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Transboundary water pollution management Lessons learned from river basin management in China, Europe and the Netherlands

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1. Introduction

On 22 November 2001, residents of the Chinese city of Jiaying, in Zhejiang province, made a desperate attempt to stop the pollution of their water. In the early morning, they gathered at the border with the upstream Jiangsu province and built a 'dam' to stop the water from flowing.¹ Over the years, they had continuously complained, they had petitioned the higher authorities and even protested in the government office by dumping thousands of dead fish. However, none of these protests worked and, finally, the idea of building a 'dam' came to mind. This is just one example of the incidents of transboundary water pollution that have occurred in China. Incidents like these have not only resulted in great pecuniary losses, but have also led to social conflicts between people. As demonstrated in a regulatory document from the Chinese Ministry of Environmental Protection (hereafter: MEP), transboundary water pollution not only accelerates and intensifies the country's already poor water quality, but may also block the stable development of the country.

Located in the east of Asia, China covers 9.6 million km² and has 1580 large rivers, whose basins cover more than 1000 km² each. That means that many large rivers are facing water pollution problems. According to the National Eleventh Five-year Plan for Environmental Protection (2006-2010), key river basins and regions have only been able to meet 60% of the pollution control targets offset by the Tenth Five-year Plan (2001-2005). Of all the monitored sections of surface water, 62% are barely potable and a further 26% are not fit for drinking or bathing. The combination of pollution, separate administrative regions and large rivers spanning

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1 The ten-year water pollution dispute between Zhejiang and Jiangsu, <<http://www.zjol.com.cn/gb/node2/node138665/node139992/node140672/node157067/userobject15ai1595501.html>> (last visited 11 November 2009).

several regions inevitably results in transboundary water pollution problems. In this article ‘transboundary water pollution’ means all kinds of water pollution across administrative regions at all levels, not only water pollution across states.

The Chinese Government has been aware of this issue for more than ten years. Up to the present, a basic legal system has been established to deal with the problem. Its main instruments are joint water utilization planning, total emission control, information sharing, an incident warning system, and target responsibility. However, according to the government report, water quality is still far from sound. Due to this, more efforts have recently been made by governments at all levels. The innovative instruments adopted on this occasion include contracts between governments, meetings on a regular basis and a joint monitoring system. All these efforts indicate China’s determination to combat the issue; however, their effectiveness is still difficult to predict. Since transboundary water pollution is a universal issue, the experience accumulated in international, EU and Dutch water management would be very helpful in improving China’s water management, since the EU is geographically almost the same size as China, and the Netherlands has a long history of water management.² At the same time, we believe that some instruments of typical Chinese origin may also provide new possibilities for the Western world.

In this article, we will begin with a brief introduction to transboundary water pollution management within China. Then, we will mainly discuss two aspects, Section 3 focuses on ‘competent authority’, Section 4 is on ‘instruments and dispute settlement’, and in Section 5 we provide a conclusion.

2. A brief introduction to transboundary water pollution management within China

Before introducing the relevant legal arrangements, we would like to introduce a famous case between Zhejiang province and Jiangsu province in 2001. By means of a close study of this case, the gap between practical needs and legal instruments will become clear. Now, eight years later, it would be interesting to review the current policy and to evaluate whether China has successfully filled the gap.

2.1. The Zhejiang/Jiangsu case

Zhejiang and Jiangsu are two neighbouring provinces in the east of China. Both are partly situated within the Tai Lake basin, which is the third largest freshwater lake in China. Occupying 52.6% of the basin, Jiangsu is located upstream and is the dominant party. In the 1960s, Tai Lake had a good chemical and ecological status. However, from the 1970s onwards, with the industrial development of Jiangsu, water quality began to deteriorate. In 1995 almost 80% of the water had been seriously polluted.³ The situation at the provincial border was even worse. After 1992, it no longer met the necessary condition to function as potable water (grade IV). The figure below shows the situation.⁴

2 The Netherlands has been playing a leading role in water management for a long time and, as a member of the EU, Dutch water law has to deal not only with water issues domestically, but it also has to combine it with EU regulations and this situation may provide indications for the provincial governments of China. This is the reason why the Netherlands has been chosen.

3 Liu Xiaohong, Yu Xijun, ‘Research on Standardization of Compensation for Trans-regional Water Pollution Based on Protection of Water Eco-system in River Valley – An Empirical Analysis of Tai Lake Basin’, 2007 *Ecology Environment*, no. 4, p. 18.

4 See note 3.

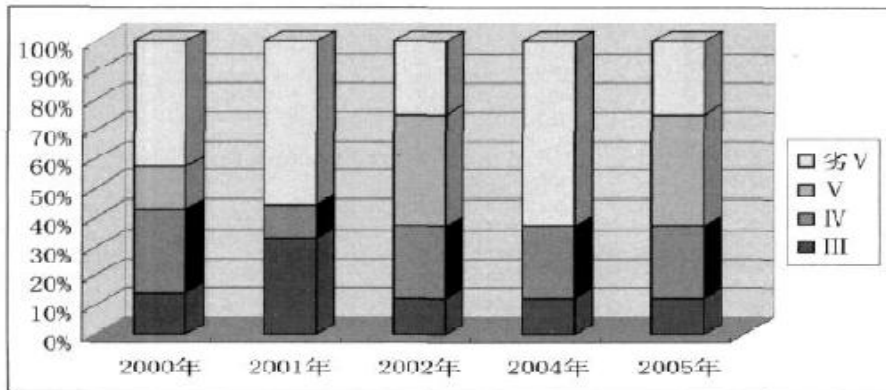


图2 苏浙省界水质变化表

Fig. 2: Change of water quality at the boundary between Jiangsu and Zhejiang

Finally, in the early morning of 22 November 2001, the tumultuous events described at the beginning of this article took place.

