

GLOBALIZATION MONITOR

**Why Bottled Water
is NOT
the Solution for
China's Drinking Water Crisis**

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Why Bottled Water is NOT the Solution for China's Drinking Water Crisis

The bottled water business is one of the fastest growing markets in China. Water companies take advantage of the public's scepticism about the quality of tap water and promote their products as 'safe' and 'healthy'. However, bottled water companies extract our precious and scarce water resources to fill billions of bottles and sell them for tremendous profit, destroying our vulnerable water system and seriously affecting people's right of access to clean, sufficient and affordable water. While bottled water is promoted with the image of being 'safe and healthy'; the water companies refuse to disclose the products' information in reality. Is bottled water a real solution to the poor quality of tap water? What disasters could bottled water bring to us? What can we do to protect our right to water in the era of globalization, which is dominated by neo-liberalism?

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Introduction

I. Background

The remarkable growth of China's economy in the past decades has come at a tremendous cost to the country's environment and society. The deterioration of the environment is threatening its sustainability and people's health. The water crisis is one of the examples. China is facing a serious water shortage and pollution problem. One third of the population cannot access clean water or tap water, which in turn affects their health and constrains the development of the water-scarce areas, mostly in the North West region of China. This also triggers the issues of social injustice and health inequality.

Regarding water problems in China, the general public usually pays attention to serious water pollution and dam construction. The privatization and commodification of water is yet an issue to catch people's concern, despite the fact that they affect their daily lives and that they are still underway and without any sign of slowing down. Globalization Monitor (GM) released a report in 2010, providing some examples about the privatization of the water sector in China. This report deals with the production and consumption of bottled water.

Bottled water is one of the rapidly growing and competitive industries in China. It is regarded as safe and convenient drinking water, and has become a replacement for tap water for many people in China. Bottled water is often viewed as an alternative for poor quality tap water, not only in China, but worldwide. However, is bottled water really a good substitute for tap water? From the perspective of health, many experts have pointed out that drinking bottled water is not really safer or cleaner than drinking tap water because of inadequate monitoring. From a macro perspective, environmentalists and many incidents around the world have demonstrated that the production and consumption of bottled water have great negative impacts for our scarce water resources and the environment, as well as contributing to the problem of social injustice.

The truth about the negative impact of bottled water is widespread in the English speaking world, yet, it is a new topic for most of the people in China. Furthermore, there is a lack of information about the bottled water

business and drinking water consumption patterns in China. By conducting this study, we aim to fill in this information gap. More importantly, the data we have collected can be used for information exchange and future advocacy work, aiming to help this topic attract greater attention in China.

II. Objectives and methodology

Objectives

This study aims to understand the consumption patterns of bottled water in China and to explore the bottled water industry's impacts on both the environment and society. By exposing the problems of producing and consuming bottled water, we hope to raise the public's and government's awareness of the negative impacts of the bottled water industry, and take action to protect water resources and people's right of access to clean water. The data collected will also be able serve as a knowledge base for further actions such as public education, information exchange, lobbying and campaigning.

In this report, we try to answer the following questions:

- What is the current situation of the bottled water market in China?
- What are the factors that contribute to the large consumption of bottled water?
- What are the impacts of the production and consumption of bottled water on the environment and society?
- What are the role of the government and the law in regulating the bottled water industry and protecting water resources?
- Is bottled water safer than tap water? If bottled water is not the solution for drinking water problems, then what is the way out?

Methodology

We used various methods to collect the information:

- 1) Literature review: mass media, academic research, and publications by investing companies.
- 2) Questionnaires: a total of 240 questionnaires have been completed in six cities; 40 questionnaires for each city: Beijing, Shanghai, Yunnan, Shenzhen, Guangzhou, and Dongguan. The purpose of conducting questionnaires is to understand people's consumption habits and attitudes about bottled water. Most of the questionnaires were conducted by face-to-face interviews, while less than 5% were completed using online tools because of practical reasons.
- 3) In-depth interviews: interviews were carried out with former owners, workers of the bottled water industry, government officials from the environmental bureau, and some local families in each of the six study cities.
- 4) Field Investigation: We have visited three places where three big bottled water companies have set up their factories, Kunming, Dali and Henan. We visited the factories and talk to their staff, and also interviewed the local residents to investigate the impacts of the production of bottled water on local water resources and their daily lives.

Chapter 1

Bottled Water in Mainland China

I. The bottled water market in China

Prior to 1980s, there was only one bottled water plant in China; the market for bottled water was very limited. At that time, drinking bottled water was regarded as a high class consumption habit and water pollution was not yet a problem. Daily drinking water for the families was simply tap water or well water. The situation started to change after the water pollution problem started to become unreasonably critical due to an over-emphasis on economic growth in the past decades. The polluted water resources have burdened China's water supply and wastewater treatment sectors. The general public is worried and doubtful about the quality of tap water. People's income has increased simultaneously which makes consuming bottled water affordable. This has contributed to the rise of the bottled water companies, which have promoted their products as "safe and healthy" water. The bottled water market became mature in the 1990s and the consumption rate has been growing 20% annually since then. Bottled water companies often create and introduce various types of bottled water in an attempt to attract as many consumers from different social classes as possible.

China exceeded Brazil in 2004 and has become the third biggest country for bottled water consumption, after the USA and Mexico¹. A study report of the CLSA Asia-Pacific Markets shows that global bottled water demand has increased by 150% from 1997 to 2010². However, a continuous decrease in demand has been observed in Europe and the USA in the past few years because more and more people have realized the negative impacts brought by bottled water. In 2008 the USA recorded a decline in the demand for bottled water for the first time. In contrast, Asia itself became the largest regional market in 2011, edging out North America and easily besting Europe, while China claimed the number-two position, ahead of Mexico³. The China Market Research Report estimated that bottled water consumption would

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- 1 *'Back to the Tap': a Global Battle against Bottled Water Industry*
<http://wordpress.hrz.tu-freiberg.de/wordpress-mu/journal/files/2010/11/huiju.pdf>
 - 2 *Thirsty Asia 2 – How do we respond to peak water?*
<https://www.clsa.com/assets/files/reports/clsa-thirsty-asia-2.pdf>
 - 3 *Bottled water 2011 – The recovery continues,*

progressively increase by 30% from 2007 to 2010, and would equal about 60% of America's total consumption.

In 2010, the total sales value and volume of bottled water in China, including institutional sales, food service and retail channels, reached RMB62.1 billion and 24.6 billion litres, respectively, representing a compound annual growth rate of 11.1% and 9.7% from 2005 to 2010. China's per capita consumption of bottled water still lags behind developed countries by a very significant margin. In 2010, the average annual per capita expenditure on bottled water was only US\$5.7 in China, compared to US\$10.6 in the United States, US\$153.7 in Germany and a worldwide average of US\$23.8, according to Euromonitor⁴. But China's bottled water industry is one of the rapidly growing industries in China. In Guangdong province alone, about 8 million tons of bottled water was sold in 2010, a 15% growth compared to 2009. It is estimated to obtain at least an 18% annual growth in the next five years. Among the various types of bottled water, carboy water, a high volume bottled water, is expanding even faster than low volume bottled water. Carboy water started to appear in households and offices in the mid-1990s and has expanded rapidly since 1998. There are more than 10 million families that have carboy water machines installed at home. The sale of carboy water has reached 30 billion RMB a year and is expected to have an annual growth of 16%.

Bottled water & Carboy water

Although the term "bottled water" can be understood as referring to all packaged water, as is the case in the aforementioned industry wide statistics, there are two main categories of bottled water in China, namely bottled water and carboy water. Bottled water refers to those with which is portable and therefore its volume small enough to carry around, commonly a capacity of 500ml to 1 litre but sometimes larger and which are usually available in retailing shops and restaurants. Carboy water usually refers to those with a capacity of around 20 litres or less, which is delivered to offices and households by the bottled water companies. Unlike Western countries, where carboy water is more likely to be consumed only in offices, in China

<http://www.bottledwater.org/files/2011BWstats.pdf>

⁴ Overview of the bottled water market in China

<http://www.researchfindr.com/overview-bottled-water-market-china>

it is also widely used in household consumption. Therefore, unless stated specifically otherwise, throughout this report we follow the Chinese practise of using these two categories in our survey and interviews.

II. Role of the domestic water supply corporations and transnational water companies

Domestic water supply companies' investment in the bottled water market Many water supply companies, no matter whether they are public or privately owned, have started to produce bottled water when they glimpsed the great potential of the market. And this includes China.

Water supply companies often claim that their carboy water is “healthier” and “safer” than tap water, despite the fact that providing safe and clean tap water for the public is their primary responsibility. The question is, if they can provide “better water” which means there is room to improve the current quality of tap water, why don't they distribute a better quality of tap water in the first place? More importantly, is the problem of how to make sure that the companies' investments in the public water supplies will not be affected by their bottled water business when the latter can make hundreds or thousands times the profit of tap water.

In China, one of the examples is Guangzhou, the provincial capital city of Guangdong Province. The Guangzhou Water Supply Company has been established for more than 100 years. It is a state-owned company and has been reformed in recent years. The company has invested about 180 million RMB in one of its plants, Nanzhou Water Plant, to produce carboy water. The carboy water is sourced from the water of Nanzhou Water Plant after some extra water treatment procedures. And the price of the carboy water is 365 times more expensive than tap water (Table 1), though their water comes from the same plant.

Table 1: Comparison between the prices of tap water and carboy water which both are produced by Nanzhou Water Plant in Guangzhou.

Type of water	Litre	Price (RMB)
Tap Water	1000	1.3
Carboy water	1000	473

The carboy water is purposely named “Nanzhou 7.3”, in order to make consumers easily associate the product with the water plant, which already

enjoys certain reputation as a long standing company with all the techniques, experiences and more importantly, a stable supply of raw resources, i.e. purified water that is also delivered as tap water to the general public. The water supply company emphasises their perfect monitoring system and unique water treatment techniques to minimize the secondary pollution that might occur in the process of filling up the bottles, and promotes their mission as “providing high quality and healthy carboy water for the citizens”. As the company had hoped, “Nanzhou 7.3” has become one of the most popular local brands in Guangzhou. However, what we need to worry about is whether if the profits from selling carboy water are much higher than profits from distributing tap water, it may be tempting for the company to allocate more resources to the bottled water business at the expense of tap water supply (See Chapter 5 for details).

Transnational bottled water corporations in China

In the 1980s, Coca-Cola became the first transnational company to enter the soft drinks market in China. At that time, people’s purchasing power was still limited, so the two biggest transnational bottled water companies, Nestle and Danone, had not yet focused on China’s market. The situation changed in the 1990s and China became one of the main target markets for transnational companies. Another critical factor for transnational water companies, such as Nestle and Danone, in looking to China’s market is the fact that on one hand their market in the developed countries is increasingly saturated, on the other hand China is an emerging economy with an extraordinarily large market.

There are usually three ways to develop a new market for the bottled water companies:

- 1) By exporting bottled water;
- 2) Start up a local bottling company, and build up local factories;
- 3) Purchase or merge with an existing local company or brand name.

