

TODAY'S FIGHT FOR THE FUTURE OF FASHION

Is there room for fast fashion in a Beautiful China?

Fashion is dirty & thirsty, which makes it a clear target in China's clean up, given the country's rampant pollution. With the current aim of building a "Beautiful China", "*where the sky is blue, the land is green and the water runs clear*", China is rethinking how to best allocate its resources to optimise the path towards balancing economics and the environment.

Given the need to protect limited water resources, the textile sector is vulnerable - it is strategically less important than food or energy security. Moreover, the sector's contribution to national GDP is falling. These add up to an increasingly difficult operating environment and an uncertain future for the global fashion industry.

Short-term operational and financial risks are present. China's war on pollution has been ramping up since 2014, with new stringent policies like the 'Water Ten Plan' driving this. Related laws to protect the environment are also currently undergoing revisions. All these point to consolidation of textile, apparel & footwear manufacturing in China, from which we expect bigger, stronger & cleaner OEMs with better pricing power over brands to emerge.

In the longer term, both manufacturers & brands face similar upstream challenges with raw material production as China transitions to higher-value products in line with 'Made in China 2025'. With the spotlight on pollution, brand reputational risk is high. The shift in Chinese consumer attitudes towards clothes that do not contaminate their waters means that the largest consumer market in the world may have a different idea of the future of fashion.

There are clear business & financial impacts for the global fashion industry. Whether one is making anything in China becomes irrelevant, as the country is still by far the largest producer of major fashion raw materials. But with great risk comes great opportunity. Key risks and opportunities for the future of fashion are:

- **Dirty thirsty fashion: a clear target in 'Beautiful China'**
- **Short-term risks: Water Ten Plan**
- **Stricter enforcement: new environmental law & policies**
- **Long-term risks: high raw material exposure, soil clean-up & 'Made in China 2025'**
- **High reputational risk: continued NGO pressure & the new Chinese consumer**
- **Brand rankings on sustainability: leaders & laggards**
- **The future of fashion: closing the loop & who can help**

China's lax environmental policies in the past two decades facilitated the rise of cheap fast fashion. But the regulatory landscape has changed. The fashion industry is at a crossroad – go circular or shutdown in China.

Brands can continue with business-as-usual and move to buy from other countries where they can continue to pollute, or they can choose to work with Chinese manufacturers to revamp the industry. We think it is time to fight for the future of fashion, to find a new business model for the industry – one that is beautiful inside and out.

DIRTY THIRSTY FASHION: A CLEAR TARGET IN 'BEAUTIFUL CHINA'

China has gone through colossal growth over the last three decades and the costs are showing. Pollution is rampant, reaching such levels that in 2014 Premier Li Keqiang declared an official 'War on Pollution'¹.

Beautiful China by 2020 but environmental quality deteriorated in 2015

Pollution is rampant...

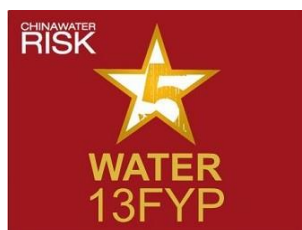
...MEP says China's overall environmental quality worsened in 2015

Latest environmental data supports this declaration of war. In 2015, according to the Ministry of Environmental Protection's (MEP) [State of Environment Report 2015](#)², except for a few pockets, China's overall environmental quality worsened. Groundwater quality continues to worsen for the fifth consecutive year and China's major seven rivers are still heavily polluted with between 3.1% and 39.1% of Grade V+ water (the most polluted category).



On top of this, pollution exacerbates China's limited water resources. With polluted and limited water resources, as well as other strategic resources like land, China is reconsidering its development path. No longer is it 'economy over environment' but 'economy & environment'. As communicated by the Chinese government this means a transition to a more services orientated economy, higher-value manufacturing and 'green' – be it development, growth, finance³ & more. It is [rethinking how to maximise](#)⁴ the allocation and use of its precious resources.

How does all this fit in China's 13th Five Year Plan (13FYP)? The plan for 2016-2020 is focused on building a "Beautiful China" (美丽中国). Cleaning up pollution is still high on the government's agenda.



"We must work to build through tireless efforts, a Beautiful China where the sky is blue, the land is green and the water runs clear."