2.1.1. Dispute settlement

Thanks to the information disclosed by the Tai Lake Basin Bureau (hereafter, TLBB) (a river basin management authority, subordinated to the Ministry of Water Resource Management (hereafter, MWR)), we can partly deduce who was dealing with the dispute and what kinds of instruments were being applied. According to the report, at least the following public authorities were involved: the Deputy Prime Minister, MEP, MWR, TLBB, and other relevant authorities in Zhejiang and Jiangsu Provinces (including provincial governments, provincial environmental protection offices, provincial water resource management offices, city governments, water resource management offices at city level, and environmental protection offices at city level). The table below shows how the dispute was settled.

<i>When</i>	<i>What</i>
19-11-2001	The forthcoming event was reported to TLBB, an investigation team (TLBBIT) was set up
20-11-2001	TLBBIT reported to the governor of Jiangsu, and immediate negotiation between the local governments of Jiaxing and Suzhou was required
22-11-2001	The event took place. TLBB reported to MWR
22-11-2001	The Deputy Prime Minister commented on this incident
22-11-2001	TLBB established principles to resolve the dispute
22-11-2001	The MWR Working Group established seven new principles together with TLBB
23-11-2001	Key leaders of MWR, Flood Protection Office, and MEP arrived
23-11-2001	MWR, TLBB, and MEP again established four principles, and negotiated with the governors of both provinces
24-11-2001	Governors of the two provinces, MWR, MEP, provincial environmental protection offices, provincial water resource management offices signed an agreement ^A
26-11-2001	TLBB was charged with supervising the implementation of the agreement

<i>When</i>	<i>What</i>
??	Removal work carried out by people living downstream
06-12-2001	The Working Group met the vice governor of Zhejiang
08-12-2001	The vice governor went to the site, the dam was removed
30-12-2001	Water quality met grade III or IV standards, a civil lawsuit against the polluters was instigated

^A The agreement stated that Jiangsu should stop widespread polluting enterprises, and that Zhejiang should immediately remove the 'dam'. All this had to be done before 5th December, 2001.

2.1.2. *The need for better management*

Although the dispute was immediately resolved, it is obvious that better management is required concerning six aspects. Firstly, there is a lack of preventive measures. Long-lasting complaints were neglected, and little effort was made to improve water quality. Secondly, too many authorities were involved. During the procedure, one can see that different solutions were suggested by different authorities. It takes time to achieve intra-governmental consensus. Thirdly, the implementation of the agreement relies, to some degree, on political pressure from more senior leaders. Fourthly, the role that TLBB played is not a reliable one. In this case, TLBB played an important role because building a 'dam' without a lawful permit violates the Water Act (2002).⁵ Violations of this kind fall within the competence of MWR and it has partly delegated its competence to TLBB, so the involvement of TLBB is only temporary. If disputes have nothing to do with the Water Act, authorities like TLBB are excluded. Fifthly, only the polluter was sued and there was no acceptance of governmental responsibility. Finally, the voice of the public was not heard, at least in this report.

2.2. Legal arrangements

After eight years of development, China now has nine acts relating to environmental protection, over fifty regulations, over 200 administrative rules, and over 500 standards to regulate water pollution.⁶ Of course not all of them specifically address transboundary water pollution management. The most relevant legal documents are hierarchically listed in the table below.⁷

Hierarchy	Name
The Constitution	The Constitution (1982) ^A
Acts	· Environmental Protection Act of the PRC (1989) · Water Act of the PRC (200) · Act of the PRC on the Prevention and Control of Water Pollution (2008) ^B
Administrative Regulations	· Detailed Rules for the Implementation of the Act of the PRC on the Prevention and Control of Water Pollution (2000) ^C · Regulations in all provinces (not listed here)

5 The Water Law was enacted for the first time on 21 January 1988 and is to be amended again in the near future according to the Decision of the Standing Committee of the National People's Congress.

6 See <http://www.sepa.gov.cn/zxbd/rdzt/jd/mdbd/200602/t20060216_74008.htm> (last visited 12 November 2009).

7 According to the Legislation Law of the PRC, Chinese legal regulations are ranked as follows: the Constitution, Law, Administrative Regulations (Local Regulations, Autonomous Regulations and Separate Regulations are generally at the same level), Rules, and regulatory documents.

Hierarchy	Name
Rules	<ul style="list-style-type: none"> · Measures for the Archival Administration of Local Standards for Environmental Quality and Pollutant Discharges (2004) · Measures for the Administration of Environmental Surveillance (2007)
Regulatory Documents	<ul style="list-style-type: none"> · Decision of the State Council on Several Issues Concerning Environmental Protection (1996) · The decision of the State Council to implement the scientific development outlook and to enhance the protection of the environment (2005)^D · Notice of the State Council on Printing and Distributing the ‘Eleventh Five-Year Plan’ for National Environmental Protection (2007)^E · The Measures for the Disclosure of Environmental Information^F (Trial Implementation) (2008) · Notice of the General Office of the State Council on Printing and Distributing the Provisions on the Main Functions, Interior Institutions and Staffing of the Ministry of Environmental Protection (2008)^G · Notice of the General Office of the State Council on Printing and Distributing the Provisions on the Main Functions, Interior Institutions and Staffing of the Ministry of Water Resource Management (2008)^H · Directive Guidance on the Prevention and Solution of the Trans-Province Water Pollution Disputes (2008)^I

^A Adopted by the National People’s Congress on 4 December 1982, as amended on 12 April 1988, 29 March 1993, 15 March 1999, and also on 14 March 2004. The text of the Constitution is available at <http://english.gov.cn/2005-08/05/content_20813.htm>.

