

Media construction of water crisis and
water consumption in the context of
climate change – a corpus assisted
approach

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Water problem in Taiwan

- The annual rainfall of Taiwan ranks No.2 in the world, but most of the rainfall rushed directly to the sea and hard to keep.
- Taiwanese use an average of 271 liters of water per day, much higher than the 250-liter average in Europe and the U.S.
- Climate Change has influenced the rainfall pattern.
- Water price is so cheap and Taiwanese pay less attention on water problems
- Raising water price is a political issues. No politician has had the courage to tackle the issues head on.

The price of water (US dollars)

| Country | Per Capita GDP | Water bill (annual) | Water Fee/ per Capita GDP (%) |
|----------------|----------------|---------------------|-------------------------------|
| United Kingdom | 35,900 | 447.21 | 1.25% |
| Japan | 34,300 | 328.13 | 0.96% |
| Australia | 40,800 | 375.94 | 0.86% |
| Spain | 30,600 | 220.48 | 0.72% |
| Norway | 53,300 | 308.4 | 0.58% |
| America | 48,100 | 214.75 | 0.45% |
| Singapore | 59,900 | 234.61 | 0.39% |
| South Korea | 31,700 | 61.16 | 0.32% |
| Taiwan | 37,900 | 61.16 | 0.16% |

Source: International Water Association, 2012

Main Research questions

- How do media represent everyday water consumption and water problem of Taiwan?
- What different between media discourse and the public's discourse of water?

Theoretical Concepts: Vocabulary, discourse and practice

- Vocabulary is the basic unit of discourse and text
- Discourse is kind of practice
- Vocabulary selection reflect the motivations of the practitioners
- Water problem is socially and culturally constructed and media representation of water is part of this constructing process

Analysis techniques (corpus method)

- Concordance & Collocation
- Key words comparison

Media Corpus

- 2008-2013 Taipei Times (English Newspaper, Taiwan)
- 2008-2013 South China Morning Post (English Newspaper, Hong Kong)
- 2007-2013 United Daily, Liberty Times, Apple Daily (Chinese Newspapers, Taiwan)
- Searching words for English newspaper is 'water resource/s'
- Searching word for Chinese newspapers is '水資源(water resource)',

Corpus of water resource/s

| Year | Articles | Words |
|------|----------|---------|
| 2013 | 833 | 583,711 |
| 2012 | 566 | 333,015 |
| 2011 | 548 | 333,354 |
| 2010 | 422 | 260,660 |
| 2009 | 473 | 297,263 |
| 2008 | 361 | 221637 |
| 2007 | 5 | ----- |

1. Total articles from 2013-2008 are 3,203.
2. Total words from 2013-2008 are 2,097,484.

Preliminary findings

- Before 2007, English newspaper in Taiwan do not have reports on 'water consumption', 'water crisis', or 'water risk'
- For the Chinese newspapers, before 2007 there are not many reports on 'water resource'.

