

# Environment, modernity and transitional China.

At the frontier of ecological modernization

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## 1. Introduction: environmental homogenization?

While directly after the 1992 United Nations Conference on Environment and Development the comments of environmental scholars, officials and interest groups on the successes of this summit were rather ambivalent, a decade later we can witness a much more positive evaluation. The UNCED conference is nowadays generally perceived as a major breakthrough in putting environmental protection and sustainable development forcefully on the (inter)national agendas. More specifically, two major contributions of the UNCED are widely celebrated. First, attention for international and global environmental problems and policies were strongly triggered by the preparations, the summit itself and the aftermath. This resulted, among others, in institutional innovations such as the United Nations Framework Convention on Climate Change and the Biodiversity Convention. Secondly, the UNCED meant a major acceleration in the attention paid to environmental protection and sustainable development in developing countries. While in most industrialized countries the institutionalization of the environment in national politics and policies started in the late 1960/early 1970s, in most developing countries the late 1980s and the early 1990s were the key period for this process of environmental institutionalization.

The process of institutionalization of the environment in western - and especially, but not only, European - industrialized societies has been reflected and theorized upon by social scientists especially under the heading of ecological modernization. Ecological modernization refers to a restructuring of modern institutions following environmental interests, perspectives and rationalities. Less and less the developments in and of modern cultural, political and even economic institutions in these western societies can be understood if we exclude environmental logics and perspectives. In addition, ideas of ecological modernization were used by policy-makers and applied social scientists as a perspective for a likely or even desirable route in solving longstanding environmental disputes and conflicts. It formed an alternative for both the curative end-of-pipe approaches of western nation-states, the demodernization and deindustrialization ideologies of the environmental movement, and the postmodernity discourse that deconstructs any environmental crisis so that it melts into the air. In that sense ecological modernization is a more specific interpretation of the key ideas prevailing in the more general notion of sustainable development (Spaargaren and Mol, 1992).

One of the key questions put on the research agenda of ecological modernization already in 1995 is its geographical scope. To what extent are ideas of ecological modernization of any use in developing or industrializing countries outside Europe? While originally formulated primarily in theoretical terms and being subject of theoretical debates in sociological and political science literature, this question is of course also of major practical relevance. It involves then policy-relevant issues of transfer of (ecological modernization inspired) environmental strategies and

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<sup>1</sup> I thank Gert Spaargaren, David Sonnenfeld and Eduard Vermeer for valuable comments on an earlier draft of this paper.

models of environmental governance from OECD countries to new industrializing economies. It also touches upon questions of harmonization or heterogenization and differentiation in multilateral environmental agreements (MEAs): should the numerous MEAs currently being concluded and implemented under strong influence of western OECD countries be expected to work equally in all countries around the world? Or does the western bias in MEAs' policy principles, approaches, strategies and inherent state-market-civil society relations prevent their equal successful implementation in, for instance, Asian newly industrializing countries?

Initially, until at least the mid 1990s, ecological modernization was typically seen as a western theory, only valid for the limited geographical scope from which it originated. This started to change, however, due to two major developments. First, a number of developing countries, especially in Southeast and East Asia started to industrialize and arguably to modernize, rapidly. The so-called first generation Asian tigers such as Taiwan, South Korea and Singapore, were soon followed by a second generation new industrializing economies, among which Malaysia, Thailand, China and recently Vietnam. With this industrialization and modernization process it was believed that it was less easy to conclude that ideas of ecological modernization were ill-fitting for these nation-states in several or all of its major assumptions (cf. Sonnenfeld, 2000; Frijns et al. 2000). Second, the accelerating processes of globalization emerged forcefully on the research agenda of the social sciences from the first half of the 1990s onwards. While there was - and to some extent still is - considerable disagreement among social scientists on the nature, the impact and the evaluation of globalization processes, most scholars do agree that these developments strongly contributed to the increasing global interdependence in political, cultural and economic domains. For environmental governance and reform it meant that economic, political and societal processes and dynamics pushing towards environmental reform often did no longer remain restricted to one (often western) country, but spread on the wings of globalization to other sides of the globe. A global civil society, global environmental governance and environmental management systems operated by transnational corporations settling down in developed and developing countries are often referred to as key examples of this. As OECD countries arguably dominate globalization processes they might do so also in the environmental arena, resulting in the 'export' of not only economic and political institutions and mechanisms from these countries to elsewhere, but also of environmental reform models, practices and dynamics. Hence, to put it in ecological modernization terms, these two developments contributed to the spreading of both the conditions under which ecological modernization initially originated and their environmental strategies, practices and measures beyond the western nation-states.

In an earlier publication I have balanced and criticized the view or idea that globalization will result automatically in environmental homogenization (Mol, 2001). Next to globalization dynamics and processes, the specific local conditions, national priorities, domestic historical trajectories, state-market relations and power balances, among others, will equally determine the environmental governance and reform practices and institutions. To put it in the terminology of Castells (1996/1997): the 'space of flows' has to meet somewhere the 'space of places', and at these meeting points we can expect to witness various models of environmental reform, if any substantial environmental reform can be identified at all. If we are to apply the idea of ecological modernization outside Western Europe, we might expect to find environmental reform models that resemble some of the core features of the (western) idea of ecological modernization, but they will also be colored by the specific local conditions and the positions in the world-system (cf. Sonnenfeld, 2000). We might conceptualize this with the notion of modes or styles of ecological modernization.

In applying this to China we touch upon the central questions of this paper: can the environmental reforms in contemporary China be interpreted as ecological modernization, what are its core features and what are the similarities and differences between Chinese and European modes or styles of ecological modernization? This article continues with a summary of the basic ideas of ecological modernization as originally formulated. It then briefly reviews the historical development of environmental protection in China, especially focusing on urban and industrial settings. Subsequently, it investigates the main social, political and economic dynamics behind processes of environmental reform currently being witnessed in China. Finally, the article draws some initial conclusions on the nature of 'ecological modernization' in China in an age marked by globalization, and thus on the geographical reach of ecological modernization theory.

## **2. Ecological modernization as a European project**

It is far from easy to distill the core features of ecological modernization from the rapidly growing European environmental social sciences literature. There are various reasons for this. For one, being a rather young theory, the literature of ecological modernization is still very much in development with 'competing' and complementing interpretations. Second, scholars contributing to the literature on ecological modernization operate on various levels of abstractions. While some contribute to ecological modernization as a theory of social change, others focus on the changes in ideas and discourses or on the environmental policies being implemented. It goes without saying that these differences result in differences in emphasizing what is now exactly the main, basic or principle idea or set of ideas that lies at the foundation of ecological modernization. Third, and partly related to the former point, those contributing to the ecological modernization literature start from or apply a range of theoretical frames, among which systems theory, discourse analysis, institutional theory, structuration theory, and new social movement approaches. Consequently, when I try to summarize below the core features of ecological modernization ideas in especially Western Europe I look for the common denominators in this rich and growing literature, but it will be impossible not to give some interpretations pride of place above others. So the essence of ecological modernization put forward here is an interpretation of what I see as the more central, important and/or influential connotations in comparison with other contradictory or more peripheral versions.