^B This act was first enacted on 11 May 1984 and was amended in 1996 and 2008.

^C No. 284 Order of the State Council, 2000.

^D No. 39 Document of the State Council General Office, 2005.

^E No. 37 Document of the State Council General Office, 2007.

^F No. 35 Order of the State Environmental Protection Administration, 2008.

^G No. 73 Order of the General Office of the State Council, 2008.

^H No. 75 Order of the General Office of the State Council, 2008.

^I No. 64 Document of the Ministry of Environmental Protection, 2008.

Available at <http://www.mep.gov.cn/info/bgw/bwj/200807/t20080711_125525.htm>.

As the highest ranking legislation, the Constitution lays down that the State ‘ensures the rational use of natural resources and protects rare animals and plants.’⁸ It also ‘protects and improves the living environment and the ecological environment, prevents and controls pollution and other public hazards.’⁹

In order to achieve a better understanding of the Chinese system of transboundary water pollution management, we are going to take a close look at all these legal documents in the following two sections. We will begin with the competent authority and then discuss the legal instruments and the dispute settlement mechanism. To discuss the issue comprehensively, we will, at the same time, pay attention to international, EU, and the Dutch transboundary water pollution management.

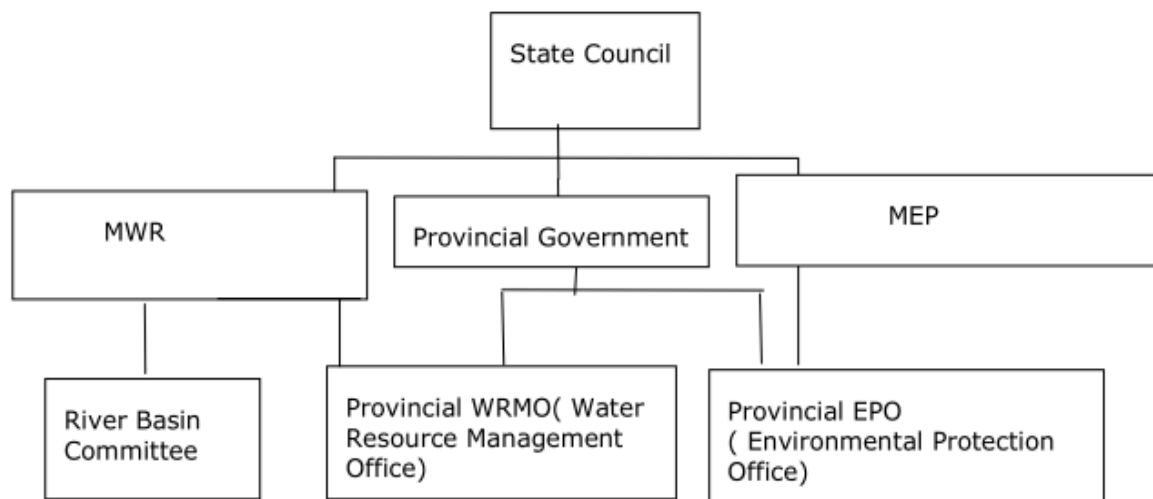
⁸ Item 2, Art. 9. However, this Article of the Constitution does not endow people with any rights, so no one can rely on it before the courts and the Government has discretion in caring for the environment.

⁹ Item 1, Art. 26.

3. Competent authorities

3.1. The Chinese way

Although more than ten public authorities were involved in the *Zhejiang/Jiangsu* case, according to the law MEP is the only competent authority concerning aspects of environmental protection. However, the existence of MWR makes things somewhat complicated. According to the Notices of the General Office (2008),¹⁰ the competences of the two Ministries can be summarized as follows. With regard to its main responsibilities, the *MEP* shall coordinate and solve transboundary environmental pollution disputes. It is also charged with environmental monitoring and the disclosure of relevant information. Its pollution prevention section controls water quality at the provincial borders. The *MWR* mainly deals with water quantity and water utilization and it also has the function of coordinating and solving transboundary disputes concerning water utilization. Furthermore, there are seven river basin management authorities subordinated to MWR. The TLBB is one of the seven. The competent authorities are structured as follows:



3.2. International arrangement

From 1992 onwards, there have been at least eight conventions which are relevant to the issue of transboundary water pollution.¹¹ The most widely known are the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (the Helsinki Convention), and the 1997 Convention on the Law of the Non-Navigational Use of International Watercourses (the UN Watercourses Convention).¹²

In contrast to the national level, at the international level multilateral and bilateral treaties have been established to lay down agreements on transboundary water management. These treaties are mostly based on the 1992 Helsinki Convention and usually establish international commissions to supervise their implementation. Within the European Union, also the coordina-

10 General Office of the State Council on Printing and Distributing the Provisions on the Main Functions, Interior Institutions and Staffing of the Ministry of Environmental Protection (2008).