Concordance of water

| N | Concordance | Set | Word # | Sen | Sen | Para | Para | Hea | Hea | Sec | Sec | File | Date | % |
|----|--|-----|---------|-----|-----|------|------|-----|-----|-----|-----|----------------|------------|-----|
| 1 | yesterday free of charge. The supplies include 200,000 water purification tablets, 5,040 large buckets for treating | | 114,355 | 4,8 | 17% | 0 | 39% | | | 0 | 39% | 2009water .txt | 2014/十一月/0 | 39% |
| 2 | on Friday night. Canberra's donation of 200,000 water purification tablets, 5,000 buckets for treating water | | 117,647 | 4,9 | 12% | 0 | 40% | | | 0 | 40% | 2009water .txt | 2014/十一月/0 | 40% |
| 3 | release. So far, Australia has pledged to provide 200,000 water purification tablets, Singapore has flown in food and | | 122,302 | 5,1 | 18% | 0 | 41% | | | 0 | 41% | 2009water .txt | 2014/十一月/0 | 41% |
| 4 |) to the Taiwan Red Cross Society as well as 200,000 water purification tablets to help with relief efforts. Local | | 113,176 | 4,7 | 76% | 0 | 38% | | | 0 | 38% | 2009water .txt | 2014/十一月/0 | 38% |
| 5 | businesses that consume more than 1,000 water units per month by the middle of next month at | | 172,865 | 7,1 | 60% | 0 | 67% | | | 0 | 67% | 2010water .txt | 2014/十一月/0 | 67% |
| 6 | from the central government for installing a NT\$45,000 water heater running on solar power, the bureau said. | | 237,402 | 9,9 | 80% | 0 | 92% | | | 0 | 92% | 2010water .txt | 2014/十一月/0 | 92% |
| 7 | Chao-cheng (蔡正元) said that of Yunlin County's 110,000 water wells, 98 percent had been dug illegally. Up to | | 202,976 | 8,4 | 67% | 0 | 78% | | | 0 | 78% | 2010water .txt | 2014/十一月/0 | 78% |
| 8 | tonnes of water each year, with the use of 250,000 water-efficient washing machines and toilet units, he said | | 179,837 | 7,4 | 79% | 0 | 69% | | | 0 | 69% | 2010water .txt | 2014/十一月/0 | 69% |
| 9 | These criteria include frequently having more than 20,000 water birds and the maintenance of biodiversity, the | | 41,045 | 1,6 | 53% | 0 | 13% | | | 0 | 13% | 2012water .txt | 2014/十一月/0 | 12% |
| 10 | out of the Edwards-Trinity Plateau Aquifer, an 88,060km2 water-bearing formation. They are sucking all of the water | | 239,915 | 10, | 96% | 0 | 76% | | | 0 | 76% | 2013water .txt | 2014/十一月/0 | 42% |
| 11 | reserved his anger for the contractors who drilled 104 water wells on his leased land to supply the oil | | 239,887 | 10, | 64% | 0 | 76% | | | 0 | 76% | 2013water .txt | 2014/十一月/0 | 42% |
| 12 | Acer sold 208 PCs, while Taiwan Sakura distributed 13 water heaters in China. Those figures were infinitesimal | | 157,035 | 6,6 | 88% | 0 | 53% | | | 0 | 53% | 2009water .txt | 2014/十一月/0 | 53% |
| 13 | were implemented in Hsinchu County on March 18. Water supplies to these areas will be reduced from 11pm | | 277,507 | 11, | 6% | 0 | 88% | | | 0 | 88% | 2011water .txt | 2014/十一月/0 | 83% |
| 14 | had dispatched 170 soldiers to affected areas and that 19 water pumps from the Navy were in place, with 36 more | | 82,702 | 3,3 | 54% | 0 | 32% | | | 0 | 32% | 2010water .txt | 2014/十一月/0 | 32% |
| 15 | government became aware of the violation in 2008, water and electricity supplies to the pub were stopped. | | 189,192 | 7,6 | 80% | 0 | 60% | | | 0 | 60% | 2011water .txt | 2014/十一月/0 | 57% |
| 16 | 48,000 military personnel, 404 power generators, 201 water pumps and more than 4,000 military vehicles, | | 199,677 | 7,7 | 47% | 0 | 64% | | | 0 | 64% | 2012water .txt | 2014/十一月/0 | 60% |
| 17 | to provide rescue and relief assistance, along with 201 water pumps, 404 electricity generators, 38 helicopters | | 196,136 | 7,5 | 69% | 0 | 62% | | | 0 | 62% | 2012water .txt | 2014/十一月/0 | 59% |
| 18 | 150m by 50m, the SCDF said. The SCDF said 21 water jets were being used to prevent nearby storage | | 86,549 | 3,3 | 29% | 0 | 27% | | | 0 | 27% | 2011water .txt | 2014/十一月/0 | 26% |
| 19 | higher than for the same period last year, when 216 water-related accidents were reported. DOCUMENT ID: | | 123,064 | 5,1 | 84% | 0 | 56% | | | 0 | 56% | 2008water .txt | 2014/十一月/0 | 55% |
| 20 | Activity (MDA)) based on the council's lab tests of the 23 water facilities as well as various brands of bottled water | | 205,813 | 8,6 | 76% | 0 | 93% | | | 0 | 93% | 2008water .txt | 2014/十一月/0 | 93% |
| 21 | . Agency statistics showed that, as of yesterday, 262 water-related accidents had been reported nationwide this | | 123,025 | 5,1 | 59% | 0 | 56% | | | 0 | 56% | 2008water .txt | 2014/十一月/0 | 55% |
| 22 | the Tamsui River (淡水河) starting at 7pm at the No. 3 Water Gate and a parade in Penghu, the first time the | | 72,204 | 2,9 | 13% | 0 | 28% | | | 0 | 28% | 2010water .txt | 2014/十一月/0 | 28% |
| 23 | pre-sale estimates, and Lien Chien-hsing's (连战) Water's Edge (水之边缘) just barely exceeded its lowest | | 17,903 | 753 | 70% | 0 | 6% | | | 0 | 6% | 2009water .txt | 2014/十一月/0 | 6% |
| 24 | estimate, his well could produce enough to fill 20 or 30 water trucks each day. At US\$60 a truck, that was | | 240,132 | 10, | 83% | 0 | 76% | | | 0 | 76% | 2013water .txt | 2014/十一月/0 | 42% |