### *The central idea behind ecological modernization*

Several authors claim that the central idea of ecological modernization is the growing compatibility of environmental protection and economic growth (e.g. Hajer, 1995) or the idea that technology is the key to any modern project of environmental reform (Dryzek, 2000; Christoff, 1996; Humphrey et al., 2002). Although without any doubt the first perspective emerges in numerous publications that deal with ecological modernization, and the second notion is prevailing widely in the more ambivalent or critical publications on ecological modernization, I think both miss the core, basic idea of ecological modernization.

The basic premise of Ecological Modernization Theory is the centripetal movement of ecological interests, ideas and considerations in the social practices and institutional developments of modern societies. This results in ecology-inspired and environment-induced processes of transformation and reform of the core practices and central institutions of modern

society, a process that started to take place seriously from the 1980s onwards. This key idea can be found in all influential publications on ecological modernization, starting from Joseph Huber's (1982) idea of the ecological switch-over as the new (Schumpeterian) phase in the maturation of the industrialization process, via Martin Jänicke's (1993) notion of modernization of the political processes due to the growing importance of environmental interest and ideas, until more recent ideas of Spaargaren and van Vliet (2000) on the transformations in the infrastructures and practices of consumption, and the analyses of Murphy and Gouldson (2000) on industrial innovations.

Within Ecological Modernization Theory these processes have been conceptualized at an analytical level as the growing autonomy, independence or 'differentiation' of an ecological perspective and ecological rationality vis-à-vis other perspectives and rationalities (cf. Mol, 1995; Spaargaren, 1997; Seippel, 2000; Andersen and Massa, 2000). In the domains of policies, politics and ideologies, the growing independence of an ecological perspective commenced in the seventies and early eighties in most of the West-European and North American societies. The construction of governmental organizations, departments, legal institutions and monitoring and reporting programs especially set up to deal with environmental issues dates from that era, followed later by the emergence of green parties in the political system of many OECD countries (cf. Carter, 2001). In the socio-cultural domain a distinct green ideology - as manifested by, for instance, environmental NGOs, environmental periodicals and 'green' belief systems - started to emerge in the 1970s or before. Especially in the 1980s this ideology assumed an independent status and could no longer be interpreted in terms of the old political ideologies of socialism, liberalism and conservatism (cf. Paehlke, 1989; Giddens, 1994).

But the crucial transformation, which makes the notion of the growing autonomy of an ecological perspective and rationality especially relevant and led European scholars to the introduction of the concept of ecological modernization, is of more recent origin. It was only in the 1980s that in the economic domain, an ecological rationality and perspective started to challenge the monopoly of economic rationality as the all-determining organizing principle. And since, according to most scholars, the growing independence of an ecological rationality and perspective from their economic counterparts in the domain of production and consumption is crucial to 'the ecological question', this last step is the decisive one. It means that economic processes of production and consumption are increasingly analyzed and judged, as well as designed and organized from both an economic *and* an environmental point of view (be it of course not to a similar extent up till today). Some profound institutional changes in the economic domain of production and consumption have become discernible from the late 1980s onward in OECD countries. Among these changes are the widespread emergence of environmental management systems and departments of the environment in firms; the introduction of economic valuation of environmental goods via eco-taxes, among other things; the emergence of environment-inspired liability and insurance arrangements; the increasing importance attached to environmental goals such as natural resource saving and recycling among public and private utility enterprises, making it a key issue in competition; and the articulation of environmental considerations in economic supply and demand (for instance via eco-labeling schemes, environmental information and communication systems in economic chains).

The fact that we analyze these environment-related transformations as *institutional* changes indicates their semi-permanent character. Although the process of environment-induced transformations and efficiencies should not be interpreted as linear and irreversible, as was commonly done in the modernization theories in the 1950s and 1960s, these changes have some

permanency and would be difficult to reverse. Hence, although environment moves up and down the "issue-attention cycle" of politics (Downs, 1966), it is strongly embedded in the core institutions and social practices of modern society, which strongly subdues any radical and sudden breakdown of environmental gains, even in times of economic stagnation. In the terminology of Giddens (1984), we speak of an episodic transformation: a specified direction of change over a delineated time period.

#### *Dynamics, mechanisms and actors in Europe*

Various ecological modernization scholars have elaborated on the social mechanisms, dynamics and actors through which social practices and institutions are transformed by the incorporation of environmental interests and considerations. In European ecological modernization studies three categories regularly return:

- *Political modernization.* The modern "environmental state" (Mol and Buttel, 2002) plays a key role in processes of environmental institutionalization, but does so no longer in a conventional way. First, there is a trend towards decentralized, flexible and consensual styles of national governance, at the expense of top-down, centralized, hierarchical, command-and-control regulation. Second, we can witness a greater involvement of non-state actors in the conventional tasks of the nation-state (= the provision of public goods), including privatization, conflict resolution by business-environmental NGO coalitions, private interest government, and the emergence of "subpolitics" (Beck, 1994). Finally, there is an emerging role for international and supra-national institutions that to some extent undermine the sovereign role of the nation-state in environmental reform. Together with the next category this results in new state-market relations in environmental protection and reform.
- *Economic and market dynamics and economic agents* gain in importance in environmental reform. While in the 1960s and 1970s environmental improvements were only triggered by the state and environmental NGOs, more recently producers, customers, consumers, credit institutions, insurance companies, the utility sector, and business associations increasingly turn into social carriers of ecological restructuring, innovation and reform (in addition to state agencies and new social movements), both within countries and across borders. They use market, monetary and economic logics in striving for environmental goals.
- *Civil society.* With the institutionalization processes, new positions, roles, ideologies and cultural frames for environmental movements are crystallizing. Instead of positioning themselves on the periphery or even outside the central decision-making institutions, environmental movements seem increasingly involved in decision-making processes within the state and, to a lesser extent, the market (cf. Mol, 2000; Sonnenfeld, 2002). Environmental norms, values and discourses gain influence by spreading far beyond the professionals and core supporters of environmental NGOs, a process that is paralleled by their reformulation.

#### *From Europe to China*

In analyzing China's environmental reforms from an ecological modernization perspective, it is important to distinguish between on the one hand the leading idea of ecological modernization theory and on the other the dynamics and mechanism and actors at work in processes of ecological modernization. If ecological modernization is taking place in China, then there should be evidence of a growing 'differentiation' of an environmental rationality and perspective from its

economic counterparts, and a subsequent institutionalization of ecological interests, ideas and considerations in social practices and institutional developments. But the concrete dynamics, mechanisms and actors which are directing (or beginning to direct) this process in China can differ from what is witnessed or interpreted in Western Europe. It is especially with respect to the (European) processes introduced in the previous section of this paper that ecological modernization processes can differ from country to country and region to region, and that the notion of mode or style might be helpful.