Premier Li Keqiang, 2016 Work Report Speech

Textiles: in Top 3 most polluting & water-intensive industries

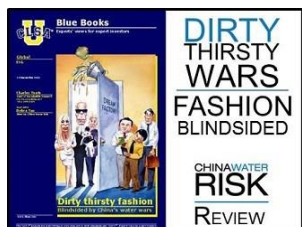
Current pollution levels mean we are still quite far from a Beautiful China. To make this more of a reality, China needs to seriously clean up. To achieve the biggest gains it makes sense to target those most polluting and most water-intensive. Textiles is a clear target: it is [ranked amongst the top 3 industries](#)⁵ for both water pollution and water use.

Moreover, the textile sector does not contribute significantly to the country's GDP. Our report with CLSA "[Dirty Thirsty Fashion: Blindsided by China's water woes](#)⁵" showed that the sector emits "lots of wastewater for not a lot of money".

In China, the textile industry discharges double the amount of wastewater discharged by the coal industry – China produces almost half of the world's coal.

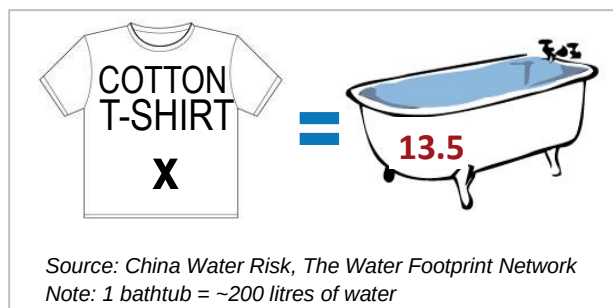
Also, vast amounts and types of hazardous chemicals are used by fashion for dyeing, finishing & other processes, of which not many are treated, yet are discharged into waterways. This includes acetic acid, hydrochloric acid, hydrogen peroxide, sulphuric acid, sulphur dyes and many more.

Textiles discharges 2x the amount of wastewater than that of the coal industry...





As for textile's thirst, cotton and leather are very water-intensive. With a virtual water content of **10,000 litres per kg⁵**, cotton requires four times more water than a kg of rice. A single cotton t-shirt has a virtual water content of 2,700 litres or 13.5 bathtubs.



There is some disagreement about leather. Some classify it as a by-product of beef and say it has a smaller virtual water footprint than beef. Regardless, the point here is that one can only get cattle hide from cows (beef), which is very thirsty at **15,415 litres per kg⁵**.

Already the Chinese government is encouraging diets with less meat content, so it is unlikely that it will encourage breeding cattle for leather. Indeed, since 2014, China has implemented the "[Regulation on the Prevention and Control of Pollution from Large-scale Breeding of Livestock and Poultry](#)"⁶. This standard sets strict pollution limits that severely discourage small farmers from breeding large livestock.

China releasing various policies to drive clean-up...
...textiles significantly impacted

China's changing regulatory landscape

To drive its clean up mission, the Chinese government has released various policies and regulations that significantly impact the textile sector. The main policies are listed in the table below. We expect more to come. As discussed in the next section each present short-term & long-term economic, operational and reputational risks.



Responsible Government Body	Policy/Regulation	Release date	Enforcement date
State Council	Soil Pollution Prevention & Control Action Plan	31-May-16	Various
State Council	Made In China 2025	8-May-15	Various
State Council	Water Pollution Prevention & Control Action Plan	16-Apr-15	Various
National People's Congress	Amended Environmental Protection Law	24-Apr-14	1-Jan-15
State Council	Circular Economy Development Strategies & Action Plan	23-Jan-13	Various

Source: State Council, National People's Congress, China Water Risk

SHORT-TERM RISKS: WATER TEN PLAN

Textiles: one of the most targeted sectors in the plan...



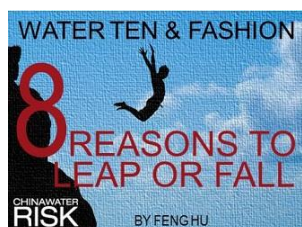
As discussed previously, it makes economic and strategic sense for China to target the textile sector in its clean up mission. The biggest hit to textiles is the 'Water Pollution Prevention and Control Action Plan' ("Water Ten Plan"), released in April 2015. The Plan is an 'umbrella plan' that ties in other central policies. Textiles is one of the most targeted sectors in the plan with action across all key areas.