11 G. Wellman, *Legal Aspects of Transboundary River Pollution in the Carpathian Basin: a case study of the Hungarian approach to protect the Tisza and the Rába rivers*, Utrecht University 2009, pp. 16-17.

12 In general, see H.K. Gilissen et al., 'International and regional transboundary cooperation in European river basin management', 2010 *ERA Forum* 11, no.1, pp. 129-157; also see H.K. Gilissen, *Internationale en regionaal grensoverschrijdende samenwerking in het waterbeheer*, 2009, Chapter 4.

tion of the implementation of the WFD regularly takes place within the framework of these treaties. For example, there are international commissions for the protection of the Elbe, the Rhine, the Meuse, and the Danube Rivers. All parties to the treaties (i.e. the EU Member States, other riparian states and sometimes the EU itself) are represented in international river commissions. These commissions, and also national authorities, are the competent authorities as far as transboundary issues are concerned.¹³

The functions of most of these commissions are threefold. Firstly, they have a coordinative and advisory function, which includes the coordination of and assistance to riparian states in their activities to implement the treaty. Secondly, they have an executive function, which includes direct activities to implement the agreement. Thirdly, they supervise the implementation of the treaty and are charged with dispute settlement, which includes the monitoring of and reporting on implementation, as well as settling differences and disputes.¹⁴

3.3. Arrangements at the EU level

At the European level, due to the implementation of the Water Framework Directive (hereafter: WFD), transboundary water pollution management is currently a hot topic. The WFD introduces a river basin management approach, which is derived from the 1992 Helsinki Treaty. The objective of the WFD is to achieve a 'good status' with regard to all of the water within the EU in 2015. Member States are responsible for implementing the WFD. In each Member State, the competent authorities are charged with correct implementation. Because of the many differences in the governmental and organizational structure in the various Member States, each state has different competent authorities. The European Commission, as a supranational authority, supervises the implementation process in the Member States and can resort to the European Court of Justice if there is a case of non-compliance. The Commission itself, however, is not a competent authority as far as the implementation of the WFD is concerned.

3.4. The Dutch experience

The Netherlands has served as a role model for water management for a long time. Influenced by EU water management, a transformation in Dutch water management policy has taken place. In December 2009, the new Dutch Water Act came into force.¹⁵ This new Water Act consolidates and replaces the eight formerly existing acts on water management, and provides for new water protection measures. The focus of the Water Act is to achieve an integrated system of water management.

The Netherlands has a unique arrangement of competent authorities compared to other parts of the world. Although the Dutch regional water boards are world-famous, the formal competent authority, in accordance with the WFD, is the Dutch Ministry of Infrastructure and the Environment. Together with other competent authorities in water management (i.e. the provinces and the municipalities), the overall picture is as shown below.¹⁶

13 H.K. Gilissen et al., 'International and regional transboundary cooperation in European river basin management, 2010 *ERA Forum Volume* 11, no. 1, pp. 129-157 and A. Keessen et al., 'Transboundary River Basin Management in Europe: Legal Instruments to Comply with European Water Management Obligations in Case of Transboundary Water Pollution and Floods', 2008 *Utrecht Law Review* 4, no. 3, pp. 35-56.

14 *River Basin Commissions and Other Institutions for Transboundary Water Cooperation: Capacity for Water Cooperation in Eastern Europe, Caucasus and Central Asia*, United Nations, New York and Geneva, 2009, p. 16.

15 Clifford Chance Global Environmental Group, 'Netherlands: New Dutch Water Legislation', 21 August 2008, <<http://www.mondaq.com/article.asp?articleid=62846>> (last visited 23 September 2009).

16 Y. Uitenboogaart et al. (eds.), *Dealing with Complexity and Policy Discretion: A Comparison of the Implementation Process of the European Water Framework Directive in Five Member States*, 2009, p. 42.

 Multilevel governance structure for water management in the Netherlands

 Governance level Authority

 National Ministry of Infrastructure and the Environment
 Regional provinces & water boards^A
 Local municipalities

^A At the regional level, the provinces are the competent authorities for strategic planning; for the operational planning and the water management of the regional water system the regional water boards are the competent authorities.

The Water Act divides surface water bodies into national and regional water bodies. The Dutch Minister of Infrastructure and the Environment is competent to manage the national water bodies. He/she should also establish a national water plan and a national water management plan, of which the former is a strategic document, and the latter is an operative document in Dutch water management. The regional water boards are competent to manage the regional water bodies. They should also establish regional water management plans, which aim at the execution of each board's water policy. The provinces mainly have a supervisory role as to the (legal) performance of the district water boards, and they should establish strategic regional water plans, which should be taken into account by the district water boards in establishing their regional water management plans. The municipalities also have certain tasks and competences within Dutch water management; these mainly involve urban water management. These clearly divided competences among the four are helpful to establish cooperation among the various authorities.

What can be recommended here is the financial system of the Dutch water boards. While both provinces and municipalities depend on subsidies from the national budget, water boards, on the other hand, are authorized to fully recover the costs of their activities through their own taxation system, which is based on a profit-payment-participation principle: those having an interest in water management may participate in decision making and have to pay for water services in proportion to their interest.¹⁷

3.5. Comments

In comparing the above four kinds of arrangements which are relevant to the competent authorities, one may conclude that the Chinese method may have an inherent danger in two respects, one is the complexity and fragmentation of the authorities, the other is the tendency to digress from a river basin management approach.