### **3. The development of the Chinese 'environmental state'**

In exploring ecological modernization and environmental reform in contemporary China it goes without saying that I will and have to be highly selective. The common opinion on China's environmental record seems to include poor performing of state agencies and deteriorating environmental quality, rather than anything like ecological modernization. While I think this is a too one-sided perspective, in searching for ecological modernization dynamics I will nevertheless have to be selective by focusing especially on the successes, improvements and changes-for-the-better in China's environmental reform. Where do we see the seeds of environmental institutionalization? Which environmental reform dynamics seems to have good chances to become dominant because they are part of larger tendencies and transformations in China? What are the crucial actors and advocacy coalitions that might push ecological modernization? And on which points do these differ from what we have witnessed in European ecological modernization processes? I will start in this section with a short historic introduction on environmental reform in China and an assessment of the trends in environmental 'additions' and 'withdrawals' over the last decade.

In a former command economy that is now in a transition stage one should not be too surprised to find environmental institutionalization primarily in state and political structures and institutions. The start of serious involvement of the Chinese government in environmental protection more or less coincides with the start of economic reforms in the late 1970s. Pollution control was initialized in the early 1970s, especially following the 1972 United Nations Conference on the Human Environment in Stockholm. In 1974 a National Environmental Protection Office was established, with equivalents in the provinces. But its major progress and maturation is achieved after the enactment and implementation of the environmental laws and regulations since the late 1970s, with especially an acceleration in the 1990s. Following the promulgation of the state Environmental Protection Law in 1979 (revised in 1989), China began to systematically establish her environmental regulatory system. In 1984 environmental protection was defined as a national basic policy and key principles for environmental protection in China were proposed, which include "prevention is the main, then control", "polluter responsible for pollution control" (already introduced in the 1979 environmental law), and "strengthening environmental management". Subsequently, a national regulatory framework was formulated, composed of a series of environmental laws (on all the major environmental segments, starting with marine protection and water in 1982 and 1984), executive regulations, standards and measures.<sup>2</sup>

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<sup>2</sup> At a national level China has now some 20 environmental laws adopted by the National People's Congress, some 140 executive regulations issued by the State Council, and a series of sector regulations and environmental standards by the State Environmental Protection Agency (SEPA).

Institutionally, the national regulatory framework is vertically implemented through a four-tier management system, i.e., national, provincial, municipal and county levels. The latter three levels are governed directly by their corresponding authorities in terms of both finance and personnel management, while the State Environmental Protection Agency (SEPA) is only technically responsible for their operation. The enactment of the various environmental laws, instruments and regulations through the last two decades was paralleled by a stepwise increase of the bureaucratic status and capacity of these environmental authorities (Jahiel, 1998). For instance, the NEPA, was elevated via the National Environmental Protection Bureau to the National Environmental Protection Agency (in 1988), and in 1998 it received ministerial status as SEPA. By 1995, the “environmental state” had over 88,000 employees all over China and by 2000 it had grown to 130,000.<sup>3</sup> Jahiel (1998: 776) concludes on this environmental bureaucracy: “Clearly, the past 15 years...has seen the assembly of an extensive institutional system nation-wide and the increase of its rank. With these gains has come a commensurate increase in EPB authority - particularly in the cities”. Although, the expansion of the 'environmental state' sometimes met stagnation (e.g. the set back of Environmental Protection Bureaus (EPBs) in many counties from second-tier to third-tier organs in 1993/1994), over a period of 20 years the growth in quantity and quality of the officials is impressive (especially when compared with the shrinking of other state bureaucracies). Besides SEPA, the State Development Planning Commission (SDPC) and the State Economic and Trade Commission (SETC) are crucial national state agencies in environmental protection, especially since the recent governmental reorganization in 1998.

Arguably, these administrative initiatives show initial results in environmental improvements, although the widespread information distortion, the discontinuities in environmental statistics and the absence of longitudinal environmental data in China should made us cautious in drawing any final conclusions.<sup>4</sup> Total suspended particulates and sulfur dioxide concentrations show absolute decline in most major Chinese cities between the late 1980s and the late 1990s (Lo and Xing, 1999; Rock, 2002), which is of course remarkable given the high economic growth figures during that decade. By the end of 2000 CFC production decreased 33% compared to mid 1990s levels, due to the close down of 30 companies (SEPA, 2001). It is reported (but also contested) that emissions of carbon dioxide have fallen between 1996 and 2000, under an ongoing economic growth (Slower and Fridley, 2001; Chandler et al., 2002).<sup>5</sup> Most other environmental indicators show a delinking between environmental impacts and economic growth (e.g. water pollution in terms of biological oxygen demand; World Bank 1997). More indirect indicators that suggest similar relative improvements are the growth of China's environmental industry (increasing from 0.22 per cent of GDP in 1989 via 0.87 per cent of GDP in 2000, to 1.1 per cent in 2002), the

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<sup>3</sup> In 2000 there were over 80,000 environmental staff at the county level (in more than 7,000 institutions), 35,000 staff at the city level (in 1700 institutions) , almost 11,000 staff at the provincial level and some 3,000 staff at the national level (together in some 300 institutions) (SEPA, 2001).

<sup>4</sup> The annual “Report on the State of the Environment in China” by SEPA usually contain data on emissions and environmental quality, but there is a major lack in consistency in data presentations between 1997 and 2001 (see: [www.zhb.gov.cn/english/SOE](http://www.zhb.gov.cn/english/SOE) for de various annual national environmental reports and the related statistics).

<sup>5</sup> Slower and Fridley (2001) and Chandler (2002) report a decrease of 17% in greenhouse gas emissions (based on official Chinese energy statistics), the International Energy Agency estimates energy reduction to be 5-8% in that period, while the American Embassy in China claims a zero growths of energy use in China ([www.usembassy-china.org.cn/sandt/energy\\_stats\\_web.htm](http://www.usembassy-china.org.cn/sandt/energy_stats_web.htm)). All sources agree on the causes of delinking energy use/greenhouse gas emissions with economic growth: increased energy efficiency, economic reforms, and fuel switch from coal to natural gas.

increase of firms certified with ISO14000 standards during the turn of the millennium (Mol 2001), and the closing of heavily polluting factories following especially environmental campaigns during the second half of the 1990s (cf. Nygard and Xiaomin, 2001). Needless to say that these positive signs should not distract us from the fact that China is heavily polluted, that emissions and environmental quality levels are often far above international standards, that only 25% of the municipal wastewater is treated before discharge (although 85% of industrial wastewater according to SEPA data; SEPA 2001), and that environmental and resource efficiencies of production and consumption processes are overall rather low.