The first method involves high transportation costs, while the second option also needs huge capital investment for collecting information and setting up and obtaining stable sources of water. On the other hand, domestic companies enjoy developmental advantages, such as good relationships with local governments, which make it easier to obtain water sources and ownership of land. They are familiar with the consumption cultures which help them to attract more consumers and expand their market share. More

importantly, it is not easy to change consumers' habits once they have started to buy a particular brand of beverage. As a result, the transnational bottled water companies tend to purchase or merge with the domestic bottled water companies as a bridge to enter China's market, including Danone and Nestle.

Here is a brief summary of the market developments of Danone and Nestle in China⁵.

Danone



Danone's waters division operates in more than 120 countries, offering natural water, aqua drinks and functional beverages. It is the second largest bottled water company in the world. Danone started to pay attention to China's market in the late 1980s and, since then, China has become a very important market for Danone. Danone is also the most active transnational bottled water company in China's soft drinks market.

Danone expands mainly by becoming the major shareholder of famous domestic companies. In the past 30 years, Danone has taken a series of actions of acquisition and equity participation in China. It owned 41% of shares of Wahaha Beverage from 1996 to 1999 and 51% of Shanghai Malin Aquarius from 2000 to 2006. Currently it holds 100% of the shares of Shenzhen Danone Yili Beverage Co. and 92% of Robust Beverage. In order to keep the existing consumers of the brands, the companies usually keep their original brand names and trademarks. Apart from buying local brands, Danone also imports its international high-rank bottled water "Evian" to China to attract upper-class consumers.

Most of the domestic companies that Danone holds are leading companies in China's bottled water business. For examples, Wahaha and Robust are famous and major brands in China and Malin Aquarius is dominant in Shanghai. Unsurprisingly, Danone has become an influential enterprise in China and is making great profits from its subsidiary companies. In 1999, Danone invested 22 million RMB in Robust carboy water and the company achieved a profit of 46 million RMB in less than three years. In 2002, Robust

⁵ *Soft Drink Industry Profile in China 2008*, www.datamonitor.com

became the leading producer of carboy water in China, based on the volume of water sold and market share. In the bottled beverages market, Danone is regarded as the enterprise that yields the highest return in the world.



Nestle



Nestle Waters is a subsidiary company of Nestle and is the biggest bottled water corporation in the world. Nestle Waters operates in more than 130 countries, selling about 64 brands, and has set up 103 production facilities in 36 countries.

The marketing strategy for developing new markets for Nestle is to gain the ownership of domestic companies or to build up partnerships with domestic companies. In recent decades, Nestle has targeted the new markets of the developing countries, especially China and India, where purchasing power is getting stronger and the quality of drinking water is yet secured. Although Nestle entered China's market at about the same time as Danone, it was mainly selling its own brands, "Youhuo" and "Shenquan" in a few big cities, until it purchased the domestic company Yunnan Shanquan in 2010. Yunnan Shanquan is the biggest brand in Yunnan province but not yet a famous brand nation-wide. Nestlé's involvement in China's market is comparatively low but it is eager to expand its market share and in particular is interested in the bottled water market in South China. It has approached some famous local brands such as Ganten, which is the largest bottled water producer in Asia.



Danone and Nestle are only two examples that show the active involvement of transnational bottled water enterprises in China's market. Developing countries such as China have become promising markets for these transnational giants, as these countries usually have significant proportion of their fresh water resources polluted, and their water supply systems lag behind rapid urban development. In the past five years, these foreign

companies have entered the Chinese market by either importing their own brands or developing partnerships with domestic companies. They are particularly keen in entering the high-rank bottled water market to maximize their profits.

III. People's voices: Reasons for the large consumption of bottled water in China

In China, if one drinks 2 litres of tap water per day, it costs 2 RMB per year. If one drinks carboy water, it would cost about 450 RMB and it would cost about 1500 RMB to drink the low-volume bottled water. Thus, consumers need to pay hundreds to thousands times more than for tap water if they use bottled water for daily drinking. Still, there is a trend for the Chinese to use carboy water to replace tap water at home, though there are often reports about hygiene problems with bottled water. Therefore we decided to look at the reasons for such "irrational" consumption behaviour.

Based on the existing reports and discussions, there are generally three reasons for people to consume bottled water: 1) they regard it as an alternative to tap water because people don't feel comfortable with the quality of tap water, 2) people think that bottled water is safer, healthier and even more natural than tap water; 3) drinking bottled water is a new and fashionable living style. In order to understand if these reasons apply to China, we need to look at the factors that contribute to such perceptions about bottled water and consider if there are other potential reasons for consuming bottled water. We thus conducted a survey and interviews and tried to answer these questions.

We chose six cities for in-depth investigation, namely Beijing, Shanghai, Yunnan, Shenzhen, Guangzhou and Dongguan. We conducted 40 questionnaires in each city, thus a total of 240 questionnaires, about water use patterns, bottled water consumption habits, reasons for consumption. Furthermore, we have also conducted in-depth interviews with 3 to 5 families in each city to get a comprehensive understanding of people's behaviour.

Six cities

1. Beijing is the capital of China. It is under the threat from a lack of water resources, especially groundwater. But because

it is the capital city the government spends a great sum of investment to ensure there is a stable water supply and so Beijing citizens usually do not need to worry about the water shortage problem.

2. Shanghai is a financial centre and one of the most developed cities in China. It is located at the downstream of the Yangtze River and the Lake Tai basin. Shanghai used to be a city without the issue of water shortage because of its good location. But water pollution problems are very serious in Shanghai now, such that only 1% of the surface water meets drinking water standards. Shanghai citizens, however, can still enjoy a comparatively stable and good quality of tap water because of the vast investment from the water supply sectors.
3. Kunming is the capital city of Yunnan province. Kunming was a city with abundant good quality water resources. However, the pollution problem, together with frequent serious droughts in recent years, is disturbing the water supply of Kunming now.

The other three cities are located in Guangdong province, which is the province with the largest consumption of bottled water in South China. Guangdong was originally a place with abundant water resources, but these have mostly been polluted like other places in China.

4. Shenzhen was the first Special Economic Zone in China. It is the financial centre of South China but also one of the seven cities in China which are facing severe water shortages. The bottled water market in Shenzhen is expanding with a rate of 20% to 30% annually.
5. Guangzhou is the capital of Guangdong Province with significant economic and political influence. According to the Environmental Protection Bureau of Guangdong Province, Guangzhou and Shenzhen's raw water quality was relatively lower than other cities in Guangdong.
6. Dongguan is a prefecture-level city in central Guangdong. It might not be as famous as Shenzhen but it plays a decisive role in both China and the world's manufacturing industry as the whole city of Dongguan is a "world factory". It has been facing quality-induced water scarcity due to acid rain and surface water pollution.

Reasons for consuming carboy water

According to the respondents, 50% of them use carboy water as their daily drinking water, followed by 42% of them who boil or filter tap water for drinking. 2% of them drink tap water directly. Those that drink water from vending machines⁶ are grouped under 'others' (Table 2.1). From the interviews, we learned that even the respondents who drink boiled tap water will filter it first. These filters are also becoming increasingly popular in recent years; the price varies from several hundred to several thousand dollars.

Among the respondents who use carboy water as their main source of daily drinking water, 32% of them believe that carboy water is cleaner than tap water, 37% think that it's more convenient to drink carboy water than tap water because they can skip the procedure of filtering and boiling. Also, 18% of them quote "carboy water is healthier than tap water" as their reason for consuming carboy water. They explain further in the interviews that the carboy water is natural, distilled, and with added minerals, as they indicate in the advertisement. Therefore, we can conclude that almost 90% of them consume carboy water as they think its quality is better than tap water.

For the families who do not use carboy water as their main source of daily drinking water, the reasons vary. 31% of them say it's because it's expensive. 16% of them think that the quality of tap water is better than carboy water and 26% think that it's unhealthy to drink carboy water. They learn from mass media that bottled water may contain bacteria and chemicals which may pose negative impacts to health. They also think that the bottled water companies are unreliable especially since more and more cases of food scandals have been disclosed in recent years. They believe that it would be better to rely on themselves to ensure the quality of water by filtering and boiling.

6, Please see Chu 2010 for the details of water vending machines in China.

Table 2.1: The consumption of carboy water and reasons

	Overall	Beijing	Shanghai	Kunming	Guangzhou	Dongguan	Shenzhen
What is y ource of household drinking water?							
Drink tap water directly	2%	3%	3%	0%	0%	5%	0%
Boil or filter tap water	42%	50%	52%	30%	25%	46%	50%
Carboy water	50%	38%	45%	67%	63%	42%	38%
Others	6%	9%	%	3%	12%	7%	12%
Why do you consume carboy water? (Can choose more than one option)							
Better quality than tap water	32%	33%	25%	50%	35%	28%	38%
Healthier than tap water	19%	10%	13%	28%	33%	20%	13%
Convenience	37%	35%	38%	52%	11%	50%	35%
Low price	6%	0%	8%	15%	0%	13%	0%
Stylish	1%	0%	0%	3%	0%	3%	0%
Others	6%	10%	3%	0%	10%	0%	14%
Reasons for not choosing carboy water as daily drinking water? (Can choose more than one option)							
Quality of tap water is better	16%	10%	30%	20%	0%	20%	15%
Environmental unfriendly	6%	10%	5%	0%	0%	0%	19%
Inconvenient to buy it	18%	0%	28%	28%	34%	5%	10%
Too expensive	31%	21%	17%	20%	47%	50%	29%
More unhealthy than tap water	26%	24%	18%	40%	20%	25%	29%
Others	7%	21%	20%	0%	0%	0%	0%

The figures show that the decision for consuming carboy water largely depends on people's perception about the quality of carboy water. If people think that carboy water is healthier and cleaner than tap water, they tend to replace tap water with carboy water, and vice versa. Quality of drinking water is thus the most important factor and the price is a secondary consideration. The result of the questionnaires indicates that 65% of respondents perceive that drinking carboy water is safer than tap water (Table 2.2). In our field visit, we gained the same impression that people generally believe that the quality of bottled water is better than tap water. They think that commercial companies are more willing to invest money in enhancing water treatment technology, in order to improve the water quality and try to meet consumers' needs as they want to remain competitive. However, they usually cannot provide concrete examples to verify their belief and refer to companies' advertisements.

Table 2.2 The consumption of carboy water and reasons

	Overall	Beijing	Shanghai	Kunming	Guangzhou	Dongguan	Shenzhen
Do you feel comfortable with the quality of tap water?							
Yes	24%	30%	48%	25%	28%	3%	10%
No	71%	50%	48%	70%	73%	95%	90%
Don't know	5%	20%	4%	5%	0%	3%	0%
Do you think drinking bottled water is safer than tap water?							
Yes	65%	58%	65%	73%	85%	70%	40%
No	28%	20%	25%	25%	15%	20%	60%
Don't know	8%	22%	10%	3%	0%	10%	0%

Besides perceptions about the quality of carboy water, we also tried to find out about the relationship between the quality of tap water and the consumption of bottled water. The survey results show that 71% of the respondents expressed that they do not feel comfortable with the quality of tap water (Table 2.2), which means, among the respondents who use tap water as their main daily drinking water, some of them are not satisfied with its quality. This can be illustrated by their habit of filtering. We further asked the carboy water consumers whether they would buy less carboy water if the quality of tap water was secured. 74% of them say 'yes' (Table 2.3), mostly because they could save money by switching to drinking tap water. About 26% of respondents answered "no" or "no comment", with interesting explanations. Many of them think that this is an unrealistic hypothesis. They believe that water pollution is "inevitable" and the situation is difficult to change as it requires huge investment from the government. They even doubt if the heavily polluted water can be treated by current technology. More importantly, they don't trust the government; they would barely believe that the tap water is safe even if it is 'approved' by the government. This is a sad idea but also reflects people's frustration about the quality of tap water.