For the first aspect, although MEP is defined as the leading player in dealing with water quality, because of the existence of MWR things become complicated and fragmented. Firstly, the competences of MEP and MWR are not in harmony, as they either overlap or leave gaps between the competences. Secondly, MEP has been divided into many subdivisions, but it is not responsible for the budget of its many branches. In this respect, it is difficult for MEP to achieve effective control over its lower branches.

For the second aspect, it should be noted that there are river basin commissions in China in which government agencies are involved from different administrative levels and across political boundaries.¹⁸ However, it is too early to conclude that China has adopted an integrated

¹⁷ H.F.M.W. van Rijswijk, 'Interaction between European and Dutch Water Law', in S. Reinhard & H. Folmer (eds.), *Water Policy in the Netherlands, Integrated Management in a Densely Populated Delta, Issues in Water Resource Policy*, 2009, pp. 204-224.

¹⁸ Yong Jiang, 'China's water scarcity', 2009 *Journal of Environmental Management* 90, pp. 3185-3196.

river basin approach, as these commissions function in almost the same way as MWR. As a result, a river basin management approach does not play a big role in water quality management.

Moreover, signing agreements among neighbouring provinces is nowadays a popular instrument. But unlike the international situation or in the European Union, joint bodies aiming to supervise the implementation of the agreements are seldom established in China. As a result, it could be foreseen that the implementation of the agreements would be problematic, or at least inefficient.

When mentioning competent authority issues, experiences from Dutch water management could be helpful. Firstly, as described, there are various authorities that are competent with regard to water management, but the boundaries between them are clearly defined, and there is no serious vertical problem as is the case in China. Moreover, the financial self-dependency of the Dutch water boards, which makes them independent and neutral in policy making and implementation, is a valuable aspect. In contrast, the local governments of China have their own interests. From 1994 onwards, China has applied a new tax system, which grants local governments a percentage of the taxes collected within their area. Because of this, local governments will try their best to accelerate economic growth in the region.¹⁹ When there is a contradiction between economic development and environmental protection, the local government may not be as neutral as it should be.

4. Legal instruments

4.1. The Chinese situation

4.1.1. Quality Standards: setting and planning

Being one of the fundamental instruments, quality standards have significant importance. To meet the different needs of various types of rivers, there are three methods to set quality standards. First, as laid down in the Prevention and Control of Water Pollution Act (2008), national water quality standards shall be established by MEP.²⁰ Secondly, based on these standards, provincial governments may establish their own regional standards for the items that are not specified in the national standards. With regard to the items already specified in national standards, provinces can only establish *more stringent* regional standards. All regional standards must be reported to MEP.²¹

When setting the standards at provincial boundaries, MEP may determine, in concert with MWR and provincial governments, water quality standards for major rivers or lakes. The standards shall be approved by the State Council before implementation.²² Moreover, the recently enforced Directive Guidance on Prevention and Solution to the Trans-Province Water Pollution Disputes (2008) introduced a third means to set quality standards. It lays down that neighbouring provinces shall implement the same water quality standards in their border regions. The provinces involved shall negotiate and make a joint decision. If this fails, MEP is competent to set the standard. Consequently, the law dictates that at the provincial level, for all boundary water bodies

19 Yi Zhibin, *Study on Inter-Governmental Cooperation Governance of Trans-boundary Water Pollution in Basin*, 2009 Journal of Social Sciences, no. 3.

20 Item 1, Art. 11.

21 Item 2, Art. 11.

22 Art. 12.

other than large rivers, uniform quality standards shall be set. This makes it easier to judge the performance of different provinces.

Scientific planning is another important instrument to avoid water pollution. As stated in the Prevention and Control of Water Pollution Act (2008), water pollution prevention and treatment shall be planned on a uniform basis per river basin or region. Plans for major rivers and lakes as determined by the State shall be set by the MEP. The procedure is exactly the same as the quality standard-setting procedure for large rivers.

4.1.2. Total emission control

In the past, China only focused on the quality standards of emitted pollutants, without giving any consideration to the total emission amounts. Recently, this attitude has changed. According to the Prevention and Control of Water Pollution Act (2008), a pollutant quantity control system for the total emission of the most important water pollutants has been adopted. Supported by the waste discharge licensing and emission fee system, every administrative region has its own emission ceiling. This is not only a useful tool to control and reduce water pollution in each province, but also provides a measurement system to determine responsibility between the provinces. Based on this total emission control system, new approaches such as government responsibility could be set up.

4.1.3. Monitoring system

All over the world, monitoring systems are widely used in water management. While dealing with transboundary issues, the Chinese State designated 'water resource protection agencies' for major rivers and lake basins. These agencies are responsible for monitoring the quality conditions of major river basins within the boundaries of the provinces involved. They also report the result to MEP and MWR. If authorities for the protection of the water resources of river basins have been set up with the approval of the State Council, the findings shall be reported to these authorities, again without delay.²³ However, this provision can only be applied to large rivers; it is not applicable to all transboundary rivers.

The new monitoring trend is to set up a joint monitoring system. This means that, under the leadership of MEP, the neighbouring provinces regularly take water samples in transboundary areas jointly, and they faithfully carry out the necessary monitoring. When water pollution incidents occur, joint monitoring becomes an obligation. If there is any disagreement about the water samples, MEP makes the final decision.²⁴ Besides this joint monitoring system, alongside the total emission control policy there is an assessment of water quality at the boundaries both when this is inflowing and outflowing. If the results of this assessment turn out to be poor in a certain province, MEP will stop granting any permits to factories in that province which may possibly affect the water quality at the boundary.