#### **4. Ecologizing China's modernization project**

In the birth period of environmental protection China's environmental protection system showed characteristics similar to that of other centrally planned economies: limited citizen involvement; little response to international agreements, organizations and institutions; a strong focus on central state authority and especially the Communist Party of China (CPC) with restricted freedom of maneuver for both decentralized state organizations, para-statal and private organizations; an obsession with large scale technological developments (in terms of hard technology); problems with coordination between state authorities and departments, together with a limited empowerment of the environmental authorities (Cf. Ziegler, 1983; DeBardeleben, 1985; Lothspeich and Chen, 1997). The further construction, development and maturation of China's environmental reform strategy was not a linear process along this line, not a simple unfolding of the initial model of environmental governance invented twenty years ago under a command economy. Two main reasons are behind a certain degree of discontinuity in Chinese environmental reform. First, the economic, political and social changes that China witnessed and experienced during the last two decades also affected the original 'model' of environmental governance. Economic transformations towards a market oriented growth model, decentralization dynamics, growing openness to and integration in the outside world, and bureaucratic reorganization processes have shifted China's environmental governance model away from those common to centrally planned economies. Second, China also witnessed the inefficiencies and ineffectiveness of its initial environmental governance approach, not unlike the 'state failures' (Jänicke, 1986) that European countries witnessed in the 1980s before they transformed their environmental protection approach along lines of ecological modernization. Building on all kinds of innovative experiments and developments resulting from such dynamics, environmental governance and the institutionalization of environmental ideas and interests in China have developed in unique ways during the last decade.

In analyzing the process of environmental institutionalization in China's modernization path we have to bear in mind that we are trying to understand a moving target, quite unlike the more stable contemporary (environmental) institutions of European and other OECD countries. Consequently, any analysis will have to focus more on trends and significant developments than on the state-of-art. These trends and significant developments may be grouped in four major categories: political modernization, economic actors and market dynamics, institutions beyond state and market, and international integration.

### *Political modernization*

The state apparatus in China is of significant and even dominating importance in environmental protection and reform. Both the nature of the contemporary Chinese social order and the characteristic of the environment as a public good will safeguard the crucial position of the state in environmental protection and reform for some time. Environmental interests are particularly articulated by the impressive rise of environmental protection bureaus at various governmental levels. Still, the most common complaints from Chinese and foreign environmental analysts focuses exactly on this system of (local) EPBs: on their poor environmental capacity (in qualitative and quantitative terms); on the dependency of the local EPBs on both the higher level EPBs and the local governments (that often have no interest in stringent environmental reform, but play a key role in financing the local EPBs); on the lack and distortion of (environmental) information; on the still low priority given to environmental criteria in assessing local governments; and on the poor (financial) incentives for both governments and private actors to live up to environmental laws, standards and policies.

But clearly the environmental state in China is undergoing a process of political modernization, where traditional hierarchical lines and conventional divisions of power are transformed. Although processes of political modernization in China's environmental policy have different characteristics from what can be witnessed in European countries, the direction of those reforms is nevertheless similar: greater decentralization and flexibility and moving away from a rigid, hierarchical, command-and-control system of environmental governance. Increasingly local EPBs and local governments are given - and taking - larger degrees of freedom in developing environmental priorities, strategies, financial models and institutional arrangements. This parallels on the one side broader tendencies of decentralization in Chinese society, and is on the other side also environmentally motivated by state failure in environmental policy.<sup>6</sup> The tendency is definitely one towards larger influence and decision-making power by the local authorities and diminishing control by Beijing, both by the central state structures and by the CPC (see for instance on decentralization in energy policy Andrews-Speed et al., 1999).<sup>7</sup> Decentralization and more flexibility contribute to environmental policies that are better adopted to the local physical and socio-economic situations. But also in China decentralization does not automatically result in a better protection of the environment (cf. Beach, 2001), as more than incidentally local

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<sup>6</sup> In developing their local policies and programs provincial or municipal governments need to be consistent with the national regulations. The tendency is that increasingly regulations and measures of sub-national governments develop their own dynamics, speed and partly contents, thus deviating at least temporarily from national regulations, but sometimes even substantially.

<sup>7</sup> As Ma and Ortolano (2000; 14) put it: "The Party has deeply penetrated the apparatuses of the state, and thus there is no advantage in distinguishing the Party from the state in our analysis of environmental policy". This is too a major extent also valid for our analysis here.

authorities give preference to economic growth and investments above progressive development of environmental policies and stringent enforcement of environmental regulation and standards.<sup>8</sup> Especially when an active civil society and accountability mechanisms are poorly developed, decentralization has little to offer to the environment. But a larger degree of freedom for local authorities does results, for better or for worse, in a growing diversity among the Chinese provinces and towns in how local and regional environmental challenges are being dealt with. It also leads to a diversification of successes and failures among towns. These successes and failures are not only divided along lines of economic prosperity, where the richer eastern provinces and towns are systematically more concerned with and investing in environmental reform. Also within the eastern part of China differences in environmental prioritization can be found, as was shown by a detailed case study on environmental reforms in 5 towns in Anhui and Jiangsu provinces (Zhang, 2002).

As in other countries, decentralization tendencies in China call for counter tendencies. Environmental protection projects, for instance, are increasingly financed centrally. The central state has also responded to this growing relative autonomy of local authorities by refining their system of evaluating towns and town governments. Mike Rock (2002b) provides a detailed analysis on how local governments are increasingly assessed with respect to their environmental performance by using the Urban Environmental Quality Examination System. The ranking on this system of environmental indicators does not only enable SEPA to compare municipalities. The indicator system also enables governments to design environmental responsibility contracts with local leaders on improvements in individual indicators, and link these to assessments, financial incentives and promotion, providing an incentive for town and village leaders to take environmental protection more seriously. This of course trickles down to the officials of, for instance, economic and planning departments of villages. It is a system of making local environmental governance accountable to the higher levels, in a situation where decentralized, civil society based, systems of accountability are underdeveloped. Via such mechanisms environmental rationalities are brought into the political system, where local leaders are no longer only judged according to political and economic criteria, but also according to environmental results.

Another political modernization tendency is the separation between state owned enterprises (SOE) and the line ministries and local governments (in case of TVEs) that were originally responsible for them.<sup>9</sup> There is a slow but steady process of transferring decision-making on production units from the political and party influence to the economic domains, where logics of markets and profits are dominant.<sup>10</sup> Although especially at the local level governments are not

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<sup>8</sup> Chen and Porter (2000: 59) conclude the same for decentralization in energy conservation policies: “It is clear that the ongoing process of change in organizational structures and lines of responsibility has given rise to much confusion in recent years, and if anything has undermined rather than improved the prospects for a coordinated and enforceable policy for energy conservation in industry”

<sup>9</sup> From research on steel enterprises Fisher-Vanden (2003) reports that within Chinese state-owned enterprises decentralization in firm management improves the incorporation of new and more energy and environmental efficient technology.