Table 2.3 The consumption of carboy water and reasons

	Overall	Beijing	Shanghai	Kunming	Guangzhou	Dongguan	Shenzhen
If the quality of tap water is secure, will you drink less carboy water?							
Yes	74%	73%	56%	82%	76%	74%	82%
No	15%	23%	37%	11%	0%	13%	5%

The survey results and interviews show an association between poor quality tap water and the consumption of carboy water. Therefore, we should tackle the fundamental issue of the poor quality of tap water if we want to reduce the consumption of bottled water. Otherwise the bottled water companies will just keep manipulating people's lack of confidence in tap water and promote their products as pure, healthy and even nutritious.

Reasons for poor tap water quality

According to the report that GM published in 2010¹ 'The Reform of the Urban Water Supply in Southern China', we have identified two major contributing factors to the poor tap water quality in urban areas: that water treatment does not meet the standards and secondary pollution.

1) Water treatment does not meet the standards: The new drinking water standard was released in 2007. However, only about 15% of the water plants in China possess the necessary facilities and technology to fulfil the new requirements of the new standard. The limited capacity is mainly a result of inadequate investment in quality control.

Furthermore, the monitoring mechanism does not always work. The health departments which are responsible for monitoring the quality of drinking water often face difficulties in their work. Because water supply is a monopolistic industry, together with the fact that the water firms are usually quite well off, the firms can afford fines, if their water quality does not meet the standards.

2) Secondary pollution: Although sometimes the water quality meets the drinking water standard when it leaves the water plants, it is often polluted by the old public pipelines and aged household pipes. These two factors play significant roles in the poor quality of household water. The costs of changing and rebuilding the old pipelines are just unaffordable to most residents and the water companies seem to have no interest in improving the situation. So the tap water quality cannot be easily improved without the government intervention. But sadly, the public water supply system is under reform of privatization.

In addition to the above reasons, people's concerns about tap water are slightly different due to the geographic features of their cities. For example, the respondents in Kunming tend to worry about the problem of hard water as the groundwater in that area has a high mineral content. The respondents

in Shanghai and Guangzhou mostly complain that tap water tastes like ‘chlorinated lime’ or ‘bleach’. Furthermore, the public’s confidence in tap water is shaken upon learning from the mass media that the water source is contaminated, or that the quality of tap water does not meet the standards. Some respondents indicated that they were affected by the experiences of their relatives or friends of having found small worms in tap water occasionally. The respondents generally believe that in order to restore their confidence in tap water, improving the transparency of water supply services is much more important than government intervention or increased investment.

Reasons for consuming bottled water

The survey results (Table 3) show that 79% of the interviewees buy bottled water often, with a monthly average consumption of 11 bottles. Most of them, 77%, buy bottled water mainly for convenience, especially when they go out and do not bring their own water. For those who do not buy bottled water, the factors are evenly distributed. 24% of them think that drinking bottled water is environmentally unfriendly; 28% of them think it’s too expensive, 21% indicate that it’s inconvenient to buy and 25% think it’s unhealthy to drink bottled water.

Concerning the question, ‘Will you drink less bottled water if the tap water quality is secured?’ over half of the bottled water consumers say ‘no’. They say even if the tap water quality is good, they will not switch their habit of buying bottled water to taking their own when they go out. They think it is too heavy and inconvenient to carry bottles with them. They have got used to the behaviour of buying bottled water when they are in the street. They say buying bottled water ‘just costs you a yuan.’ In addition, compared with other packaged drinks such as soft drinks or juice, they think bottled water is cheaper and healthier because there is no added sugar. It seems the reasons for buying bottled water are quite different to those for consuming carboy water. People do not consider the quality of water when they decide to buy bottled water in the supermarket and restaurants; they just buy it out of convenience. Some young people think that drinking bottled water looks much more fashionable than drinking from their own water bottles. We can see that the bottled water companies’ advertisement has successfully created people’s ‘needs’.

However, 31% of the interviewees expressed that they would buy less bottled water if the tap water quality improved. Some explain that as many people are doubtful about the quality of tap water, it has become a trend and living style to receive guests with carboy water or bottled water. They say that they would buy less in order to save money if the quality of tap water improved.

Table 3: The consumption of bottled water and reasons

	Overall	Beijing	Shanghai	Kunming	Guangzhou	Dongguan	Shenzhen
Do you buy bottled water often?							
Yes	79%	73%	85%	73%	83%	92%	67%
No	21%	27%	15%	27%	17%	8%	33%
Monthly average consumption (No. of bottles)	11	14	9	9	6	10	16
Why do you buy bottled water? (Can choose more than one option)							
Better quality than tap water	19%	43%	23%	18%	13%	15%	3%
Healthier than tap water	14%	15%	18%	18%	10%	23%	0%
Convenience	77%	75%	83%	83%	78%	80%	65%
Price is low	8%	15%	13%	10%	0%	10%	0%
Stylish	2%	0%	0%	3%	0%	8%	0%
Others	7%	5%	5%	0%	0%	0%	33%
Missing	2%	13%	0%	0%	0%	0%	0%
Why don't you buy bottled water? (Can choose more than one option)							
Quality of tap water is better than bottled water	0%	0%	0%	0%	0%	0%	0%
Environmental unfriendly	24%	23%	25%	12%	70%	0%	12%
Inconvenient to buy	21%	23%	25%	27%	0%	33%	15%
Too expensive	28%	25%	25%	12%	0%	30%	78%
Bottled water is more unhealthy than tap water	25%	0%	0%	36%	80%	33%	0%
Others	18%	27%	50%	18%	14%	0%	0%
If the safety of tap water is secured, will you drink less bottled water?							
Yes	31%	38%	23%	35%	16%	36%	40%
No	54%	42%	53%	52%	68%	53%	57%
No comment	15%	20%	24%	13%	16%	11%	3%

The above data gives us a general picture of bottled water consumption in China. The poor quality of tap water and the message that “carboy water is better than tap water” explain the large consumption of carboy water. The consumption of bottled water is mostly because of

its convenience, which people have adopted as a habit. This reflects how the general public is not aware of environmental issues and so this is an area that education should focus on. These consumption habits, on the other hand, can actually be changed gradually if there are adequate public fountain facilities. However, this relates back to the discussion about the quality of tap water and bottled water.

Chapter 2

The Bottled Water Industry and Water-mining Activities in China

Part One:

The Economic and Environmental Costs of Bottled Water

The distribution costs of bottled water

“It struck me... that all you had to do is take the water out of the ground and then sell it for more than the price of wine, milk, or, for that matter, oil.”

Chairman of the board of the Perrier Corporation

The price of bottled water is tremendously high, compared to tap water. In China, bottled water prices range from 1RMB per 500ml to more than 8RMB per 500ml. Tap water generally costs between 1.2RMB per cubic metre to 3RMB per cubic metre. Thus, the ratio for the price of bottled water to tap water ranges from a low of about 666 times higher (cheap bottled water: expensive tap water) to a high of 13,333 times higher (expensive bottled water: cheap tap water). However, according to a report released by the Natural Resource Defence Council, the actual cost of the water in the bottle purchased off a store shelf is generally just a fraction of a cent to a few cents⁷. Typically 90 % or more of the cost paid by consumers goes towards things other than the water itself -- bottling, packaging, shipping, marketing, retailing, other expenses and profit.

We interviewed a former owner of a bottled water company in Wuhan about the distribution cost of producing bottled water. ‘The production cost of one bottle of water is really low. Indeed, plastic bottles are more expensive than the liquid it contains and contribute around 85% of the total cost. As I

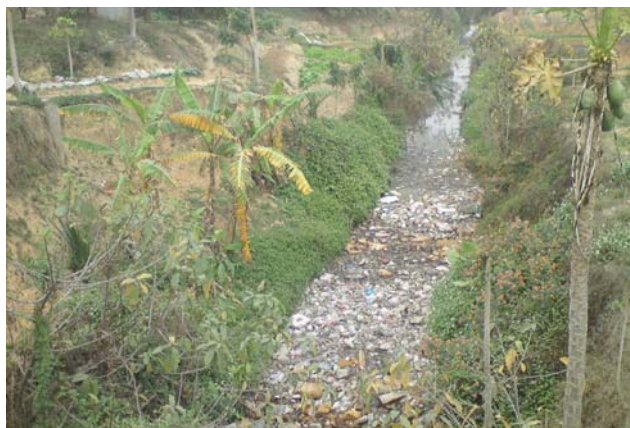
⁷, *Bottled Water - Pure Drink or Pure Hype?*
<http://www.nrdc.org/water/drinking/bw/chap2.asp>

know, large bottled water companies also spend huge amounts of money on marketing and transportation, as they have to enlarge their market as far as they can. So it involves a lot of big money! And these costs will be added to the price of bottled water of course. ' In fact, the amount of investment by bottled water companies in TV advertisement in China has been increasing. It increased by 60% from 0.4 billion RMB in 1998 to 0.64 billion RMB in 1999.

Ironically, water is the main item consumers want to buy. They assume that the water inside the bottles is well treated by advanced and expensive technology; a belief which allows the bottled water companies to get away with charging significantly more for the water. Actually, this is not the case. Consumers are actually buying the plastic bottle.

Negative impacts on the environment

Bottled water is a very resource-consuming product. The excessive use of water and energy that are involved in the production and transportation of bottled water is totally unnecessary and avoidable if we simply drink tap water. Another serious and obvious negative impact on the environment is the pollution problem caused by the plastic wastes. Even in the USA, only 25% of plastic bottles are recycled and the rest are simply wasted. The recycle rate of plastic bottles in China is unknown, as there is no proper public/official recycling system. The bottles are actually dumped everywhere. Scavengers, who collect the bottles and sell them to the recycling companies, are the only ones who play a role in reducing plastic waste in China. The majority of the bottles, however, are just left behind and cause pollution and hygiene problems.



A motionless river in Dongguan, which has become a dump for bottles and other wastes. This is a very common scene in every corner of China. (Photo by GM)

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Scavengers play a major role in the recycling system in China (Photo from internet)

The negative impacts that are caused by bottled water and bottled water companies are well reported in developed countries. In contrast, the undesirable consequences on both the environment and society that are caused by the bottled water corporations in China is still a new topic in China.

Part Two: The Mining of Groundwater

I. Background

“There will be no sustainable development in the future if there is no groundwater supply.”

----- *Liu Changming, a hydrologist, the Chinese Academy of Sciences*

When Chinese consumers are buying or drinking bottled water, not many of them will ask where the water comes from. Even those who do think about it tend to think that there is an unlimited supply of water for bottling up and consumption. Not many people know that the intensive water-mining by the bottled water companies can actually dry up an area. In addition, the bottled water factories are usually located in rural areas, where problems caused by water-mining are difficult for the majority of citizens to notice and the local people are usually marginalized and their voices typically neglected. When it becomes known to the public, it is generally because the damage to the vulnerable ecosystem and people's lives is too serious to be remedied.