Essentially, the Water Ten Plan is an ultimatum for the industry, be they manufacturers or brands, to reinvent itself and for companies to fundamentally change the way they do business, in order to have a bright future.

5 key short-term risks from the Water Ten Plan are:

1. Tight compliance deadlines: >90% of factories face shutdown risk

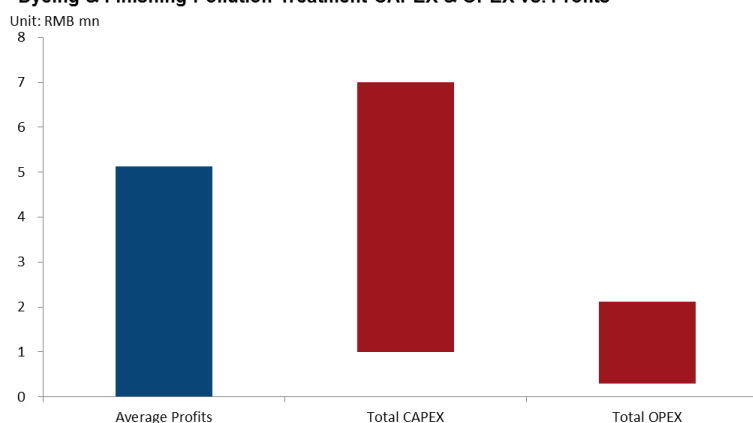
Businesses and factories need to comply with the new industrial standards or shutdown within the next 3 years (from time of release). [Our analysis shows](#) that Small Medium Enterprises (SMEs) face the greatest shutdown risk due to capital expenditure requirements (CAPEX) to upgrade to meet compliance standards, plus higher operating costs (OPEX). Over 90% of textile factories are SMEs.



SMEs face greatest shutdown risk due to CAPEX requirements...

...over 90% of textile factories are SMEs

**Small Size Enterprises in Textile Manufacturing
Dyeing & Finishing Pollution Treatment CAPEX & OPEX vs. Profits**



Source: China Water Risk, NBSC, Ministry of Science & Technology's "Compile of Advanced Wastewater Treatment Technologies" & various industry sources

YRD, PRD & JJJ face tighter compliance deadlines

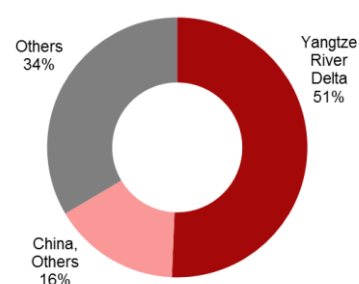


2. Only 2 years to comply for water challenged but key textile regions

Factories in the Yangtze River Delta (YRD), Pearl River Delta (PRD) & Beijing-Tianjin-Hebei (JJJ) face tighter compliance deadlines than national of 2016/2017/2018.

These are serious risks as more than 50% of global chemical fibres are produced in the [YRD](#). Clearly this will not only impact China but also global markets.

2014 Global Chemical Fibres Output



Source: China Water Risk based on NBSC and CIRFS

Water Ten requires mandatory equipment upgrade



Most new industry standards focused on synthetic leather

Shaoxing City in Zhejiang province, releases 4 dyeing-related standards that are “more stringent”

>60 factories shutdown & >100 ordered to upgrade



Centralised treatment may ease compliance costs for factories but shifts pollution risks

3. Complete mandatory equipment upgrade - nearly 75% of textile wastewater not recycled

According to Hu Kehua, deputy Director of the CSR office of the China National Textile and Apparel Council (CNTAC), [only 26.9%⁷](#) of water in dyeing & finishing is recycled. The Water Ten tackles this:

- By 2020, water use in the textile and other six water-intensive industries (including: chemicals and paper & pulp) should meet the advance levels of industrial water quota standards; and
- Textile dyeing, finishing & leather, along with four other industries (including: chemicals and paper & pulp) will need to recycle their wastewater.