<sup>10</sup> By the end of the 1990s many state owned enterprises have full decision power on production, sales, purchasing and investments. But in most cases relations between these enterprises and state authorities are still intricate and local agencies still succeed in extracting funds from profitable enterprises for public works or other purposes, in subsidizing inefficient enterprises and in influencing decisions at enterprises. This is also valid in the case of TVIEs, as Zhang (2002) has shown for counties in Anhui and Jiangsu provinces.

always eager to give up direct relations with successful enterprises because of the financial resources linked to that, the tendency of growing autonomy of enterprises from political agents is unmistakable. This process of differentiation opens, among others, opportunities for more stringent environmental control and enforcement as the 'protection' of these SOE by line ministries and bureaus at all government levels is less direct. It also sets preferential conditions for a stronger rule of - environmental - law (see below). But it does not solve one of the key problems of environmental governance: the low priority given to environmental state organizations vis-à-vis their economic and other counterparts. The progress in the strengthening and empowering of China's environmental state is ambivalent, as is common elsewhere around the world. While, - as illustrated above - the central environmental authority in Beijing has strengthened its position vis-à-vis other ministries and agencies, this is not always the case at the local level where more than incidentally the EPBs are part of - and thus subsumed to - an economic state organization (see Zhang, 2002 and Vermeer, 1998, for examples).<sup>11</sup> And also at the central level interdepartmental struggles do not always result in favorable environmental positions and often continue a fragmented environmental authority (Lo and Xing, 1999: 165; Jahiel, 1998). For instance, the State Economic and Trade Commission SETC is the primary responsible party for the new 2002 Cleaner Production Promotion Law, and not SEPA. The former is also responsible for energy conservation policy (Chen and Porter, 2000). And the Ministry of Science and Technology won the battle over the coordination of China's Agenda 21 program from SEPA, despite heavy influence and lobbying from UNDP (Buen, 2000).<sup>12</sup>

Finally, the emergence of the rule of law and can be identified as a modernization in environmental politics, closely tied to the emergence of a market economy. The system of environmental laws established from the 1980s onwards has led to the setting of improved standards for environmental quality and emission discharges and the establishment of a legal framework for various implementation programs.<sup>13</sup> But usually the environmental programs themselves, the administrative decisions related to the implementation of standards and the bargaining between administrations and polluters on targets have been more influential for environmental reform than the laws and regulations *per se*. Being in conflict with the law is usually still less problematic than being in conflict with administrations and programs, and most of the massive clean-up programs were not so much derived from environmental laws (although they were not in conflict with them), but rather based on administrative decisions at the top.<sup>14</sup> The

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<sup>11</sup> In the past EPBs relied sometimes heavily on the environmental protection divisions of industrial bureaus or ministries, as these had usually good access to and knowledge of the polluters, especially in the situation when state and markets agents were hardly separated. More recently, the involvement of the industrial bureaus (or general companies as they are sometimes renamed) in environmental protection has been diminished. While on the longer term this is considered to be a favorable development, in specific cases and on the short term this has caused EPBs with serious problems due to lacking environmental and technological capacity.

<sup>12</sup> The SETC replaces the industrial line ministries and is indeed much more powerful than the SEPA (which is also suggested by being named Commission). SETC has several environmental tasks and organizations independent from SEPA, such as monitoring stations.

<sup>13</sup> The major eight national environmental programs are: environmental impact assessment; three synchronizations; pollution discharge fee system; pollution control with deadlines; discharge permit system; assessment of urban environmental quality; centralized control of pollution and environmental responsibility system. The first three date from the late 1970s, the last three were implemented later to manage problems the first three could not handle (see for further details Ma and Ortolano, 2000: 20ff)

<sup>14</sup> Most sinologists that aim to understand state environmental protection system pay indeed only marginal attention to environmental laws and the enforcements of environmental laws, and rather concentrate on

same is true for enforcement of national environmental laws at the local level. The rather vague laws are interpreted in very different ways by EPBs, often under strong administrative influence of the local mayor's office (cf. Ma and Ortolano, 2000: 63). Courts have been marginally involved in enforcement and EPBs use courts only as a last resort to enforce environmental laws that polluters refuse to adhere to (Jahiel, 1998: 764). More recently there are signs that the rule of law is taken more seriously in the field of environment, paralleled by, among others, stronger (financial) punishments and legal procedures started by for instance environmental NGOs such as the Center for Legal Assistance to Pollution Victims (CLAPV) in Beijing.<sup>15</sup> One of the potential threats to the environment is of course the institutional void that can emerge when the administrative system loses its power on environmental protection, while the rule of law has hardly been institutionalized in the field of environment.

### *Economic actors and market dynamics*

Traditionally, centrally planned economies did a poor job in setting the right price signals for a sustainable use of natural resources and a minimization of environmental pollution, notwithstanding the theoretical advantages and the early ideas of some progressive economists and other environmental scholars in these command economies (cf. DeBardeleben, 1985; Mol and Opschoor, 1990). With a cautious turn to a market oriented growth model since 1978 one would expect to find some first economic and market dynamics pushing for environmental reform. In contemporary China, as well, environmental interests are being slowly institutionalized in the economic domain of prices, markets, and competition.

First, subsidies on natural resource prices are increasingly abandoned and prices for natural resources tend to move to cost prices, sometimes pressed through foreign loans.<sup>16</sup> This is up till now of course a relative improvement, as the cost prices hardly ever include costs for repair of damage and environmental externalities (and we know from the major flooding due to forest cuts that these externalities can be quite dramatic, also in monetary terms).<sup>17</sup>

Secondly, clear attempts are made to increase environmental fees and tax reductions<sup>18</sup>, so that they do influence (economic) decision-making of polluters. Especially the discharge fees, introduced already in the 1980s, have become more and more common practice, also because these are an important source of income for local EPBs and a significant trigger for implementation of environmental measures.<sup>19</sup> Fees are often only paid for discharging above the

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administrative measures and campaigns (cf. Vermeer, 1998; Jahiel, 1998)

<sup>15</sup> Interview with the director of CLAPV, Wang Canfa, 2001. See also Ho (2001: 908) and Otsuka (2002).

<sup>16</sup> An example is the early 1990s World Bank loan to replace the thousands of small coal burning boilers in Beijing for more energy efficient and less polluting heating systems. The World Bank's condition was that the Beijing heating Power Corporation became an independent business body operating under market conditions and that subsidies were removed from energy prices. This has indeed been done (Gan, 2000).

<sup>17</sup> In 1996 it costs 0.843 yuan to supply a ton of water, while the average price of water in Hebei province was 0.6-0.9 yuan/ton, 0.637 yuan in Beijing and only 0.013 yuan in Hetao region (Lo and Xing, 1999: 159).

<sup>18</sup> Tax reductions are sometimes offered if environmental goals are reached, such as in the case of energy saving in steel plants and other heavy energy consuming industries (cf. Chen and Porter, 2000).

