection) and industry (economic development). It must be kept in mind, however, that what was found true for energy intensive state-owned industry may not be the same with private companies that are not closely tied to the government.

#### TARGET SETTING AND IMPLEMENTATION

Much emphasis was put on process management applying a cooperative approach throughout. Each enterprise put together a so-called Energy Action Team for voluntary agreement development and implementation. Energy Action Teams conducted Energy Potential Scans (EPS) in cooperation with a Dutch expert to identify energy saving potentials and possible measures to realize them (see figure 2). In the pilots the EPS also included a scan of pollution reduction options. On this basis, achievable targets were agreed and a detailed action plan developed. This procedural innovation helped to create a sense of ownership in the companies and assigned clear responsibilities. A first evaluation is scheduled for April 2009.

During the EPS both options for technical and management improvements are assessed and their energy saving or pollution reduction potential roughly estimated. At the same time, saving potentials are categorised by the degree of maturity of a saving option in a given industrial sector, as well as the estimated payback time (PBT) of each option (illustrated in table 1).

Based on these categorisations targets were agreed for each company and formulated in an action plan including a detailed description of energy saving and pollution reduction measures. Measures are differentiated into managerial and technical measures. Managerial measures are cross-sectoral and include trainings of operators and managers, energy audits or the introduction of new managerial systems. Many employed technical options are also cross-sectoral, such as waste heat and waste

water recovery, improved fan technology, improved cooling systems or fuel switch, e.g. from oil to gas. Other employed measures are sector-specific, such as optimizing cement kilns and transmission lines, desulphurisation in the coal and power industry or improved painting systems in the automobile industry.

In Nanjing, agreed targets are in the range of a 3-5% reduction in energy intensity by 2009 over a 2007 baseline. Emission and pollution reductions vary more widely between companies.

The aggregated savings and pollution reductions envisaged by the 14 companies are represented in table 2<sup>2</sup>.

#### FINANCING ENERGY EFFICIENCY IMPROVEMENTS AND EMISSION REDUCTIONS

Target setting is closely related to economic feasibility of certain measures and therefore with finance options. In this context, we also looked at the possibilities and constraints to use the CDM as finance instrument in combination with voluntary agreements. Analysing the compatibility of voluntary agreements and the CDM, we found that significant procedural synergies exist between the two instruments. Both need to define a baseline (albeit according to different criteria), set an energy efficiency or emission reduction target, respectively, develop a timeline and implementation schedule, secure finance and monitor and evaluate project progress. As concerns regulatory compatibility, good housekeeping<sup>3</sup> measures alone, which can contribute to voluntary agreement targets, will not be compatible with the CDM. Good housekeeping measures tend to be inexpensive and self-financing and do not usually fulfil the CDM requirement of being additional, i.e. that they could not have been implemented without the CDM. Rather,

2. Reduction of SO<sub>x</sub> and NO<sub>x</sub>: The wide range is explained by a 90% reduction of sulphur emissions in the two companies that installed desulphurisation systems for the first time.

3. This includes management improvements, such as implementing ISO 14001 or cleaner production auditing.

the CDM can be used to finance certain technology and process improvements towards higher energy efficiency and emission reductions. However, if a CDM project were to be linked to a voluntary agreement, the CDM feasibility assessment should be carried out by the Energy Action Team of the voluntary agreement in parallel to the Energy Potential Scan. If a CDM project was found feasible, including a formal CDM provision in the voluntary agreement is crucial in order to ensure additionality of the CDM project.

Since VA targets will always be limited by the feasibility of potential energy efficiency measures, the CDM could function as one possible means to achieve higher targets by increasing the cost effectiveness of certain energy efficiency measures through additional CER revenues (in other words decreasing the payback time of an investment). Whether or not a CDM project activity is integrated into a voluntary agreement should be carefully considered. The benefits of additional finance flows for certain energy efficiency or emission reduction activities and the additional administrative burdens and risks posed by the CDM process have to be weighed up. In some cases, a combined approach of the CDM and VAs can be mutually reinforcing: While the CDM may support VA financing, voluntary agreements can draw the attention of the company's executive management to the opportunities of CDM project activities. However, depending on the kind of measures and available CDM methodologies, it may be more suitable to look for other sources of finance.

As mentioned above, in the Nanjing case priority access to environmental funds from Nanjing Environmental Protection Bureau is granted to participating companies as incentive for voluntary agreements.

## Conclusions for Transfer of Energy Efficiency Policy

No policy exists in a vacuum and so energy efficiency policy, too, has to reflect local institutional and political realities to be successful. A different institutional fit and notorious implementation gaps of national laws and regulations in China required that pilot negotiated agreements be adapted to these needs. Political developments during the project lifetime, making ambitious energy efficiency improvements mandatory through the 11<sup>th</sup> five-year plan, changed the objective of voluntary agreements in Nanjing from setting ambitious targets to ensuring implementation of ambitious targets. At the same time, using voluntary agreements as implementation tool showed to have the potential to overcome limitations of traditional top-down policies in China by providing not only specific aims but also assisting with the concrete measures to achieve them. Here the formation of Energy Action Teams and the EPS proved to be suitable tools as they helped to create a sense of ownership in the companies and assigned clear responsibilities. At the same time the cooperative approach offered active, methodological support in concrete measures. By lifting industry on a more equal power level with government authorities, voluntary agreements made energy efficiency and environmental improvements acceptable and manageable by participating companies and thus showed to be an effective policy instrument to overcome traditional institutional constraints to environmental policy implementation at the local level in China.

In conclusion we found that although the concrete objective of voluntary agreements changed from an instrument to achieve higher-than-required energy efficiency improvements to an implementation tool for national/provincial targets, the rationale behind the agreements remained essentially the same as in the EU – employing a flexible instrument to overcome complex environmental problems that are not easily tackled by (only) issuing a regulation.

A similar trend can be seen in the introduction of a national programme to improve energy efficiency in China's most energy-intensive enterprises (the Top-1000 Enterprises Programme). Although, the Top-1000 Enterprises Programme is modelled on voluntary agreements, here the National Development and Reform Commission set the targets for participating companies unilaterally (Price and Wang, 2007). So, again, instead of being a *voluntary* agreement in the very sense of the word, rather its elements are employed as implementation tool.

Recent developments of government documents embracing voluntary agreements as innovative policy instrument, the success of the first pilot agreements in Shandong (Hu, 2007) and the introduction of the Top-1000 Enterprises Programme all paint a positive picture for further voluntary agreements in China. Whether or not they will all be wearing a new skin as implementation instrument remains as yet to be seen.

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