4. New or more stringent industrial standards

Between 2015 and 2016 various textile industry standards have been released. The majority relate to synthetic leather – surface treatment agents, water slurry management, technology, safety requirements & more. Of note are 2 new work plans (see below) from Shaoxing City, which accounts for [around a third⁸](#) of China’s dyeing production capacity.

- [Notice on Speeding Up the Upgrade Work on Environment & Ecology by the General Office of the People’s Government of Shaoxing City⁹](#); and
- [Notice on the Plan on Regulating "Small & Dispersed" Enterprises by the General Office of the People’s Government of Shaoxing City¹⁰](#).

From these two plans, [four regional dyeing standards¹¹](#) (see below) have come into effect since April 2016, which according to the China Textile Economic Information Network are [even more stringent¹²](#) than national standards.

- Dyeing Industry Phase-out Backwards Production Capacity Standard
- Dyeing Industry Technology & Advanced Technology Standards
- Dyeing Industry Green Benchmarking Standards
- Requirement for Enterprises To Improve Environmental Compliance

Industry consolidation has already been seen with at least 64 factories closing down, which accounts for around a quarter of Shaoxing’s capacity. Also, more than [100 factories were ordered to upgrade¹³](#).

5. Centralized treatment eases costs but shifts risks

There are specific industrial wastewater discharge standards for different textile manufacturing processes. Some are so stringent, SMEs struggle to comply. SMEs are able to ease pressure through discharging wastewater via an industrial park. This reduces land use, CAPEX and OPEX requirements.

However, the Institute of Public & Environmental Affairs (IPE) warned that under the current situation between factories and wastewater treatment plants, [“centralised treatment brings centralised pollution”¹⁴](#). Adding that, “Our survey suggests parts of centralised printing and dyeing wastewater treatment has serious problems and so should not be considered a cure-all.” Clearly more needs to be done here to mitigate these risks.

STRICTER ENFORCEMENT: NEW ENVIRONMENTAL LAW & POLICIES

New environmental law & three pollution “Ten Plans” mean China now has a strong & modern legal framework

China’s Environmental Law was updated and in effect on 1 January 2015, after more than 25 years without revision. Also, the three pollution “Ten Plans” (air, water & soil) are out and the corresponding updated laws to follow. These add up to a strong and modern legal framework that can drive enforcement. These mean the old ways are out and there are now more serious consequences for those violating.

New Environmental Law means failure to comply will not just cost you but could also mean jail time

China’s revised law: unlimited daily fines, shut down & criminal punishments

Key highlights of China’s revised Environmental Protection Law are unlimited daily fines, shut down and criminal punishments. The amended law gives more weight to officials to punish environmental violations. Some key changes are:



- Criminal & Other Punishments: enterprises, institutions and manufacturers will not only face fines but could face criminal charges;
- Penalties & Fines: no cap and can be applied daily;
- Shut Down: for overdue pollution treatment ;
- Naming & Shaming: of violating enterprises;
- Environmental Impact Assessment (EIA): in the event of fraudulent EIA report content the assessors will be held jointly and severally liable with the enterprise responsible for project construction;
- Government Officials Environmental Protection Target Responsibility & Appraisal System: reporting on achieving environmental targets by State Council, provincial, local governments & other responsible officials is now mandatory; and
- Litigation & Civil Suits: social organisations registered with civil affairs department and engaged in litigation on environmental issues for more than 5 years can file a lawsuit to the People’s court.



Actions include companies being called out, people sent to prison/detained & fines...

Laws & policies proving a backbone to deal with those not going ‘green’

China’s revised environmental protection law has been in force for just over a year and a half now. [Various other environment or ‘green’ related regulations and standards³](#) have also been passed. Over this period we have seen these laws and policies in action:

- Hebei: Steel firms’ illegal expansion called out by MEP (May 2016)¹⁵;
- Three people were sentenced to prison and fined for polluting water in central China; one of the companies involved was also fined RMB1.7 million (Jan 2016)³;
- 10 company officials were detained over fabricated pollution data; some of the companies involved may face criminal lawsuits (Dec 2015)³; and
- A China Coca-Cola bottling executive was held for five days after a Coca-Cola facility was accused of falsifying pollution data (Oct 2015)³.