Water sources for bottled water

There are mainly two sources of water for bottled water: the municipal tap water system or natural water resources, such as groundwater, surface water and glacial water. Tap water is usually used to produce purified or mineral-added bottled water. Natural water is used to make spring or mineral bottled water. In this chapter, we will focus on the later type of bottled water which uses natural water as the raw material. Unpolluted natural water resources in China are becoming scarce since over 70% of rivers in China are seriously polluted and not suitable for drinking. Protecting the unpolluted water has therefore become an important and urgent issue in China.

The category of bottled water which comes from natural water resources can be further divided into two groups. One involves using underground or aquifer water where the water-mining activities must be certified by the government. Another one is by using surface water or ground water. The mining of underground mineral water is more strictly regulated by the government than surface water. Still, as mineral water can be easily promoted as high-ranked bottled water and hence a high price can be charged, bottled water corporations have been actively buying the licenses from the government and extracting the water for making profits. The policy

of certification, on one hand, regulates the water from being over-mined; on the other hand, it legitimatizes water pumping and selling activities. It also demonstrates the critical role of the government in the protection of water resources.

The Rise of the mining of mineral water

The original German brand Laoshan Mineral Water, produced the first bottle of mineral water in China in the 1930s, and it remained the only bottled water producer until 1977, with an estimated total annual production of 1000 tons, mostly for exporting. The situation changed largely in the 1990s. With an overall improvement in the living standard due to economic development, mineral bottled water became affordable. At the same time, economic development didn't come without cost. Water pollution is becoming more and more serious and there are news reports about 'Cancer Villages' from time to time. People are thirsty for 'healthy, unpolluted and natural' water. Water Companies made use of this situation and began to produce bottled mineral water in ever increasing quantities, regardless of whether the latter is really 'healthy, unpolluted and natural'.

The history and development of groundwater mining

In the 1980s, the government became active in mineral water exploration, utilization, evaluation, and then setting allowable withdrawal amounts of mineral water. Nowadays all the major and popular places for mineral water production have their own comprehensive database of the distribution and allowable withdrawal amounts of water resources. So far, more than 4100 locations of mineral water have been identified, which are mainly distributed in South and East China.

Mineral water is one of the mineral resources that are strictly regulated by the government in China. The bottled water companies need to obtain a license for drawing mineral water. They also heavily rely on the data issued by the government regarding the quality and allowable withdrawal amounts of water before they can make any decision about their investment.

Currently, China is the country with the largest number of manufacturers of mineral water in the world and the production of mineral water is one of the most important industries in China. In 1990, the annual mineral water production was only 150,000 tons; and it has increased by 20 times to an annual output of more than 3 million tons in 2000⁸. In 2004, there were about 1226 mineral water manufacturers. In Guangdong alone, there are 160 companies which have gained the license for drawing mineral water and the amount of water it draws counts for 1/3 of the total draw in China⁹. From 2000 to 2006, the production capacity of mineral water recorded an annual increase of 33%.

8, *Guonei kuangquanshui shichang he chanye fazhan xianzhuang (The domestic mineral water market and the development of the industry)*, <http://bbs.tianya.cn/post-149-583788-1.shtml>

9, *Woguo kuangquanshui ziyuan kaifa liyong zhuangkuang he duice (China's development of mineral water resources and the appropriate policies)*, <http://www.cn-mineralwater.com/show.aspx?id=66&cid=13>

II. The major water-mining places




‘Gain water, Gain market share.’ This is the motto and objective of the bottled water companies. Controlling good water resources is essential to the bottled water business, not only because it ensures a stable source of raw materials for the companies’ expansion but also because it’s the selling point in promoting their products.




We have collected and consolidated some data which reveals the situation of groundwater mining by the large bottled water companies. Table 4 presents the popular water-mining places, number of companies that are extracting its water, the amount of water being extracted and the investments by each company. Table 5 lists the famous bottled water brands in China and the corresponding water sources they have controlled or occupied, the amount of water the companies have extracted, and their investments in the business.



These two tables look similar and some of the data overlap but they have different objectives. Table 4 aims to reveal how the water resources are divided by the bottled water companies and the monetary rewards for the local governments, while Table 5 points out the number of water sources the bottled water companies acquired, their investments and annual turnover volume.



We mainly collected the information from newspapers, company websites, government press releases and other available resources on the Internet. The figures we present here, thus, largely depend on how much information has been released by the companies and the governments. However, we believe that the real situation of water-mining and bottled water production in China should be slightly different, or to be more precise, should be more serious than the figures we present here because some small brands and unknown locations are not included.

Table 4: The major mineral water production bases in China

Huizhou City, Guangdong Province		
<ul style="list-style-type: none"> • One of the three most water-rich sources in Guangdong Province and also one of the major mineral water production bases in China. • It is named as ‘Gold Mine’ by water enterprises because of its high quality water resources and the welcome policy by the domestic government. • A total of 67 bottled water companies had set up their factories there in 2008. However, the figure may be over 100 if it includes the unregistered companies. <p>Remarks: The water-mining activity is mainly carried out in Heyuan, a jurisdictional city of Huizhou. Heyuan is famous for its rich water resource which is the home to the Xinfengjiang Reservoir, the biggest reservoir in Guangdong Province and contains most of the Dongjiang River basin. It is not surprising that the domestic government is selling its water to other large cities such as Hong Kong, Shenzhen, Guangzhou and Dongguan, for substantial income. Because of the building of the reservoir and to ensure a good quality water supply, many villages around the area were displaced and many economic activities are restricted. More than 50 years after the displacement the affected villagers still feel unsettled.</p>		
Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Danone Yili	Danone Yili Mineral Water 	<ul style="list-style-type: none"> • Produced 416 thousand tons of mineral water in 2007; 550 thousand tons in 2010. • Invested 0.5 billion RMB to build Danone’s biggest bottled water factory in Asia.
Shenzhen Ganten Industry Co., Ltd.	Ganten Mineral Water 	<ul style="list-style-type: none"> • Sold 660 thousand tons of mineral water in 2010, with an annual increase rate of 30% • Invested 500 million RMB for extension and aims to become the largest mineral water production base in Asia in 2015.
Nongfu Spring Co., Ltd.	Nongfu Spring Mineral Water 	<ul style="list-style-type: none"> • The production capacity in Huizhou is unknown. The company in total produces 700-800 thousand tons of mineral water each year

Baekdu Mountain, Jilin Province		
<p>177 mineral water sources have been identified since 2006. The daily allowable water extraction capacity is 280 thousand tons. It is the area with the biggest mineral water reserve in China.</p> <p>In 2007, the development of mineral water production was the focus for the local government. It was expected to reach a production capacity of more than 4 million tons of mineral water in 2008.</p>		
Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Nongfu Spring Co., Ltd.	Nongfu Spring Mineral Water 	<ul style="list-style-type: none"> Invested 477 million RMB to build its production base at Baekdu Mountain which can produce more than 300 thousand tons of mineral water each year
Tingyi Holding Corporation	Tingyi Natural Mineral Water 	<ul style="list-style-type: none"> Sells around 4 million tons of mineral water annually Invested 500 million RMB to build a production base at Baekdu Mountain
Hangzhou Wahaha Group Co., Ltd.	Wahaha Mineral Water 	<ul style="list-style-type: none"> Sold over 1 million tons of mineral water in 2007
Wudalianchi, Heilongjiang province		
<ul style="list-style-type: none"> One of the three largest cold mineral springs in the world. Produced the first bottle of mineral water in 1980. Currently, there are 7 manufacturers in Wudalianchi, with an annual turnover volume of 0.1 billion RMB. In its peak period, there were nearly 23 mineral water plants in this area. <p>Remarks: Different to other provinces, the development strategy the domestic government takes is by controlling the water resources and building up the government-owned bottled water company. The government has been seeking for investment or partners to run the bottled water business as a joint venture. It tried to ask other companies for 1 billion RMB for building up the partnership but was not successful. It seems partnerships don't work well as many companies have stopped the partnerships with the government-owned company one by one in the past years. However, we can see that there is a close relationship between the government and the water companies.</p>		

Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Government-owned company, in partnership with other foreign companies	Quanshan Mineral Water, World Mingquan Soda Water, etc.	<ul style="list-style-type: none"> Total investments are estimated to be 500 million RMB. Produced 200,000 cases of mineral water and generated more than a million net profit in 2010.
Sichuan Province		
<p>About 100 mineral water sources have been identified by the Ministry of Land and Resource of the Sichuan Province. It is named as “City of Mineral Water” by the China Mining Association. Sichuan is the province with the biggest annual mineral water production capacity in China.</p>		
Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Bluesword Drink & Food Holding Company	Bluesword Ice Age Mineral Water 	<ul style="list-style-type: none"> In 2007, the production capacity was about 2 million tons; with a turnover volume of 44.8 thousand tons. Invested 500 million RMB to develop the high-rank mineral water ‘Ice Age’, which had become one of the world-class mineral water brands in 2011
Aba Xinchun Dagu Glacier Spring Water Co., Ltd	9000 Years Glacier Mineral Water 	<ul style="list-style-type: none"> Invested 30 million RMB in 2006 for the first phase of development * Its water source is the oldest glacier in the world, i.e. 9610 years of age.

Nyainqêntanglha Range, Tibet		
<p>The water source that the company, Tibet 5100 Water Resources Holdings Ltd., extracts is located at an altitude of 5100m of the Tibet Nyainqêntanglha Mountain, which is pure and unpolluted.</p> <p>Remarks: The water-mining area is a semi-arid plateau, with an annual precipitation of 481mm. The land is known as semi-dry grassland, the glacier, thus, is very important to the survival of local residents and the environment. The spring water is interconnected to the origin of the Nujiang River and Brahmaputra, which are the main rivers of Myanmar, India and Bengal. This means that tensions between nations may develop if the water supply is affected.</p>		
Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Tibet 5100 Water Resources Holdings Ltd.	5100 Tibet Spring Mineral Water 	<ul style="list-style-type: none"> • Accounts for 28.5% share of the high-rank mineral water market; the first in the ranking. • Government approval for a maximum of 500 thousand tons of water extracted annually. • Significant increase in profit from 11.9 million RMB in 2008 to 115 million RMB in 2010. • Raised 2.3 billion HK dollars from Initial Public Offering (IPO) in 2011 • Invested 1.4 million RMB to gain the right of land use for 50 years; 500 thousand RMB for glacier-mining, and 57 thousand RMB user fee from 2006 to 2015
Qingdao Province		
<p>One of the three major groundwater flow systems in the world. Produced the first bottle of mineral water in China in 1930.</p>		
Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Qingdao Laoshan Mineral Water Company Limited	Laoshan Mineral Water 	<ul style="list-style-type: none"> • Own 20 thousand square meters production base with an annual production capacity of 100 thousand tons mineral water • One of the famous brands in the high-rank bottled water market in China; products are also exported to other countries such as Southeast Asian countries, the United States, Japan, Hong Kong, and Panama.