<sup>19</sup> The fee program started in 1979 in some locations but gained more widespread use after 1982 and especially after the legal strengthening in 1989 in the final version of the Environmental Protection Law. The majority of the fees are collected for water and air emissions (see SEPA, 2001). Only part of the fee can be used by the local EPBs to finance their staff, equipment and programs. The other part goes back into environmental funds that are used to subsidize environmental measures of industries. While hundreds of thousand of firms have paid a fee, especially the small and rural industries have managed to escape

standard. Notwithstanding the rhetoric of ‘pollution prevention pays’ and ‘cleaner production’ that have entered modern china since the 1990s fees<sup>20</sup> are still so low and monitoring is so weak that enterprises risk to either pay the fee or neglect payment, rather than installing environmental protection equipment or changing production processes, (cf. Taylor and Qingshu, 2000 for the city of Wuhan). The introduction of higher fees is by no means a smooth process. Already in 1992 NEPA proposed an increase of 0.20 yuan per kg of discharged sulfur dioxide following coal burning (an increase of less than 1%), to cover at least part of the environmental costs of desulfurization.<sup>21</sup> Implementation was postponed first to 1996 and then only introduced as a pilot program, which was - in an extended version - still the situation in 2000.

Third, market demand starts to take environmental and health dimensions of products and production processes into account, especially in international markets that have increased so dramatically in the trail of China's accession to the WTO. Already in 1990 the import of Chinese refrigerators to the EU was restricted due to the use of CFC as a cooling agent (Vermeer, 1998), but that was still an exception. Today, these kinds of international (especially European, North American, and Japanese) market trends towards greener products and production processes are felt in many more product categories, pushing for instance to higher levels of ISO certification, and growing interest for cleaner production, eco-labeling systems and industrial ecology initiatives (cf. Shi, 2003; Shi et al., 2003). Like most developing economies, the Chinese domestic market still poorly articulates environmental interests, and green or healthy labeling is underdeveloped.

Although, economic reforms have resulted in a decreasing role of the central state in economic decision-making and a growing autonomy of economic and market actors (with a few exceptions described above), this has not yet resulted in more non-state actors that articulate environmental interests.<sup>22</sup> Insurance companies, banks, public utility companies, business associations, general corporations and others do not yet play any significant role in environmental reforms. The main reason of course is that these economic actors do not yet feel any direct or indirect pressure or market opportunity for institutionalizing environmental interests in their arrangements and daily routines. The three major exceptions to this are: large Chinese firms that operate on an international market, the environmental industry and R&D institutions.

- The larger Chinese and joint venture firms that operate for and in a global market articulate stringent environmental standards and practices, but also try to pass these new standards and practices onto their customers and state organizations, pushing the domestic level playing field towards international levels. The Chinese petrochemical company Petrochina, for instance, is investing in several countries nowadays and has joint venture operations in China

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payment due to lack of enforcement. Wang and Wheeler (1999) found that the levies are higher in heavily polluted and economically developed areas and that they do influence air and water emission reductions within companies.

<sup>20</sup> Ma and Ortolano (2000: 21) refer to four penalty charges (the so called *four small pieces*) that have to be paid above the discharge fee.

<sup>21</sup> “Notification on Implementation of Pilot program of levy on Industrial Sulfur Dioxide Pollution by Coal Burning”. State Council Letter (1996#24) agreed on the pilot implementation via SEPA’s “Report on Pilot Program of Sulfur Dioxide Discharge Fee”.

<sup>22</sup> Although finance bureaus and local banks sometimes still play a role in administrating environmental funds that are filled with the pollution discharge fees and decide on loans or grants to polluters, these economic agents do not really play a role in articulating themselves environmental interests in their economic activities. Local banks are not really eager to lend additional money to polluters for environmental investments, according to a World Bank study (Spofford et al. 1996, as quoted in Ma and

with several western oil multinationals. It strongly feels the need to acquire international recognized environmental management knowledge, standards and emission levels, allowing it to compete on a global market. In acquiring these practices, it also brings home to the Chinese state these standards with a call for upward harmonization among all players in the Chinese petrochemical sector.<sup>23</sup>

- The expanding environmental industry (see above) becomes an actor that presses for the greening of production and consumption processes, as it has a clear interest in growing environmental regulation and reform (cf. Sun, 2001).<sup>24</sup> Also foreign environment industries and consultancies increasingly enter the Chinese market, partly financed by ODA projects.
- Research and development institutions, from the ones related to universities to those related to the line ministries and bureaus, are increasingly focusing their attention to environmental externalities, and articulate environmental interest among decision-making institutions both within the economic and the political domain. In universities a growing number of environmental departments, centers and curricula have been established in the 1990s.

#### *Beyond state and market: civil society*

Similar to European countries, environmental reforms in China have not been limited to institutional changes of state and market. In European countries the environmental movement, environmental periodicals and the foundation of a more and more universal system of environmental norms and values are both medium and outcome of processes of ecological modernization in what has become known as civil society. In China the incorporation of environmental interest in institutions and arrangements beyond state and market has followed a completely different trajectory.

China has a very recent history of environmental NGOs and other social organizations that articulate environmental interests and ideas of civil society and press them among the political and economic decision-makers (cf. Qing and Vermeer, 1999; Ho, 2001; the contribution of Martens to this special issue). Environmental NGOs are limited in number, they are often not adversarial or confrontational but rather expert or awareness-raising organizations, such as Global Village. The 'political room' for a western-style environmental movement seems still limited, as also international NGOs have witnessed. International NGOs such as Greenpeace and WWF have invested major efforts in further stimulating the environmental movement in China, with ambiguous successes. While in some of the Central and East European centrally planned economies environmental NGOs played a role in articulating environmental and other protests against the ruling social order, in China environmental NGOs have been marginal up till now in pushing for the ecological modernization of the Chinese economy. For civil society's contribution to environmental reform three other arrangements are important: the rise of environmentally-oriented government-organized NGOs (GONGOs); increasing local activism and complaints; and the importance of unwritten social norms, rules and codes of conduct.

Government-Organized NGOs, such as the Beijing Environmental Protection Organization

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Ortolano, 2000).

<sup>23</sup> Interview Petrochina, environmental monitoring office, December 2001.

<sup>24</sup> In analyzing the growing role of Government Organized Non-Governmental Organizations in environmental reforms Wu (2002) mentions two major and influential environmental industry associations: the China Environment Protection Industry Association and the China Renewable Energy Industry Association.

and China Environment Fund, are playing an increasingly important role in environmental governance in China today. They have more freedom of registration and maneuver due to their close links with state agencies. Via closed networks with policy-makers and their expert knowledge these GONGOs articulate environmental interests and bring them into state and market institutions. In doing so GONGOs play a role in bridging the gap between NGOs and civil society on the one hand and the state on the other, thus “becoming an important, non-state arena for China’s environmental politics” (Wu, 2002: 48).<sup>25</sup> Now that these GONGOs are gaining organizational, financial and political independency and autonomy from the state, they are evaluated more positively by Western scholars. Although they remain embedded in a dominating state structure, the state is relaxing its control and allowing them relative autonomy in developing activities and raising funds.