... Environmental fines up 34% y-o-y, in 2015 totaled RMB4.25 billion

In 2015 total environmental fines amounted to [RMB4.25 billion](#), up 34% year-on-year. Moreover, 1.77 million inspections were conducted across the country which resulted in 191,000 companies investigated. Around 20,000 were shut down, 34,000 had their operations halted and 89,000 had to conduct rectification actions².

There have been various landmark lawsuits, trial acceptances & more



Courts in China have seen action too

There have been [37,216 first instance criminal cases](#)² of environment crimes and 47,087 people brought to justice from January 2014 to June 2016.

- Prosecutors won a lawsuit against the Shandong Environment Department for inadequately punishing a sewage firm, “Qingshun Chemical Technology Company” that produced dye without the required safeguards. This was the first such public interest case against a government department (June 2016)¹⁶;
- Court accepts lawsuit filed by 3 NGOs over toxic soil near school in Jiangsu that made 490+ students ill (May 2016)¹⁷;
- The Supreme People’s Court upheld the record penalty of RMB160 million against six companies in compensation for discharging waste acids into two rivers sentenced in late 2014. It was the biggest environmental penalty imposed in China arising from a public interest case concerning polluters. It was also the first time that this Court had heard such litigation (Jan 2016)³; and
- Two environmental groups have become the first NGOs in China to win a lawsuit against polluters on behalf of the public (Dec 2015)³.

Enforcement still an issue but signals show there’s more to come

Extent of future enforcement is still unclear...

Despite the examples above the extent of future enforcement is still unclear. Though, with continued focus on cleaning-up and commentary like the below, it seems that we could see more and soon. China’s updated Water Law is currently under the public consultation stage.

...though commentary signals could see more & soon

“This year should see big increase in China’s environmental law enforcement capabilities and efforts... This year will see further improvements at the central government level, with stronger central oversight and coordination with local governments. Both government and the courts will be coming down harder on businesses that break environmental laws.”

Wang Hua, Researcher at the MEP’s Policy Research Centre for Environment & Economy, Chinadialogue, 8 Jan 2016

Watch out! New market mechanisms: water permits trading pilots



The “Three Red Lines” policy in water management is set to ensure China’s development does not put the environment at risk. Additional policies and mechanisms are being put in place to help manage the Red Lines. Two such mechanisms are the:

- Wastewater Discharge Permits: to control the total amount of wastewater discharge - since 2007, the State Council has selected 11 provinces, aiming to establish provincial-level pilot systems and trading markets for these permits; and
- Water Use Permits: to manage the total water use - the Ministry of Water Resources only selected 7 pilot provinces in July 2014, aiming to establish provincial trading markets of Water Use Permits.

These permits act as both carrot & stick

[These permits act as both carrot and stick](#)¹⁸. These permits must be acquired from the government and set strict quotas but any remaining savings from the permit quota can be sold. This simultaneously controls use & discharge and incentivises efficiency.

Surplus wastewater discharge being sold on Taobao & more

However, there is still much work to be done before full trading markets are operational across the country. In the meantime, we have seen a Zhejiang textile company spend RMB12 million for 41.06 tonnes of COD. This amounts to RMB292/kg of COD, [200x the actual discharge fee](#)¹⁹ of RMB1.4/kg. Also, wastewater discharge permits are being used as security for loans¹⁶.

LONG-TERM RISKS: HIGH RAW MATERIAL EXPOSURE, SOIL CLEAN UP & 'MADE IN CHINA 2025'

High raw materials exposure: global fashion still exposed to China's water woes



High raw materials exposure means that whether one is making anything in China becomes irrelevant...