Bama, Guangxi Province		
<ul style="list-style-type: none"> • <i>One of the best water sources in the world.</i> • <i>Identified by the United Nations as one of the five long-life villages in the world. The good water quality is regarded as the main factor for good health.</i> 		
Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Uni-President China Holdings Ltd.	Uni-President Mineral Water 	<ul style="list-style-type: none"> • Invested 30 million RMB to buy the Bama water plant and improve its production capacity. • Daily water output in 2010: 350-400 tons • Annual water output in 2010: 146000 tons
Guangxi BAMA Lifelong Soft-Drink Co., Ltd.	BAMA Lifelong 	<ul style="list-style-type: none"> • Investments: 60 million RMB. • The forefront bottled water manufacturer in Guangxi in term of the scale of area occupied.
Yunnan province		
<p>Remarks: There are not many mineral or spring water companies based in Yunnan; however, there is one company, Yunnan Dashan Drinks, which covers more than 95% of the sales networks in Yunnan and over half of the market share in Kunming, the capital city of Yunnan province. The company was purchased by Nestle in 2010.</p>		
Companies	Product Name	Water Extraction Capacity, Production Capacity, Sales and others
Yunnan Dashan Drinks Co. Ltd.	Yunnan Shanquan Mineral Water 	<ul style="list-style-type: none"> • Produce 1 million tons of mineral water annually. • Invested a total of 130 million RMB in two production bases in Yunnan: Chenggong and Yimen.
<p>Annual total withdrawal amount of springs and mineral water in Yunnan: 9 million tons* Total Investment: 5,527,000,000 RMB = 5.5 billion RMB = 614million Euro*</p> <p>* Only the figures provided by the companies have been counted, some companies may not release the data or just disclose partial data for promotion purposes. Also, we only included the main water sources and major brands. So we can reasonably estimate that the actual water withdrawal and investment amount should be more than the figures we present here.</p>		

The above table shows how the mineral water sources are being intensively extracted by large bottled water companies. They have been trying to enlarge their control over the water resource through buying other bottled water companies or by building new factories to occupy new water resources. This also shows that the governments are more concerned about their short term monetary benefits from the selling of the water-mining licenses than protecting precious water. We can expect that the figures for the water being extracted and the companies' investment amount will keep increasing in the coming years.

III. The large bottled water brands and their water-mining bases







The following table, Table 5, presents the large mineral and spring water companies in China, and their major water-mining bases, amount of water withdrawn and their investment. This table aims to give readers a better picture about the water-mining activities and the ambition of each company.

Table 5: Large mineral water brands; their water sources and water extracting activities

Brands	Water sources	Amount of water withdrawn	Investment
1. Ganten 	1. Baisui Mountain, Huizhou 2. Ao Feng Mountain, Guangzhou 3. Tianlu Lake, Guangzhou 4. New plant in Xiamen City, Fujian Province 5. New plant in Rudong County, Jiangsu Province	Sold 660 thousand tons of mineral water in 2010, with an annual increase rate of 30%	500 million RMB in Shenzhen; 300 million RMB in Jiangsu provinces in plant construction.
2. Bluesword Ice Age Mineral Water 	Shifang City, Sichuan. It is a basin between Longmen Mountains and Longquan Mountains	Sold 440.75 thousand tons of mineral water in 2007, with a production capacity of 200 million tons	500 million RMB in 2011

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Brands	Water sources	Amount of water withdrawn	Investment
3. Danone Yili 	Four water sources in Guangdong Province, include Jiaquan, Longmen County and Huizhou City	Produced 416 thousand tons of mineral water in 2007; the production capacity is expected to increase to 500 thousand tons in 2015	508 million RMB to construct the greatest natural mineral water production base in Asia
4. 5100 Tibet Spring 	Spring water at an altitude of 5100m in Tibet Nyainqêntanglha Mountain	Produced 60 thousand tons mineral water; it is the no. 1 high-rank mineral water in China; with a market share of 28%	Invest 500 million RMB to construct production bases
5. Qingdao Laoshan 	Laoshan, Qingdao. One of the three major groundwater flowing systems in the world.	Annual production capacity: 100 thousand tons water	
6. Dashan Yunnan Shanquan 	Two bases in Yunnan: Guyue Spring, Chenggong County in Kunming City; Yimen, Yuxi County.	Produce 1 million tons of mineral water annually	130 million RMB
7. Nestlé Deep Spring* 	Ji County, Tianjin City		
8. Hua Shan Quan* 	Heshan City, Guangdong	Production capacity: 800 thousand tons	150 million RMB to build the production plant
9. Kunlun Mountains natural mineral water 	Melted ice water from the 6000m high Yuzhu Peak, Kunlun Mountains, Qinghai Province		Invested 300 million RMB to construct a production plant

Brands	Water sources	Amount of water withdrawn	Investment
10. Nongfu Spring* 	Only set up plants at the first class national protection zones: 1. Thousand-Island Lake, Zhejiang Province 2. Manas County, Xinjiang Uyghur Autonomous Region 3. Jingyu Country, Baekdu Mountain, Jilin Province 4. Danjiangkou City, Hubei Province, at the middle point of the South-North Water Transfer Project 5. Wanlu Lake, Heyuan City, Guangdong Province	Produce 300 thousand tons mineral water annually in Baekdu Mountain; the total production capacity for the company is 700 thousand to 800 thousand tons per year	477 million RMB to construct a production base in Baekdu Mountain 1 billion RMB to construct a production base in Heyuan City in 2004 (Some reported it is 300 million RMB instead)
11. Cestbon Mineral water 	Zhuhai City, Guangdong Province	Estimated a turnover of 1.8 million tons in 2009	
12. ROBUTS 	Guangzhou Maofengshan forest park, Guangdong province	The largest scale carboy water production base in 2006	
13. Tingyi Natural Mineral Water* 	Jingyu Country (“The City of Mineral Water”), Baekdu Mountain, Jilin Province		500 million RMB to set up production base
14. DingHu Spring* 	Dinghu Mountain, Zhaoqing City, Guangdong Province	Produce 1.5 million bottles of spring water daily	100 million RMB to set up production base
15. Hugese Spring Water* 	Huangguoshu Waterfall, a 5As National Tourist Attraction, in Guizhou province	It’s expected to produce 800 thousand tons of spring water each year after expansion.	Invested 130 million RMB in 2010, to expand the existing plant
*They are not mineral water products although the water sources are natural water as well and mainly come from surface water or lakes. However, the content of mineral substances does not meet the standard for mineral water, so it is called “spring water or natural water.” (See Chapter 4 for details)			

The above table shows that the bottled water companies are very ambitious in making money from mineral water resources. Sadly the negative impacts caused by intensive water-mining are often ignored. The local governments, which are supposed to protect mineral water resources, are driven by the incentive of income from taxes and fees from the bottled water companies to sell more mineral waters to the latter instead. Local governments tend to defend this by saying that the operation of bottled water factories creates employment opportunities. However, our investigation shows that local residents started to realize the negative impacts of water-mining after the water factories had been in operation for a few years. The most visible impact is the water supply shortage, which threatens farming activities and seriously affects farmers' daily lives. Unfortunately there is no channel for them to express their concerns and it's very likely that their voices will not be heard at all. In addition, the water being intensively extracted won't be replaced easily. Our water resource is drying out silently, together with people's right of access to fresh water, as the cases in the following section illustrate.

Part Three: The Consequences of Water-mining

I. Case study: Dali, Kunming & Henan

When we were searching for literature about bottled water, we noticed that although there are many reports about the damages caused by the bottled water companies in different countries, there is no such information about China. Therefore we visited three large bottled water companies in China, tried to talk to the staff and local residents, in order to collect first-hand information about the negative impacts of water-mining on the neighbourhood.

Case One – Wahaha factory in Dali, Yunnan

Dali, a city in Yunnan province which is located at southwest China, holds the seventh biggest freshwater lake in China, Erhai Lake. It is also the second largest freshwater lake and is a major water resource in Yunnan. The water of Erhai comes from seventeen streams which flow down from the city's hills and has accumulated for more than hundred years. Unfortunately, in recent years, due to uneven rainfall and the building of bottled water and beer factories, the water flow has greatly reduced.

The hills, streams and Erhai are very important to Dali, not only because they are a tourist attraction that yields considerable income for the government and local residents; but also because the residents' major daily drinking water comes from the streams. There is public water supply system, i.e. tap water, for most of the city dwellers. However, they believe the spring water that flows down from the hills is much more natural and has a better quality than tap water, city dwellers thus hike out to the hills with friends to fetch water almost every day. They have expressed their concerns about the gradual reduced water supply.

Wahaha is one of the major bottled water factories that are based there. It is located at the middle of one hill inside the National Geological Park. It mainly produces purified bottled water and dairy beverages. Because of the unique water source, the company often uses it as the selling point to attract consumers. We have talked to the residents who live downstream. They told us that they have been drinking and using the river water since their ancestors settled here and they previously never needed to worry about the supply and quality of the water. The river passing their village not only provides daily household water for them but is also used for irrigation.

However, according to the interviewees, the water has become polluted and the amount of water has significantly decreased since 10 years ago when Wahaha set up their factory upstream. Although the pollution problem has been largely improved after the company built a new waste treatment plant, the water is allegedly unsuitable for drinking and can only be used for washing and irrigation. Currently, their drinking water comes from other hills through extra connections. Still, as a result of the declining water level, residents have had to change to growing crops which consume less water and their income has been largely affected by this.

THE DRINKING WATER PROBLEMS IN CHINA – WHY BOTTLED WATER IS NOT THE SOLUTION



The mountains are the main tourist attractions of Dali, which play an important role in sustaining the water supply for Erhai.



The water resource here is known to be pure and unpolluted. However, because of climate change and other reasons, the amount of water is gradually decreasing.



The advertisement of Wahaha bottled water invites consumers to visit their water source.



Local residents like to hike out to the mountain to fetch water for its good quality. Because of the crowds, the government, thus, built a connecting pool here for the convenience of residents.



Wahaha bottled water factory, located in the middle of a mountain. Its water-mining activity has led to complaints from local residents living downstream.

THE DRINKING WATER PROBLEMS IN CHINA – WHY BOTTLED WATER IS NOT THE SOLUTION



The front door of the factory. We were refused entry to see the water source



*The stream next to the factory.
This stream passes through the village and used to be the main water resource for the residents. Now the farmers keep the water mainly for irrigation.*



Some parts of the stream inside the village have already dried out.



The villagers said that they have this stream interconnected to every house. For the past hundred years they have used the water for daily drinking, cooking and cleaning etc. But after the bottled water companies set up their factories upstream, the villagers' water became polluted and the amount reduced. Now they only use it for washing.



Due to the decreasing water supply, farmers have changed from growing high water consumption crops, such as rice, to low water consumption crops. According to our observation, apart from this small paddy field, the rest of the farmlands are all growing corn. The villagers said that their income has been significantly affected.

Globalization Monitor had approached Wahaha through email to request the company to respond to local's residents' complaints, but failed to get a reply.

Case Two: Yunnan Shanquan factory in Kunming, Yunnan

The water company Yunnan Shanquan was founded in Kunming in 2002 and has since become the leading brand in the packaged beverage market in Yunnan province. It mainly produces purified and spring bottled water and carboy water. It has obtained more than 95% market share in Yunnan. The company is also distributing its products in the neighbouring provinces and countries and has become one of the Top Ten in China in terms of turnover volume. In 2010, Nestle became the major shareholder of Yunnan Shanquan, acquiring 70% of its shares.