However, the most important development is the 'ex post monitoring system', which has recently been adopted by the Directive Guidance on Prevention and Solution to the Trans-Province Water Pollution Disputes (2008). It provides a long-term monitoring system to ensure that after the settlement of a water pollution dispute the conclusion reached in the negotiations will be fully enforced.

23 Art. 26, Prevention and Control of Water Pollution Act (2008).

24 Directive Guidance on Prevention and Solution to the Trans-Province Water Pollution Disputes (2008).

4.1.4. Information sharing

Generally, it is the responsibility of MEP to publish water quality information. However, Article 26 of the Prevention and Control of Water Pollution Act (2008) places this obligation on the river basin commission in the river basin region. Presently, yearly and monthly reports on water quality are published by both MEP and the commissions. These reports are accessible on government websites. However, the quality of the information is not always so sound and the information is often not disclosed in good time. To increase the disclosure of intra-provincial information, several instruments are provided, such as joint meetings and a regular information exchange system. The intention of the joint meeting is to increase transparency and to urge the upstream government to fulfil its obligations. A regular information exchange system not only obliges the upstream party to inform the downstream party about the possible pollution, it also obliges the downstream party to alarm the upstream party if a severe pollution incident is likely to occur. Worth mentioning is the fact that information sharing has been regarded as one of the most basic requirements for successful management, as most innovative developments try to maximize this benefit.²⁵ In 2008, even a trial edition of the Environmental Information Disclosure Rule was implemented.²⁶

4.1.5. Incident warning system

According to the Detailed Rules for the Implementation of the Prevention and Control of Water Pollution Act (2000),²⁷ governments above the municipal level are obliged to warn all governments involved when water pollution is causing or has the possibility to cause transboundary damage. The warning report includes *inter alia* the location, time, and category of the pollution and other necessary information about the incident. Moreover, the Directive Guidance on Prevention and Solution to the Trans-Province Water Pollution Disputes (2008) states that, when a pollution incident occurs, the MEP branches at the border shall oblige the relevant local governments to execute their emergency preplans immediately. The question here is what would be the result if there has been an inappropriate warning. For instance, in November 2009 a transboundary air pollution incident occurred in Jiangsu. Due to an inappropriate warning being given by the source city, the affected city suffered extensive damage.²⁸ The situation in transboundary water pollution is almost the same.

4.1.6. Target responsibility

Setting up a 'target responsibility system' to place some burden on the administrative leaders is a traditional management tool of the Communist Party of China. Many 'performance evaluation rules' are applicable to administrative leaders, who at the same time are party members. According to Article 5 of the Prevention and Control of Water Pollution Act (2008), a target responsibility system is also applicable to water pollution management. The performance of all leaders, whether they are party members or not, is evaluated. Experiences show that target responsibility is an effective instrument in China, as most administrative leaders are rational persons and are willing to adjust their behaviour in line with the evaluation policies. Currently, there is a national

25 For example, neighbouring provincial governments are required to do so.

26 No. 35 Order of the State Environmental Protection Administration, 2008.

27 Item 4, Art. 19.

28 Jing Ju, 'Transboundary air pollution, whose fault?', *Nan Fang Weekend News*, <<http://www.infzm.com/content/37251>> (last visited 11 November 2009).

campaign for Energy Saving & Emission Reduction in China, in which target responsibility again takes a leading role.

4.1.7. Dispute settlement

The instruments mentioned above are of a preventive type. However, no matter how effective they are, the possibility of disputes remains, as does the need for a dispute settlement mechanism. Below, we separately discuss the issue from a civil and a public law perspective. The emphasis will be on governmental liability.

In civil law procedures, the plaintiffs will be the ones whose rights have been violated by the occurrence of the pollution (for instance, people whose property has been damaged by the pollution). The civil law division of the courts will decide the case. The unlawful damage will be paid by the private polluter, supported by the compulsory enforcement authority of the court. From the public law perspective, statutory requirements of different forms of legislation at the central level are very similar. For example, the Environmental Protection Act (1989) states in Article 15: 'all trans-administrative regions' environmental pollution shall be fixed by relevant local governments through negotiation or the higher government makes a decision.' The Prevention and Control of Water Pollution Act (2008) also states: 'Any cross-region disputes with respect to water pollution shall be settled by relevant local people's governments through consultations, or by the people's government to which they are subordinate through coordination.'²⁹ When disputes are related to the Water Act (2002), the obligation is even more stringent. It is stated that before dispute settlement takes place, any involved party should not change the existing situation of the water by blocking it or in other ways without the consent of the others.³⁰ According to the Water Act (2002), though, there is no governmental responsibility, but there are some negative effects for public officials who behave wrongfully during the dispute settlement procedure. The wrongful behaviour relevant to transboundary issues includes: (1) failing to obey the decision of a higher government; and (2) changing the existing water situation before disputes are settled, without the consent of the others, or without the approval of a higher government.³¹ The legal consequence of wrongful behaviour is an administrative sanction being imposed on the responsible public official. However, the government itself will not bear any responsibility.

Recently, stimulated by severe transboundary water pollution incidents, China has been imposing stricter punishment on polluters. For instance, in the *Shandong Yi Xing Company transboundary arsenic pollution* case the company manager was charged with administering poison and illegal operations. He was sentenced to 15 years imprisonment.³² Although Article 74 of the Prevention and Control of Water Pollution Act (2008) states that under some conditions the criminal law may be applied, this is not a sound legal basis for applying criminal law. With the trend of more stringent criminal law, governmental responsibility is also being discussed. However, a sound legal system has not yet been set up.