Together with economic liberalization, decentralization of decision-making and experiments with local democratization one can witness a growing pressure of - often unorganized - citizens on local (environmental) authorities to reduce environmental pollution. Dasgupta and Wheeler (1996) estimated that local and provincial authorities respond to over 130,000 complaints annually in the period 1991-1993. In most of the cities and towns systems of complaints and hotlines have been installed, be it with different levels of use and effect. In Wuhan (a city of almost 7 million) the local EPB received 680 complaints in 1994, resulting in 658 visits (Taylor and Qingshu, 2000), in 1998 Wujin EPB (1.2 million, Jiangsu province) responded to 479 complaints, while a deadly polluted small town as Digang (50,000 inhabitants, Anhui province) reported that they received not one complaint in 1998 (data by Zhang, 2002).<sup>26</sup> In China, these systems of complaints and the growing attention the (state-owned and controlled) media pays to environmental pollution and environmental mismanagement are more important than NGOs in articulating civil society's environmental interests towards economic and political decision-makers. One should be aware that these dynamics drive on the growing commitment of the CPC and the central government to combat pollution, and more than incidentally the central government has strongly encouraged the media and individuals to speak up on environmental misuse. In that sense, the dominant environmental discourse and the advocacy coalitions supporting that discourse have changed dramatically during the last 15 years. But still, this system of complaints is a poor form of ‘participation’ of civil society in environmental issues. It focuses only on (sensible) monitoring after pollution has happened, in a time where the ‘expropriation of the senses’ needs a preventive and precautionary approach. More systematic involvement of citizens and civil society in the stage of project development with full access to information is missing.

Thirdly, in Chinese society informal social norms, rules and unwritten codes of conduct play an important role in structuring human action. These rules are strongly anchored in Chinese civil society, rather than in the formal institutions of state and market and may play an important role in environmental reform. Ma and Ortolano (2000: 77ff) mention three major non-formal rules:

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<sup>25</sup> Wu (2002) gives a detailed analysis of the emergence of a diversity of GONGOs (among which foundations, education centers, research institutions, and industry associations) within the national and provincial administrative bodies, and the role they are able to play due to their less restrictive institutional structure, their expertise and personal connections. Wu also shows the clear reasons for the Chinese government to allow or create GONGOs, among which attracting foreign assistance and funding.

<sup>26</sup> Dasgupta and Wheeler (1997) show that the average number of environmental complaints of major cities and provinces in one year range from 55.0 per 100,000 inhabitants in Shanghai to 1.7 per 100,000 inhabitants for Gansu. In most provinces EPBs responded to over 80% of these (telephone, letter and face-to-face) complaints.

respect for authority and status even if it conflicts with the formal institutions; the social connections or *guanxi* that play a major role in organizing social life in China; and the moral authority and social capital that is included in the concept of (losing, maintaining or gaining) 'face'. With the growing importance attached to environmental protection, these and other 'informal' rules and institutions are put to work for environmental goals and rationalities. *Guanxi* and 'face' play a role in environmental protection, where informal networks of social relations are formed around environmental programs and dispute resolutions, and social capital is built via environmental awards, prizes, and media coverage. While some of these institutions are not unknown in Europe (be it often differently organized), they have a much larger influence in China and are consequently more important in environmental reforms. If we are to understand ecological modernization dynamics in China we have to understand how and to what extent these informal institutions, networks, and connections articulate environmental rationalities via for instance the inclusion of environmental norms in social capital and moral authority and the increase of the status of environmental authorities. These dynamics are of course not working in the same way and equally strong in every corner of China.

One of the shortcomings that prevents a larger role for civil society - and other institutions beyond state and market - in environmental reform is its limited environmental information due to:

- scarce environmental monitoring (most environmental monitoring needs to be funded by the local governments, who have limited budgets) and distortion in information processing;
- secrecy of environmental data for large segments of society;
- absence of a right-to-know code, legislation or practice;
- limited publication and availability of non-secret data (due to poor reporting, limited internet use and access).

Often only general and aggregate data are available only for political decision-makers and scientists, while specific local data are lacking or kept secret for those directly involved in environmental pollution. Consequently, local EPBs rely strongly on complaints as monitoring data, and priorities for control and enforcement are more than incidentally set accordingly.

In their analysis of accountability of Chinese environmental authorities Wu and Robbins (2000a+b) show that also with a lacking active civil society and a shortage of reliable and transparent data China's environmental governance faces accountability questions. State agencies at other levels and other sectors, the media, scientists and international monitoring by MEA (Multilateral Environmental Agreement) organizations and donors do regularly hold environmental authorities accountable.

### *International integration*

In assessing the role of external international forces on China's turn to environmental protection Rock (2002a: 82) is straightforward: "...there is no evidence of Chinese pollution management policies being affected by either international economic or political pressure. Instead, the Chinese government's pollution management programs have largely been influenced by internal developments, particularly the partial liberalization of its economy that started in 1979 and the decentralization of decision-making that accompanied it". Compared to the sometimes significant influence of foreign pressure and assistance on national environmental policy in other Asian countries, China has indeed been reluctant to accept assistance under stringent environmental conditions. The Three Gorges Dam is a clear example in this, where China ignored both foreign

pressure against the dam and threats of withholding international loans for this project. And also in international negotiations on MEAs, Chinese authorities are often hesitant to support stringent environmental policies that could rebound on domestic efforts (cf. Johnston, 1998; McElroy, 1998; Chen and Porter, 2000).

On less controversial issues foreign assistance programs have had a clear contribution to and influence on China's environmental policies and programs, however. Between 1991 and 1995 US\$ 1.2 billion foreign capital was invested in environmental protection in China (Vermeer, 1998: 953). More recently, China has become an object of considerable international attention as well as environmental funding, via several MEAs and multilateral institutions such as the World Bank, GEF, ADB (cf. Huq et al., 1999) and UNEP. By the end of the 1990s the World Bank and the Asian Development Bank together provided US\$ 800 million on environmental loans in China annually. Asuka-Zhang (1999) illustrates the significance of bilateral environmental official development assistance (ODA) and environmental technology transfer to China, taking Japan as an example. It is estimated that around 15% of China's total environment-related spending originates from bi- and multilateral lending and aid (Tremayne and De Waal, 1998). For instance, foreign projects have had a significant influence on the development and introduction of cleaner production, resulting finally in the 2002 Cleaner Production Promotion Law (Shi, 2003a). In drafting environmental laws nowadays participation of foreign lawyers, scientists, and other experts is standard practice. The phase-out of CFC use following the Montreal protocol has been another example. Directly after the Montreal protocol negotiations (1987) China increased its CFC production (by some 100% between 1986 and 1994; Held et al., 1999: 397), becoming the world leader in CFC production and consumption in 1996. It stabilized its production in the mid 1990s onward and moved to a decline in consumption (from the mid 1990s onward) and production (in 2000), in response to international aid and potential trade bans by triad countries.<sup>27</sup>

The recent growing openness to and integration in the global economy and polity will only increase international influence on China's domestic environmental reform.<sup>28</sup> For instance, its membership of WTO will enhance the importance of the ISO standards in international but increasingly also domestic business interactions. And it will make China more vulnerable to international criticism on its domestic environmental performance. But international integration will also parallel China's growing role in setting the agenda and influencing the outcomes of international negotiations and agreements, among which those relevant for the environment.