In order to control the water resource, Yunnan Shanquan has applied for a license from the government to build a third-grade groundwater protection zone. People are prohibited from entering a large part of the area, with barbed wire, in the name of water conservation. In other words, apart from the company, no one can use the water. Kunming has undergone serious

drought for three consecutive years since 2009 but still the company has not slowed down its water-mining activity.

We pretended to be the consumers of Yunnan Shanquan and showed our interest in learning about its production procedures. We were arranged a visit to the factory but our request to visit the water source was denied. When we asked if the production of Yunnan Shanquan had been affected by the drought that the city has been experiencing, the staff reassured us that it will not be affected by the drought and that as long as there is still groundwater, they would ensure a stable supply of this good water. The staff even explained to us that the groundwater supply is unlimited. With this kind of mentality one may suspect if the company has the intention of protecting the water resource in the first place. In addition to this is that the company has removed the right of accessing water from the local people in the name of “protecting consumers’ right.”

The local residents we interviewed expressed strong negative feelings about the factory. The building of the factory not only denies their access to the lake, but also the river that they used to use for irrigation has allegedly dried out due to the water-mining activities. The water level of wells has dropped from six meters to 17 meters in recent years. The farmers have had to switch to growing simple crops like vegetables and can only rely on the unstable rainfall for irrigation. They are extremely worried about their livelihoods but nobody approaches them or shows any concern.



Yunnan Shanquan has built itself a friendly image and it does not arrange any guards at the main door. There are not usually any visitors anyway because the factory is located in a remote area.

THE DRINKING WATER PROBLEMS IN CHINA – WHY BOTTLED WATER IS NOT THE SOLUTION



The water treatment process is fully mechanized, only the last few steps are operated manually, such as packaging.



The manager of the factory said that they have gained extra support and benefits from the local government, especially after Yunnan Shanquan was purchased by Nestle in 2010.



The factory is located next to the water source which is surrounded by farmlands.



The bush on the right-hand side used to be a river that passes the farmlands but it has dried up.

THE DRINKING WATER PROBLEMS IN CHINA – WHY BOTTLED WATER IS NOT THE SOLUTION



The farmer explained that although they used to be self-sustainable, the land has dried up now. Due to inadequate and unstable supply of rainwater, they have given up growing rice and grow vegetables instead, which they use to exchange for rice on the free market.



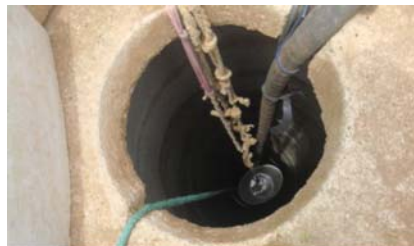
The farmers are angry about the water-mining activities. They said, 'We had a lake and rivers before, now they are all gone! We can only pray for rain to sustain our life.'



It is almost impossible to find water along the farmlands.



Except for some small-scale rainfall collection points, wells are the only source of water for the village. Still, its water level has dropped from 6 meters to 17 meters. The villagers need to pay for the new wells that can reach the deeper underground water.



Globalization Monitor had approached Yuanna Shanquan through email to request the company to respond to local's residents' complaints, but failed to get a reply.

Case Three: Robust factory in Henan

Robust food beverage is owned by the second largest bottled water company in the world, Danone. Its factory in Henan produces different kinds of soft drinks but mainly bottled water. The factory is located in an



industrial area. What surprises us is that the impacts of water-mining on water resource seem more serious in developed areas than in remote areas.

With the development of the economy, most farmlands have changed into industrial and residential areas. Tap water has replaced well water as the source of household water and thus it is difficult for residents to become aware about the water crisis caused by water-mining. Furthermore, we noticed that most of the current residents are migrant workers. They do not regard this place as their home but only a temporary residency and hence are not concerned much about local environmental issues. Still, they told us that one of Robust's buildings had caved in by about one meter. They believed that this was because of the over-mining of ground water. However, it was not followed-up after the building stabilized.

We found a village which is still using underground water. The villagers said the groundwater level was quite low before Robust set up the factory

there. The well they were extracting water from was about 70 meters deep. However, ten years after the building of the bottled water factory, allegedly they could not manage to extract water any more. In other words, the underground water is decreasing rapidly. They have no idea how low the water level is now; they only know that the new well that the village had dug is taking water from a depth of 280 meters underground. Although the villagers are concerned about the water crisis, they are not as concerned as the villagers we met in the other two cases. This is perhaps because they gave up farming a long time ago. Most of them are working in nearby factories now and they believe that they can have access to tap water soon.



The neighbourhood of the bottled water factory.
The place has been developed into an industrial area and most of the residents are using tap water. Perhaps this is why they do not show much concern about the shortage of groundwater.

THE DRINKING WATER PROBLEMS IN CHINA – WHY BOTTLED WATER IS NOT THE SOLUTION



One of a few villages that have not been urbanized and still uses well water. The villagers claimed that there was a dramatic decrease in underground water after the building of the Robust factory.



The villagers have been using this old well since the 1970s. It was dried out in 2010, ten years after the building of the bottled water factory.



In the middle of 2011, a new well was installed by the local government. We were told by local residents that because of the decline of the water level, the new well has to pump water from a depth of 280 metres under the ground.



The lands surrounding the village.

Most of the farmlands have been redeveloped for industrial and residential purposes.

Globalization Monitor had approached Robust through email to request the company to respond to local's residents' complaints, but failed to get a reply.

Summary

A common theme of the complains of the local residents we interviewed was the significant decline of surface water and underground water in the neighbourhoods of bottled water factories. Farming activities are allegedly affected as well and, along with this, the living of farmers. However, allegedly neither the bottled water companies nor the local governments have approached them or provided any compensation.

The further rapid development of the bottled water market reinforces the water crisis if no action is taken in the near future. Water is a public resource. It is the government's responsibility to protect and monitor the usage of water. Hence, understanding the roles of the government and the laws in protecting natural resources is important for further discussion of this issue.

II. The role of government in protecting water resources

'It is in our hands and depends largely on how domestic laws manage and protect our freshwater resources in the era of global water markets.'

----- *Water Law Review, University of Denver*

Many international reports have warned about the negative impacts of bottled water on the environment. We have to protect the water resource and the environment that it sustains, before it is too late. We have to stop the over-mining and commoditization of water by the water companies. Since the government is in charge of the management and protection of water resources, it should be responsible for addressing how and how much the water can be used, preventing the water from being used for making a profit, as well as seeking consensus about the use of water in the society. The water law in every country varies but it is usually less strict in developing countries than in developed countries.

Intensive water-mining activities by the bottled water companies have led to disputes in many countries, including social movements and lawsuits, which have forced some governments to formulate regulations to restrict the selling of water resources. In China, however, it seems the legislation reforms, rather than halting the commoditization of water, have instead legitimized such behaviour. The tax levied on the water business is simply one of the examples; one can make large amounts of money out of water as long as one pays the tax, with little regards to the need to preserve fresh water resources. There is still a long way to go to stop the privatization of water through legal reform.

In this section, we will examine the relevant regulations and legal system in China to understand the role of governments in protecting water resources, especially in preventing the over-mining of water by the bottled water companies.

Legislations in protecting fresh water

Regarding groundwater extraction, there are two relevant regulations which are issued by the National People's Congress, "Water Law of the People's Republic of China" and "Mineral Resources Law of the People's Republic of China." According to these two laws, water and mineral resources are the properties of the nation. The use of these resources needs to comply with the law. The implementations of these two laws are further illustrated in the "Regulation on the Administration of the License for Water Drawing and the Levy of Water Resource Fees" and "Measures on the Administration of the Collection of Mineral Resource Compensation Charges." These two regulations suggest the measures for managing resources, with the purposes of water protection, conservation, and development carried out in a reasonable manner. As stated by these two regulations, bottled water companies have to apply for licenses for extracting water and mineral resources; as well as paying tax according to the extracted volume. The companies that produce mineral bottled water need to pay 'mineral resource compensation charges' in addition to water resource fees. However, these regulations only serve as guidance. The provincial governments reserve the right to draw their specific water laws according to their provincial context. Therefore there is a difference between the strictness of water laws in different provinces.

To put it simply, the water-mining activities of the bottled water companies are subjected to two restrictions, administrative and financial. Administrative restriction refers to the procedure for getting the water-mining license (together with mineral resource-mining license for the companies producing bottled mineral water). Financial restriction means the regular tax that the companies pay to the local governments as a compensation for extracting water and mineral resources.

In practice, because of the over-emphasis on economic development, local governments tend to make the procedure involved in applying for licenses simple for the water companies. Regarding the financial restriction, although the resources compensation tax is one of the main costs for the beverage companies, it is quite easily covered by the profits they make and thus is not really a measure that deters the over-mining of water. On the contrary, the tax rather becomes a

supporting legal measure for water-mining and selling activities.

Limitations of the legislation system in protecting water resources

Lack of clear guidance and inadequate restrictions for the provincial governments

The central government has provided the legal guidance in managing and protecting water resources but it does not strictly monitor the provincial governments in formulating and implementing water laws. Instead, provincial governments are given extent lot of freedom concerning the timeline and content of the legislation. This consequently leads to great diversity between different provinces and it is thus difficult to ensure the efficacy of legislation for protecting water and mineral resources.

For instance, it is supposed that the companies should pay a mineral compensation tax to the central or local governments for extracting mineral water. However, the tax rate is different in different province. While some provinces impose a sum of tax for compensating the mining of mineral resources on top of the usage of water, some provinces only collect the tax for using water resources. In Guangdong, the government asks for 1.2% of the companies' revenue as a water resources fee. In Beijing, the government gathers 40 RMB per ton of mineral water as a compensation charge. The amount of taxation directly affects the companies' production costs. It also means that the provinces that levy less water tax will attract more bottled water companies.

Furthermore, some provinces have not levied a comprehensive taxation system on water-mining activities. For example, in Hainan, the bottled mineral water companies do not need to pay any compensation charge for the usage of mineral resource, they are only obligated to pay a sum water resource fee which is similar to the fee for using tap water. Hainan's example, i.e. no tax on the mining of mineral resource, reflects that the government does not realize the consequences and threats brought by intensive water-mining. The provincial government of Hainan only amended the loopholes in the law in 2011. This shows that the central government should reinforce its monitoring measures regarding the implementation of national water laws, in addition to providing legal guidance.

Low threshold for setting up bottled water business

Almost anyone can set up a bottled water business nowadays as long as one gets capital. This looks like a good thing because it prevents monopoly.

However, it is a disaster from the point of protecting water resources as it means water resources can be easily controlled and sold for profit by anyone who has the capital.

If one wants to set up a bottled water factory, he/she needs to apply for and gain approval from the Industry Bureau, Food and Drugs Bureau, Hygiene Bureau, and Land and Resource Bureau. The applicant needs to hand in an evaluation report about the potential impacts on the environment and neighborhood that may be caused by the production of bottled water. The applicant needs to provide an agreement signed by third parties, including local residents if the water-mining activities will affect their interests. This procedure aims to protect the third parties' interest. Ironically, all of the local water users whom we talked to state that they know nothing about this regulation and nobody has ever approached them about their opinions. The local governments also refuse to disclose the evaluation reports to the public. It is obvious that the interests of the public and even the national policies are ignored by the companies and local governments under the temptation of economic benefits.