Collocation of water

| N | Word | With | Total | Total left | Total right |
|---|--------------|-------|-------|------------|-------------|
| 1 | Quality | Water | 299 | 57 | 242 |
| 2 | supply | water | 249 | 59 | 109 |
| 3 | drinking | water | 219 | 204 | 15 |
| 4 | Conservation | water | 192 | 17 | 175 |
| 5 | Use | water | 159 | 90 | 69 |
| 6 | River | water | 155 | 55 | 100 |
| 7 | Electricity | water | 140 | 51 | 89 |
| 8 | Pollution | Water | 119 | 18 | 101 |

Everyday water consumption

1. Using 'water consumption' as the key term to do concordance analysis, words such 'reduce', 'decrease' and 'efficient' frequently show up in media discourse of water.
2. The results imply that the general public has become the major subject to respond the water problem in the media discourse.

Concordance of daily water consumption

office in May 2008. That year, his administration set a **water consumption** ceiling to help stave off droughts. Ma has

The company aimed to reduce per capita **daily water consumption** to 250 liters from the 259 liters recorded shortages. They include **encouraging people** to reduce **daily water consumption**, introducing water rationing measures for

The agency said it hoped to **decrease personal daily water consumption** to about 250 liters. WRA studies have show opportunity for people to adjust **their habits to minimize water consumption**, the premier said. In related news, WRA that the government's policy was to **decrease personal water consumption**, which has remained steady for the past a water consumption with the aim of limiting each person's **water consumption** to 250 liters per day.

water-saving products to **encourage people to reduce their water consumption**. President Ma Ying-jeou has been

Climate change and water problems

Climate change has become the major reason for water problem and this also been attributed as the mission by the government.

The government may have to deal with more water shortages as Taiwan's climate has become "bipolar," (Taipei Times, 2011-04-14)

Concordance of water risk

7 lease of polluted water in the area constituted a risk to health and safety, the court said. It also
34 would put nearly all reservoir catchment areas at risk of pollution. According to **the Soil and Water**
39 o a precarious situation, with water resources at risk. The nation has reached a crossroads in which
79 More areas face risk of water rationing: official
176 tement on its Web site that there was no imminent risk of a water shortage as supplies would increase
248 said it was pumping away the water to reduce the risk of flooding and potential tank leaks mixing w
254 the problem, the public should be aware of the risk of water shortages. **Global climate change** has

Next step

- What are the public 's discourses of water problem and water crisis in Taiwan?
- Do they make sense of the problem of climate change and water crisis?
- Do they accept that water problem is their response to solve, and how do their everyday water consumption practice respond to their recognitions of the water problem?