29 Art. 28.

30 See Art. 56, Water Act (2002).

31 Art. 75, Water Act (2002).

32 See *China Environmental Newspaper*, 'The person responsible for the environmental incident convicted of the crime of administering poison', 7 September 2009, <http://news.jcrb.com/jxsw/200909/t20090907_259924.html> (last visited 8 September 2009).

4.2. Instruments applied in international water law

It is difficult to mention all the instruments for dispute settlement, since different treaties may provide for different instruments. International law is quite general and is sometimes somewhat vague. Generally speaking, there are monitoring programmes, information exchange systems, and also joint environmental impact assessment systems.³³ However, most of the treaties are not legally binding; instead, they merely lay down due diligence requirements. Most of the instruments provided are quite similar to the ones adopted in China. Because of this, we will not discuss these instruments any further, but will discuss the dispute settlement procedures instead.

There are two ways to solve a dispute at the international level. The first is based on private international law, and the other stems from public international law. Since private law dispute settlement has already been discussed elsewhere,³⁴ we will focus on the latter.

Article 2.3 of the UN Charter lays down the principle that international disputes shall be settled by peaceful means including negotiation, enquiry, mediation, arbitration, judicial settlement, and resorting to regional agencies or arrangements.³⁵ There are mainly two legally binding dispute settlement mechanisms: bringing the case before the International Court of Justice (ICJ), or seeking arbitration. However, it must be emphasized that disputing states which are EU Member States do not always have a free choice in deciding whether they will resort to international courts or to European dispute settlement mechanisms, since the EC Treaty makes it mandatory for the European Court of Justice (ECJ) to have jurisdiction if the interpretation or application of Community law is at stake in the case.³⁶ Except for this, it is up to the parties to decide which method to apply if dispute settlement is not mentioned in the relevant international agreements.

4.3. EU instruments

The common instrument used in European directives to improve water quality is the setting of objectives. According to the case law of the European Court of Justice, most of these objectives are legally binding obligations of result.³⁷ Although the ECJ has not yet delivered a decisive ruling on the WFD, this is arguably also the case for the environmental objectives therein. This means that the ECJ will judge the performance of Member States based on the outcome and not on the means by which they are adopted. All that matters is whether the objectives are attained. If this is not the case, the Member State is found to be in violation of European law.

It is widely recognized that without cooperation between Member States, the objectives of the WFD can never be attained.³⁸ In this respect, Article 3(4) WFD requires that Member States shall coordinate the setting of objectives and the planning of measures for international river basin districts. This is an obligation of best efforts, meaning that Member States should do everything which is reasonably possible to achieve successful cooperation. This could for example be done by appointing an international body as the competent authority for a river basin district.³⁹ The WFD states that Member States may use 'existing structures stemming from

33 See, for example, the Helsinki Convention(1992).

34 See, for instance, J.J.H. Van Kempen, *Interstatelijke civiele sancties wegens grensoverschrijdende milieuvervuiling. Hindernissen en kansen*, Utrecht, Wetenschapswinkel Rechten 2007, which discusses using private law for dispute settlement in Europe.

35 Art. 33.

36 Case C-459/03, *Commission v. Ireland (Mox plant)*, [2006] ECR I-4635; G. Wellman, *Legal Aspects of Transboundary River Pollution in the Carpathian Basin: a case study of the Hungarian approach to protect the Tisza and the Rába rivers*, Utrecht University 2009, p. 70.

37 See, for instance, ECJ 14 November 2002, case C-316/00, *Commission v. Ireland*, [2002] ECR I-10527 and ECJ 14 July 1993, case C-56/90, *Commission v. United Kingdom*, [1993] ECR I-4109.

38 Consideration 14 of the WFD's preamble can serve as an example.

39 Art. 3(6) WFD.

international agreements'. Water authorities can cooperate in numerous ways. Besides these special arrangements, most other instruments such as exchanging information, the execution of specific measures or a joint formulation of policy resemble the situation in China.

When the coordination of plans and programmes does not function very well, Member States can ask the European Commission for help. Although the Commission has no legal means to enforce cooperation itself, it can commence an infringement procedure before the ECJ because of non-compliance with European law. This could be done either when environmental objectives have not been attained, or when Member States do not make a serious effort to cooperate. Member States themselves can also bring other Member States before the ECJ. In both cases, after a first judgement in which the ECJ establishes a violation of European law obligations by a Member State, it could impose a lump-sum or penalty payment, or both, on the transgressing Member State.⁴⁰ The threat of paying high fines or losing an advantageous position in negotiation in other policy areas of the EU could help to motivate the authorities to take the necessary measures.⁴¹ So far, however, Member States appear reluctant to resort to the Commission, even though cooperation is far from smooth. This is probably due to political reasons. Bringing a case to the Court could possibly ruin the little fragile cooperation that *does* take place.