We interviewed a former bottled water business owner. He told us that government officers do not strictly examine the documents. "I don't think the application procedure was complicated. On the contrary, the process could be sped up if you know the related officers. Even if you know nobody, you only need to spend some money and time, there's usually no problem then. At least I had never heard of a failed case." When this owner spoke about spending some money, this implicitly implies bribing the officials. In a country where independent media and freedom of speech is absent, corruption is rampant.

Water protection zone: "water protection" or "water selling"?

"Water protection zone" means a specific area where household and industrial activities are strictly constrained by the government, in the name of protecting the precious and valuable water resources. Special measures should be implemented to protect the water quality and ensure that it complies with the standards. Because of the name 'protection zone' and the good water quality, large bottled water companies are usually willing to invest considerable sums of money in occupying its water resources. This helps the companies to build up an image of being 'healthy and pure' and become a high-end product which can be sold at a higher price than other types of bottled water. This also means that the local governments can benefit from

good quality water resources through private investments and taxation.

In order to attract investments and ensure a stable supply of good quality water, the governments generally implement special measures to protect these water resources from being polluted. As a result, many protection zones have been set up around springs and mineral water resources. Take Jilin and Sichuan as examples, attracting investments through the building of protection zones is their first priority in encouraging the development of the bottled water industry in recent years. And this strategy has been proved ‘successful’ as Jilin and Sichuan have become the two largest mineral water production provinces in China. Indeed, most of the large mineral bottled water factories are built in the protection zones. For example, all the plants of Nongfu Spring Mineral Water are built in the first class national protection zones and extract more than 300 thousand tons of water annually from one of their water sources, Baekdu Mountain. In order to make the production process more effective, the company has enveloped the mouths of three springs to speed up the flow of water into their water collection pipe. This example demonstrates that the protection zones serve the purpose of sustaining the bottled water business rather than protecting water resources.

From the point of view of consumers, this looks like good news as it proves that some bottled water is produced from good quality raw materials. However, it should be noted that the water source is not the only factor that affects the quality of bottled water; packaging and storage also play decisive roles. Moreover, the water resources will be polluted in the process of bottled water production. It is also a controversial issue about whether the water in the protection zones can be intensively extracted without harming it. Unfortunately, the water resources have already become occupied by the bottled water companies before we can even debate this topic. Thirdly, mineral water has now become a commodity, which only people who have money can afford. For local residents this also means that their common goods which they had enjoyed for centuries are now being monopolized by business.

Tax income, a reason for selling water

‘We heard that Wahaha Company pays more than 10 million to the local government for tax each year. So nobody will care how much our lives are affected by the water-mining activities. The company doesn’t bother to talk about compensation either.’ A villager who lives next to the Wahaha factory in Dali told us.

Indeed, the building of bottled water factories generates considerable amount of tax income for the local governments. For examples, the Dinghu Mountain

Spring Water recorded a sum of sales revenue of more than 100 million RMB in 2008 and paid 10 million RMB tax to the local government. In Boluo, a subordinated county of Huizhou which is one of the largest mineral water production locations in Guangdong, the local government's tax income increased from 560 million in 2006 to 1.2 billion in 2008, after Ganten built their largest production base there.

The regulation of a compensation charge aims to protect the water resources but there is a lack of a monitoring system on how this sum of revenue should be used. As a result, we barely know if it is used in protecting water resources effectively. The disclosure of information is very important for monitoring as we know that the purpose of the bottled water companies is maximizing profit but not water protection. There is a danger that the companies will use up all the water if the governments do not strictly constrain the amount of water being extracted.

Ambiguous relationship between governments and bottled water companies

China's model is considered by some as a kind of state capitalism, characterised by substantial government intervention and control. The government is also an active investor or competitor in many different industries. The bottled water business is a fast-growing industry with great profit-making potential; it is not difficult to find examples with active government participation.

Take Heilongjiang province as an example. Wudalianchi, one of the three largest cold mineral springs in the world is located in Heilongjiang. The provincial government knew the 'value' of its precious water resource and started to develop it in the 1970s. Since then, several administrative departments have been involved in the exploitation, evaluation, setting up of water protection zones and then using their administrative power to control the water flow and consequently setting up a government-run bottled water company, which reserves the absolute power in controlling the use of water. Other bottled water companies have to obtain a water coupon from the company or its partners for using the water in Wudalianchi. In the last few decades, Wudalianchi has attracted four foreign companies and the government have requested for millions to billions of investment from each partner. However, it should be noted that Heilongjiang is one of the major provinces facing serious water pollution. More than 80% of the surface water is classified as undrinkable. Everyone in Heilongjiang knows how important fresh clean water is to them.

Chapter 3

Is Bottled Water Safe?

- The Regulation of the Quality of Bottled Water

Our survey and interviews show that many consumers generally believe that the quality of bottled water is better and more reliable than tap water. Some consumers even use bottled water as a replacement for tap water for daily drinking. Large corporations try to convince people that their product is a safe alternative with their huge investments, advanced production processes and scientific management. This is just a misleading message unfortunately. Some reports show that bottled water is not actually of a better quality than tap water and is sometimes actually of a poorer quality. In addition, because of the constraints of its production process, packaging and transportation, bottled water in fact cannot replace tap water.

Common consumers are not equipped with the necessary knowledge to tell whether the bottled water they are drinking is safe from chemicals and bacteria/colonies or not. Many consumers simply trust the advertisements that the quality of the water is safe. One of our interviewees said, “I think there must already be enough regulations to control the quality of bottled water, as bottled water has been selling on the market for more than twenty years...” However, none of these interviewees could provide concrete information to support their claims. In this section, we will discuss the current regulations concerning the quality control of bottled water to find out whether bottle water is safe, or safer than tap water.

I. Different types of bottled water and their regulations

The quality of bottled water is monitored by different administrative departments in China: the Ministry of Land and Resources, the Public Health Bureau, the Bureau of Quality and Technical Supervision, the Administration for Industry and Commerce and the Consumers’ Commission. Each of these departments has the right to test the quality of water and determine whether the bottled water meets the national standard for bottled water. Not every type of bottled waters has its own standards however.

Table 6: Four major types of bottled water and their safety regulations	
Mineral Water	<p>Definition: Water comes from unpolluted underground water sources by natural emission or hand-dug. It contains a certain amount of mineral salts, trace elements or carbon dioxide gas. Under normal circumstances, its chemical composition, flow rate, water temperature dynamic are stable within a range of natural fluctuations.</p> <p>National standards: Drinking Natural Mineral Water, GB8537-2008</p>
Purified Water	<p>Definition: Using water that meets the standards of drinking water quality (i.e. the same standard for tap water) as the main source, and undergoes with appropriate processing methods to remove the substances until there not any additives.</p> <p>National standards: Bottled Purified Water for Drinking, GB17323-1998</p>
Mineral-added Water	<p>Definition: Using water that meets the standards for drinking water quality (i.e. the same standard for tap water) as the main source, and adding extra minerals.</p> <p>National standards: NA</p> <p>Remarks: There is no national standard for this type of bottled water. The mineral salt additives have not yet been approved by the Administration of Health to be included as food additives. Furthermore, the added minerals have no marked health benefits so far. The French Senate even advises people who drink bottled mineral water to change brands frequently because the added minerals are helpful in small amounts but may be dangerous in high dosages¹⁰. In fact, mineral-added water is classified as an illegal beverage in some countries.</p>
Spring Water	<p>Definition: Water comes from unpolluted natural ground and/or surface water and has not yet been treated by public water utility. Water from different springs can be sold under the same brand name.</p> <p>National standards: NA. Based on the same standards as purified water.</p> <p>Remarks: It is impossible for raw water of this type of bottled water to meet the high standards of underground mineral water. But, because consumers in general think that mineral water and spring water are the same, many companies name their products “spring water” to save production costs.</p>
Information comes from the “General Standard for Beverage” GB10789-2007	

¹⁰ Bottled-water-drains-natural-resources

<http://www.watershedsentinel.ca/content/bottled-water-drains-natural-resources>

II. Limitations of the monitoring mechanism

Table 6 shows that mineral water and purified water are the only types of bottled water that is regulated by specific national standards. The rest rely on the self-monitoring system of the companies and so it is difficult to judge the quality and safety of the water. For tap water, however, there is a clear national standard and comprehensive monitoring mechanism. The World Health Organization even issues an international drinking water standard for all the countries as a reference. But there is not yet any international standard for the safety of drinking bottled water. In other words, the regulations for bottled water in China, just like other countries, are actually more lenient than the regulations for the quality of tap water.

Furthermore, apart from the categories of mineral water and spring water, all other types of bottled water can use tap water as raw material. Actually, because of the heavy cost of transportation and water resource fee, most of the bottled water uses tap water for bottling. However, there is no study about the impacts of the extra treatments or chemicals added by the companies on our health. In particular, the mineral-added water already raises concerns about the impact of the mineral additives on human health in developed countries.

People tend to be more confident in imported bottled water than local brands. However, there is barely any difference between them, in terms of the quality of the water. The international companies and local brands follow the same regulations of the local markets. The international companies do not necessarily apply as strict quality controls as they practise in other countries whose regulations are stricter. For instance, between 2006 and 2011, the largest international high-ranked brand, Evian, was tested and found to be an unqualified product four times by the General Administration of Quality Supervision, Inspection and Quarantine of China. The numbers of colonies and bromates it contained exceeded the national standards. A total of 230 tons of Evian mineral bottled water was destroyed or sent back to the exporting country.¹¹

Insufficient information disclosure

Apart from avoiding the governments' monitoring system, bottled water companies are trying to avoid public monitoring as well. The bottled water companies often promote their products as pure and healthy but seldom disclose related information to the public, such as water sources,

treatment methods and test results. The bottled water companies even fail to disclose some information that is required by the law that should be released to the public. For example, the new standard issued in 2009, Drinking Natural Mineral Water, requires the water companies to disclose the amount of carcinogen and bromate that the product contains on the label. Still, not all companies follow the regulation.

Informal power – The manipulation of regulations by the corporations

The General Standard for Beverages (GB10789-1996) which was issued in 1996 banned all kinds of mineral additives from water, although the mineral-added bottled water was still being sold on the market. However, in the new version of the General Standard for Beverage which was revised in 2008, the companies are allowed to add minerals to bottled water. Before the implementation of the new standard, mineral-added bottled water had become the second largest category of bottled water, accounting for 28% of the total consumption of bottled water in 2008. One insider explained, “It’s because the mineral-added water is popular in the market now, so the government needs to cater to the trend and revise the regulations.” Another insider told the journalist, “The enactment of the national standards of beverage is actually led by the Beverage Industry Association. And who are the members? They are all the representatives of large bottled water companies. So the enactment of regulations actually represents the interest of these big corporations.”¹²

The regulations are supposed to protect the interests of consumers but this example shows that the governments’ decision making processes are influenced by the bottled water companies, so that the policies are conducive to the development of the water companies.