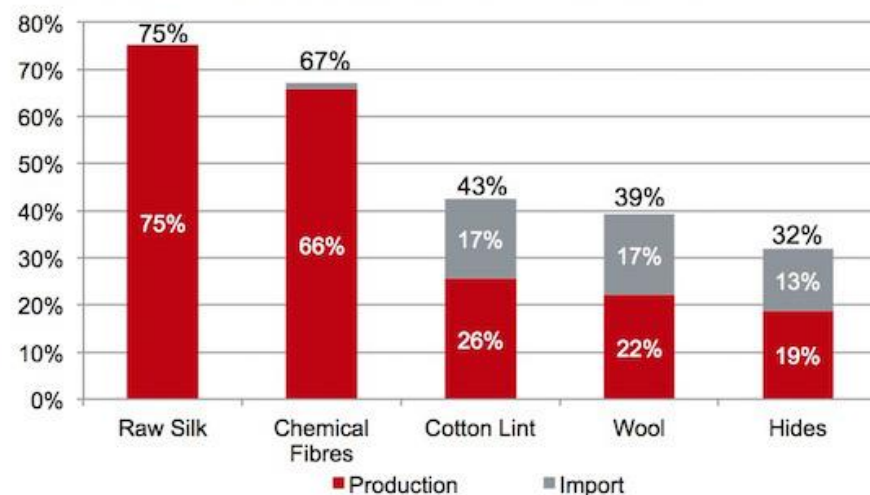
Global fashion has been moving out of China (moving sewing, cutting etc.) given increasing wages. Now other factors could also be pushing this trend including: more stringent regulations, greater punitive measures and the move to a Beautiful China.

But whilst many brands and fashion-related investors may now consider themselves “de-risked” by moving out, most likely they are not. Around **32% – 75% of key fashion materials**²⁰ like cotton, raw silk, chemical fibres and wool are still exposed to China (see chart below).

Even with slight decreases these high levels mean that whether one is making anything in China becomes irrelevant. The entire apparel and footwear sector is exposed to China's water-related risks - be they regulatory, physical, pollution, reputational or economic.

Around 32% – 75% of key fashion materials like cotton, raw silk, chemical fibres and wool are still exposed to China

Fashion Apparel - Raw Material Exposure to China (2013)



Sources: CWR estimates based on NBSC, FAO, CIRFS, UN Comtrade

Note: The chart is dated 2013 as this is the latest full data set available across sources

~90% of textile production in 2013/2014 was cotton & chemical fibres

Cotton and chemical fibres are the two major raw fashion materials. For 2013/2014²¹, on average, cotton made up 35-40% of textile production and around 50% was from synthetics (“chemical fibres” in chart above), with the rest accounted for by other fibres. So combined cotton and chemical fibres accounted for almost 90% of total textile production.

Cotton production moving West to Xinjiang

China is no longer top cotton producer...



Shifts by China in these raw materials will affect the prices of these commodities



The Water Ten Plan mean 76% of China's chemical fibres must comply by 2016/2017

The solution here isn't to simply move out of China...

... Instead it makes sense to work more closely with manufacturers

China is deprioritising growing thirsty cotton

Cotton subsidies in the parched North China Plain where in 2013 a quarter⁴ of the country's cotton was grown have been removed and production is being shifted west, focusing in Xinjiang province. As a result China is no longer the top global cotton producer, India is.

This intentional shift to deprioritise cotton is not only because it is a thirsty crop but also a dirty one. Cotton accounts for 24% and 11%²² of the global sales of insecticides and pesticides respectively.

Moreover, the North China Plain where some of China's cotton is grown is also the country's agriculture heartland and major coal source. On top of this the North of China is drier than the South. There are obvious cotton vs food vs energy trade-offs. Cotton is not of paramount importance like food or energy.

HSBC's "No Water, More Trade-offs", highlights that as China goes about implementing new plans, regulations etc., it will have no choice but to make trade-offs with its limited water. The report that features China Water Risk's analysis is specifically focused on trade-off options. The report warns that the parched North China Plain is home to vast amounts of cotton and coal and that shifting cotton production from the North China Plain could "free up" around 9.5 billion m³ of water, equivalent to a fifth of the entire South-to-North Water Diversion Project.

Raw material risk overlooked by brands

These key raw materials (cotton, raw silk etc.) are commodities and with the high levels of exposure this means that any domestic movements in China caused by regulatory or physical (droughts) shifts will affect the prices of these globally.

These raw material risks seemed to be overlooked by top leading brands in sustainability, according to our analysis of their sustainability/annual reports. If we found related information, it was limited. This raises questions about how much brands really know about the source of the materials that make-up their products.

Water Ten Plan means 51% of global chemical fibres at risk

If the high levels of raw material exposure weren't alarming enough the tight compliance timelines set by the Water Ten Plan mean 76% of chemical fibres, which are produced in the Yangtze River Delta must comply by 2016/2017. This represents 51% of globally produced chemical fibres.