## **5. Conclusion: a Chinese path of ecological modernization in-the-making?**

Especially since the early 1990s we can witness developments in China in restructuring processes and practices of production by giving environmental interests and conditions a higher priority. The first activities of the Chinese state to widen the original project of simple, technological modernization by giving environmental externalities more considerations date from the late 1970s and parallel the start of economic reform. Since then, state-driven environmental laws and programs have made a more serious impact, especially during the 1990s. China's strategy and

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<sup>27</sup> Data by the Ozone secretariat of UNEP: [www.unep.org/ozone](http://www.unep.org/ozone)

<sup>28</sup> There is still considerable debate, also within China, whether the accession to the WTO will force a further separation between politics and economics, with (beneficial) consequences such as an increase in transparency in policy-making, a growing pressure to implement the rule of law and a further undermining of the structural basis of corruption (cf. Fewsmith, 2001).

approach to tackle the growing environmental side-effects of modernization is far from stable and still developing and transforming, together with the general transition of China's economy and state. But most environmental reform initiatives are firmly based on, make use of and take place within the boundaries of China's modernization process. In that sense, using the denominator ecological modernization for China's attempts to restructure its economy along ecological lines seems justified.

But here the story doesn't end, as can be concluded from the analysis above. The claim of a western version of ecological modernization theory seamlessly fitting current advancements in greening China's economy and society needs to be further weighed and qualified along three major and interdependent lines:

- the degree of institutionalization of environmental interests;
- the respective roles of state, market and civil society in China's 'ecological modernization';
- the Chinese characteristics of environmental reform dynamics

First, in its relatively short history most contributions to ecological modernization theory claim processes of institutionalizing environmental interests in social practices and institutional developments, reflexively reorienting the institutions of simple modernity along ecological criteria. While the analysis in this article gives sufficient evidence of a growing importance of environmental interest in the modernization processes, it also made clear that up till now environmental interests have been institutionalized partially, at best. There is no routine-like, automatic and full inclusion of environmental considerations in the institutions that govern production and consumption practices in contemporary China.

Second, and partly linked to the former point, the institutions that take up environmental interests and ecologically restructure the Chinese economy deviate strongly from what scholars have identified in European societies. Only with respect to several political and state institutions environmental considerations and interest seem increasingly incorporated in the standard operating procedures and social practices, not too much unlike what ecological modernization scholars have identified in Europe. A large environmental state; a system of environmental laws, regulations and standards; the emergence of the rule of law; assessment systems of environmental performance; flexibilization and decentralization in environmental policy give evidence of that. But with respect to both economic and market institutions, and civil society the Chinese situation differs dramatically from Europe.

Where the introduction of the market economy liberalizes prices, increases efficiencies, takes away subsidies and strengthens international economic relations, economic institutions can advance ecological reforms. The abandoning of subsidies on natural resources such as energy and the international market demand for environmental conditions on Chinese products and processes are clear examples. But more often environmental reforms do not automatically coincide with economic (efficiency interests and then economic and market institutions play hardly any role in advancing environmental interests. There are several reasons for the poor articulation of environmental interests in, for instance, price settings, consumer and customer demand, insurance arrangements, credit facilities, public utility performance, economic competition, enterprise R&D programs and niche market developments in China. For one, environmental interests have not been articulated very strongly throughout the nation to put the emerging economic and market actors and institutions under pressure to include environmental considerations. In addition, in large parts of China economic institutions and actors have still intricate relations with and are dependent on political ones. This makes economic actors and institutions less free to incorporate environmental (and other new non-economic) interests in their routine operations. Finally, where

economic institutions and arrangements differentiate or 'emancipate' from political control they often develop into new, virgin, and single-goal institutions that are unable and unwilling to take up such 'additional' tasks as environmental protection. Arguably, jungle capitalism in its purest form can more often be found in certain parts of transitional China than in the welfare states of capitalist Europe.

Similar conclusions can be drawn with respect to 'civil society' institutions and actors. Economic liberalization and market reform have not been paralleled yet with equal political liberalization and democratic reform. Consequently, civil society in China has been unable to play a role similar to civil society in most OECD countries: e.g. setting the environmental agenda, pressing economic and political institutions to include environmental interest, and fighting itself towards the center of political and economic decision-making. While China has developed its own institutions beyond state and market (e.g. GONGOs, cultural institutions, mass organizations), the role of these institutions in environmental reform is by no means equal to what we have witnessed in Europe.

Third and finally, if we focus more in depth and precise on the mechanisms, processes and dynamics that trigger environmental reform and push for institutionalization, there are clear similarities but also differences of what we read from the European literature on ecological modernization. GONGOs, environmental responsibility contract system, policy principles such as three simultaneous, the strong role of informal networks, rules and institutions, and the dual responsibility of local EPBs are all arrangements that play a (major) role in the greening path of the contemporary Chinese economy, but have no equivalent in most European states. On the other hand European scholars in ecological modernization are familiar with protesting local communities, the emergence of an 'environmental state', globalization dynamics that push towards a level playing field on environmental protection, economic instruments such as the discharge fee system, a growing environmental industry and a reorientation of state R&D to environment, and decentralization and flexibilization in environmental policy.

In sum, ecological modernization in-the-making in China can be said to be of a different mode than the European version that has been studied so widely. And it is also far from stabilized. Especially now that China is in transition and is opening up to the world polity and economy, the balance between commonalities and uniqueness in environmental reform may be increasingly uncertain. If the modernization path of China continues with a further 'differentiation' of economic institutions and arrangements from their political counterparts (and all signs point in that direction), it is essential that economic institutions and arrangements will increase their role in environmental reform. Ecological modernization studies have shown that - at least in Western countries - these economic institutions can play a major role in articulating, communicating, strengthening, institutionalizing and extending (in time and place) environmental reforms by means of their own (market and monetary) 'language', logic and rationality and their own 'force'. However, economic institutions can and will only play that role if they are put under pressure, by the environmental state, by international institutions and/or by civil society. The future, character and uniqueness of China's ecological modernization will especially depend on what will happen with this latter category.

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