11, French Evian fails quality test

http://www.china.org.cn/business/2012-06/04/content_25556397.htm

12, Duoxiang shipin guoji biaozhun chongxin xiuding, zao qiye bangjia de zhiyisheng buduan

(Multiple Food Standards are under revision, Doubts are raised if they have been hijacked by corporations). <http://finance.sina.com.cn/chanjing/yjsy/20111201/080510914279.shtml>

The loopholes in the quality test

Before the break out of the milk powder scandal in 2008, China was running an exempt-from-inspection system, meaning that eligible products were free from any inspection and quality tests for three years. However, the milk-powder scandal reveals that there were serious quality problems for those products and so the measure has been eliminated. The system showed that the government had been largely relying on the self-regulation of the corporations and such practice was uncommon in other countries. Nowadays, even though the governments have re-activated the inspection system, it is a common practice for the companies to receive notice of the inspection in advance, or that the government officials set a routine date of inspection, which makes the test results look doubtful as the companies can 'prepare' for the inspection.

In summary, bottled water is actually less regulated and monitored by the government than tap water and thus the quality of water cannot be guaranteed. Bottled water should be only used in emergencies and should not be used as a replacement for tap water for daily drinking.

Chapter 4

The Threat to the Human Right of Access to Clean Water

“In a world where everything is being privatized, citizens must establish clear perimeters around those areas that are sacred to life or necessary for social and economic justice. Equal access to water is absolutely central to both life and justice.”

----- Maude Barlow

Without oil, we may encounter many inconveniences in daily life but we survive. No one can survive without water, however. The lack of water security thus puts everyone’s life at risk and the bottled water business only adds to the deterioration of the situation.

I. Providing clean water: welfare or commodity?

In most of the countries there is a growing awareness that water should be treated as a public good rather than a commodity. In China, the 1949 revolution established a collectivist regime which made the government responsible for the investment, construction and operation of public utilities to deliver clean water to the public as a form of social welfare. This meant that water either cost little or was free of charge. With globalization and capitalist domination since the 1990s, however, this concept has been challenged and China has been undergoing reforms to privatize the urban water sectors in the last decades. Tap water quality has since been deteriorating because of the pollution of water resources; a result of rapid industrialization. Instead of seriously treating pollution to save our fresh water resources the government simply endorsed the water business’s agenda in tempting people into buying bottled water as their daily drinking water. What is more frustrating is that some water supply companies have even developed bottled water businesses while they are providing tap water to the public.

In July 2010, The General Assembly of the United Nations (UN) declared that “safe and clean drinking water and sanitation is a human right essential to the full enjoyment of life and all other human rights”. This is based on a view that water is a public good and human right that should not be commodified and sold for profit.

In our survey, we found that almost 90% of interviewees thought that water is a public resource which should be accessible to everyone. Around 70% of the interviewees also disagreed with the practise of treating water as a commodity to be sold for profit. However, the bottled water business continues its practise of making money from water at the expense of fresh water resources and people. There is still a long way to go to protect peoples' right to access affordable clean water.

In order to build their bottled water kingdom around the world, bottled water companies are taking over the fresh water resources. Large bottled water companies, such as Nestle and Danone, have already been significantly involved in the bottled water business in China and other countries. If they succeed, only those people who can afford the high price of bottled water can enjoy access to allegedly better water resources.

II. The abuse of bottled water reduces the incentives of improving public water supply services

To regain the people's confidence over tap water, the government is required to practise as much transparency as it can. Unfortunately, in China the transparency of government services is always low. 60% of our interviewees think that there is not enough transparency regarding public water services (Table 7).

Table 7: Do you think there is enough transparency in public water services?

	Total	Beijing	Shanghai	Kunming	Guangzhou	Dongguan	Shenzhen
Yes	19%	13%	37%	41%	3%	8%	10%
No	60%	48%	33%	45%	60%	75%	63%
No comments	21%	39%	30%	14%	37%	17%	27%

Once people lose confidence in tap water, bottled water then becomes an option for them. Apart from the extra financial burden placed on people, there is a long-term consequence. Considering that one day most people might mainly use bottled water for drinking, and only a small group will use tap water for drinking and cooking, it would not be necessary or economically efficient for the tap water supply sector to provide high quality drinking water any more. Their incentives to improve the water will disappear. As a result, the general public, especially the poor, will suffer as bottled water is an unaffordable item to them. They will only be able to drink the low quality tap water, which is not safe to drink at all.

III. The people want the government to take over the responsibility for providing clean water

According to our survey, half of the interviewees do not use tap water as daily drinking water. This is not what they prefer however. 70% of interviewees (Table 8) think that the government is the most appropriate institution to secure people's access to clean water, 79% of interviewees think that water should be provided as welfare. And as mentioned previously, 74% of carboy water consumers say that they will buy less carboy water if the safety of tap water is improved. It shows people's demand for clean and affordable water as welfare.

Table 8: People's thoughts on tap water services

	Total	Beijing	Shanghai	Kunming	Guangzhou	Dongguan	Shenzhen
If the safety of tap water is improved, will you drink less carboy water?							
Yes	74%	73%	56%	82%	76%	74%	82%
No	15%	23%	37%	11%	0%	13%	5%
No comment	11%	4%	7%	7%	24%	13%	13%
Which of the following is the most appropriate institution through which to ensure that people have access to clean drinking water?							
Government	70%	73%	78%	85%	87%	73%	83%
Private company	23%	27%	19%	13%	3%	24%	17%
Non-profit	3%	0%	3%	0%	9%	0%	0%
Individual Responsibility	4%	0%	0%	3%	0%	3%	0%
Do you think providing clean drinking water for people should be regarded as a...							
Welfare	79%	73%	70%	80%	73%	88%	90%
Commodity	12%	18%	13%	10%	14%	10%	10%
Don't know	7%	9%	18%	10%	3%	3%	0%

With the expected continuous expansion of the bottled water market, the bottled water corporations will potentially gain more power and become more influential in the policy making process, the situation will become beyond control. Also, the bottled water companies usually keep their information secret, claiming it is business property, meaning that there is almost no transparency for the public to monitor. So it is not sustainable to allow bottled water companies to take up the responsibility for providing drinking water.

Besides, if the corporations fail to fulfil the public water needs and cause any social problems, the government must step in and provide clean water to ease social tensions, while the water companies can just leave without any trouble. There have been many such cases recently, details can be found in Globalization Monitor's report, 'China's Water Crisis and the Privatization of Urban Water in Kunming'. Water is important in stabilising society. To have access to water is not a matter of choice or of people's social status; it is a matter of life and death. We simply should not allow private companies to take over this resource. Rather we should hold the government responsible for people's right of access to safe and affordable water for their basic needs.

IV Conclusion and Recommendations

China is one of the fastest emerging countries. This is at the cost of China's valuable natural environment and people's health however. More and more people are becoming concerned about whether the current development is sustainable. Unlike economic problems, social and environmental problems unfortunately are sometimes intangible and it can be hard to recognize the causal relationship. For example, carcinogens do not cause cancer immediately but after decades. In the same way water will not suddenly dry up but will disappear little by little, which means that the seriousness of these problems is underestimated by the public and policy makers. Bottled water is one of the examples. It looks like a solution to the problems of drinking water in China. However, the negative impacts brought about by bottled water such as, the problems for health, its threats to the water resource and people's right to access clean and affordable water, are lethal and irreparable.

In order to improve the situation in China, raising the public's awareness about this issue is necessary. All stakeholders should be involved and their interests should be considered in developing both short-term and long-term solutions. The following are some recommendations that we make regarding bottled water and drinking water problems in the context of China.

A. Improve the quality of tap water and protect people's right of access to clean water

The recognition by the United Nations General Assembly and the U.N. Human Rights Council in 2010 of a human right to safe drinking water and sanitation should also be seen as a challenge to the commodification of water, with the abuse of bottled water as one of its best example. However, the prerequisite for reducing the consumption of bottled water is the adequate supply of good quality and affordable tap water. Tap water is an efficient method for water allocation,

which can benefit more people than bottled water. The quality of tap water is also more stable than bottled water. In fact, providing good quality tap water is not impossible. In the World Water Development Report of 2006, the UN pointed out that “there is enough water for everyone” and “water insufficiency is often due to mismanagement, corruption, lack of appropriate institutions, bureaucratic inertia and a shortage of investment in both human capacity and physical infrastructure.”¹³ Therefore, it is possible to solve the problem of poor quality of tap water in the economically fast growing China. It mostly depends on the governments’ determination. What China needs to do now is to stop the privatization of water supply services and resume its practice of viewing water supply as a public service.

Furthermore, one of the main reasons for the lack of confidence in the quality of tap water is the serious contamination of the raw water. If the problem of water pollution is not solved, the cost of treating water will only keep increasing but with little or no improvement to the water quality.

In summary, bottled water will not be able to solve the problems of drinking water in any substantial way in China. The primary task for the government is to improve urban water supply and its quality by, for example, enhancing the wastewater treatment capacity, solving the water pollution problem, strengthening the water treatment process and reinforcing secondary water supply management, with the purpose of ensuring that the quality of tap water complies with the national standard, as well as safeguarding people’s right to water use at an affordable cost.

B. Bottled water should be viewed as a temporary and instantaneous alternative

I. Bottled water should only be regarded as a temporary and instantaneous alternative and we should minimise its use. For example, bottled water can be used for long distance transportation so it can play a complementary role when there are natural or environmental disasters such as droughts or when the tap water is contaminated. In places where tap water is safe for drinking, the governments should regulate the promotion and selling of bottled water. In places where bottled water is used as a replacement for tap water due to its poor water quality, the government should be held responsible for resuming the full provision of quality and affordable tap water. It should increase investment to improve the water

¹³, Page 45, see: <http://ww2.unhabitat.org/programmes/water/documents/waterreport2.pdf>

treatment facilities, and enhance the transparency of water supply services to regain public confidence in tap water.

C. Stop the corporate take-over of government regulations

In order to protect China's water resources from over-mining and from being contaminated, it is necessary to stop bottled water companies from enjoying direct influence on the government's power over regulation and on the legislature. This is particularly urgent in China as local governments tend to be deeply involved in business activity, including water supply and the bottled water industry. This therefore gives corporations, which are either owned by the local governments or enjoy very close relation with the latter, an advantage in influencing regulations and laws. To achieve this end it is necessary to restore basic civil liberties like freedom of speech and of association, without which transparency and public scrutiny is impossible. Furthermore, lobbying should be heavily regulated by law, so that corporate powers can be put under democratic control. In the final analysis it is essential for the Chinese government to allow the social movement to freely develop so that corporate power over the government can be checked and public interest advanced. Also, mandatory evaluations should be conducted by the independent sector to monitor the impacts of the bottled water manufacturers and related information should be disclosed to the public in order to carry out a complete monitoring system that involves the general public.

D. Enhancing quality control measures

In order to protect public health, regulation and information disclosure is very important. Stricter regulations and irregular spot-checks on the production procedures and product quality should be promoted. The bottled water companies should be regulated to disclose related information to the public, allow public participation in monitoring the water quality, as well as the water-mining activities.

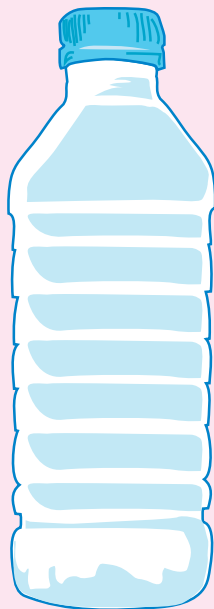
On the other hand, as consumers we can try to reduce the consumption of bottled water. We can also be more active in monitoring the water industry by gathering available information and voicing out our opinion through proper channels.

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