4.4. Instruments applied in the Netherlands

Under the influence of European law, the instruments provided are characterized by the river basin approach. By dividing the country into several river basin districts and sub-basin areas, the main instruments are monitoring, alarm systems, and the exchange of information. Most of these instruments are similar to those that are used in China. The major difference is that cooperation among water boards within the country is determined by Article 3.7 of the Water Act (on the so-called '*waterakkoorden*'). By virtue of this Article, Dutch water management authorities can conclude transboundary public law agreements.⁴² Dutch water law also makes cooperation between government bodies compulsory. This cooperation applies to the state, the provinces, the district water boards and local governments, as well as between water managers and provinces that form part of the same river basin. The Dutch Water Act has a number of provisions on this subject. An agreement based on public law between the parties involved in a specific river basin district is the most appropriate instrument. The Water Act proposes that the water agreement should be the instrument for government bodies with responsibilities in the field of water management to shape their cooperation.⁴³ Furthermore, Article 3.8 of the Water Act contains an obligation for regional water boards and municipalities to adjust their tasks and competences in order to establish coherency and efficiency in (regional) water management.

40 E.g. case C-304/02, *Commission v. France*, [2005] ECR I-6263. This can only be done in a second ruling, after a violation has been established in a previous case and the Member State still does not comply.

41 H. Folmer & S. Reinhard (eds.), *Water Policy in the Netherlands: Integral Management in a Densely Populated Delta, Resources for the Future*, 2009, p. 207.

42 Crossing administrative borders within the Netherlands.

43 H.F.M.W. van Rijswijk, *Moving Water and the Law: on the Distribution of Water Rights and Water Duties within River Basins in European and Dutch Water Law*, 2008, p. 52.

4.5. Comments: weaknesses and merits of the Chinese way

4.5.1. Weaknesses

4.5.1.1. A deficit in the dispute settlement procedure

As mentioned above, there is also a lack of government responsibility. Although, according to the Constitution, it is the responsibility of the Government to prevent transboundary pollution, regardless of whether or not it appropriately fulfils its obligation, only the civil party will be asked to bear responsibility when transboundary water pollution actually occurs. Here, some important improvements can be made by learning from international water law and EU water management. As described above, both of them have specific procedures and authorities to solve disputes among states or public organizations.

4.5.1.2. Lack of water rights and public participation

To some degree, water pollution is a common problem which we are facing throughout the world. Specifically in China, according to the Water Act (2002) the state owns water resources except for the water in local ponds which is owned by the local collectives that constructed these ponds. So when transboundary disputes occur in the public law domain, mediation or a decision by EPA is final. During the decision-making procedure, no individual rights can be detected. Even in the planning procedure, little public participation is expected. When taking a look at the recent cooperative agreements among the provinces, we can see that no obvious development is taking place concerning this subject. However, in the Netherlands water boards play a curial role in water management and we all agree that the key value of water boards is their degree of autonomy; people in certain regions govern themselves.

4.5.2. Merits

The good news is that besides all these weaknesses, China has designed several systems which actually work.

4.5.2.1. Special monitoring system

Monitoring may be the most common instrument in water management. However, the Chinese monitoring system has seen some advances. For example, the joint monitoring system ensures that neighbouring provinces regularly take water samples in transboundary areas jointly and also carry out the monitoring together. Also the inflow and outflow monitor, which established a basis for the next step to government responsibility, is a major step forward. Finally, the subsequent monitoring system, which ensures that the decision or conclusion of a dispute settlement can be fully enforced, is a great improvement.

4.5.2.2. Target responsibility

Without a proper incentive, cooperation would be impossible. The target responsibility of administrative leaders partly rectifies the problem. Taking water quality control as the main responsibility of a local leader shows the determination of the central Government to resolve water pollution issues. No matter what the real incentive is for local leaders to set up practical systems, once the system is set up it will exist for a long time and provide benefits for the people. It can be said that the recently developed cooperation among the provinces is mostly driven by this target system. Although the WFD set up ambitious objectives, it is not related to specific

administrative leaders, but to Member States. If there were clearly defined competent authorities for this issue, it might be useful to apply this system in the European context as well.

5. Conclusion

In the past, China was not aware of transboundary issues. Few instruments were provided and only when transboundary disputes occurred. Preventive means rarely existed. The case between Zhejiang and Jiangsu, for instance, was settled more in a political way than by using legal means. Since that time, several positive developments have taken place, not only in creating appropriate legislation but also in raising awareness among the government which could be seen from the voluntary cooperation among different provinces. In short, China is facing serious transboundary water pollution. Stimulated by numerous incidents, a basic legal system has been set up. Together with the recent developments, there is a possibility to resolve the problem in the future.

However, by analyzing our own system and comparing it to solutions outside of China, we find that although there are already over twenty legal documents which are relevant to transboundary issues at the central level (as listed in Section 2), there is still a legislation deficit. On the one hand, this is because of the hierarchy of the statutes. It can be noted that the most useful and most frequently used instruments are provided by lower statutes, especially by the regulatory documents of MEP, which is the lowest in the legal hierarchy in China. Regulatory documents do not have the same influence as law in the administrative litigation, as regulatory documents can only serve as references. On the other hand, there are inadequate procedural provisions in the legislation. This is problematic, especially as more than one competent authority is responsible and no specific procedures can be followed to fulfil the task by cooperation.

Moreover, by observing the trends in the development of international, EU, and Dutch water law, one can say that the integration of water management and the river basin approach are the main features of modern water management. However, most of the recent developments in China are not based on these new approaches. In contrast, local governments and their environmental protection sectors are still playing a dominant role in transboundary water management. These arrangements not only make the already weak river basin management even weaker, but also strengthen the impact of political division concerning the transboundary issue.

In a word, compared with the arrangements in international, EU, and Dutch water management, further improvements concerning the competent authorities, comprehensive legislation and public participation are needed. At the same time, the new monitoring system and the idea of target responsibility also provide a new approach from which the rest of the world could also learn.