Adding more complexity, 85% of chemical fibres in China are produced in water scarce and water stressed regions in China. Textiles will be impacted.

The solution here isn't to simply move out of China as the country already has significant industrial capabilities and infrastructure, while other major textile producing countries, such as Bangladesh and India, less so. How feasible is it to move this amount of production out of China in this short time frame?

It seems unlikely. In fact conversations with manufacturers/industry associations in China point to "highly unlikely". Instead, working more closely with the manufacturers to help them meet the new regulations makes sense. If not, brands may face fewer sourcing options and reduced purchasing power.

China's Soil Ten: Further downside to raw material production



Soil Ten highlights action for chemicals & tanning

Soil Ten is an "extension" of the Water Ten...

...all this means more investment

Key fashion raw materials' exposure to China took another hit with the 'Soil Pollution Prevention & Control Action Plan'²³ ("Soil Ten"), released by China's State Council on 31 May 2016. China's triage of plans to tackle air, water & soil pollution as part of the official war on pollution declared in 2014 is now complete.

The Soil Ten aims to improve soil quality and ensure safe agricultural products resulting in a healthy living environment for China's population. In total, there are 231 specific actions involved. Deadlines are given, although not as tight as those in the other two plans.

The plan puts eight polluting industries under the spotlight, two of which – chemicals & tanning – directly impact textiles. Clearly there will be big impacts on cotton and leather.

In addition, the Soil Ten also lists key pollutants (PAHs & petroleum hydrocarbons) and heavy metals (cadmium, mercury, arsenic, lead & chromium) to be monitored.

It's important to remember that the Soil Ten is somewhat an "extension" of the Water Ten since water and soil pollution are so closely interlinked and both need to be tackled to successfully clean up either.

All of this means more investment in clean up technology and operations for water and soil pollution. The industry will also need to develop plans to grow with likely less cotton and leather.

Textiles not included in 'Made in China 2025': risk or opportunity?



The 'Made in China 2025' Action Plan²⁴ released by State Council on 8 May 2016 is a 10-year plan to transform China from a manufacturing giant into a world manufacturing power.

The issue for textiles is that it is not one of the 10 key industries listed by the plan to facilitate the transformation. This likely reflects textiles' decreasing economic importance and high environmental costs. Instead, textiles is on another list of 10 industries, the Circular Economy Ten. That said, this is not all negative and also presents opportunity - more on this later.

Industries on the 'Made in China 2025' list will help provide technical solutions for textiles. 'New Materials' is one such. This is positive for textiles as the Chinese government is supporting the development of these industries.

Textiles is not one of the 10 key industries...

...but can be found in Circular Economy Ten

Made in China 2025' Ten Key Industries vs Circular Economy

Made in China 2025		Circular Economy
1	Energy Saving & Clean-Energy Vehicles	Coal
2	Power Equipment	Power
3	Biomedical & High Performance Medical Devices	Steel
4	New Materials	Textile
5	Next Generation IT	Nonferrous Metals
6	Advanced Rail Transportation Equipment	Petroleum & Petrochemicals
7	Advanced CNC Machine Tools & Robots	Chemicals
8	Agricultural Machinery	Food
9	Aerospace Equipment	Building Materials
10	Marine Engineering Equipment & High-tech Ship	Paper

Source: State Council

HIGH REPUTATIONAL RISK: CONTINUED NGO PRESSURE & THE NEW CHINESE CONSUMER



... but consumer-led movements are growing

In China, IPE ranks brands & their supply chain



More sustainability reporting tools now available & used by brands

Action also coming from brands...

... Levi Strauss open-sourced its Water-Saving "Water<Less" Process

NGO campaigns calling for brands to clean up their supply chains go back for some time now but the fruit of their labour is being seen. Greenpeace's campaigns ultimately resulted in the Zero Discharge of Harmful Chemicals Roadmap (ZDHC) that six leading brands founded. This year saw Greenpeace update its Detox Catwalk campaign (among others), where brands were again clearly grouped according to performance, leaving nowhere to hide.

Also, Pesticide Action Network UK, Solidaridad & WWF released a report in June on companies' delivery on cotton sustainability. Results were not encouraging, with just eight out of 37 global companies not in the lowest "red zone".

There are also growing movements, like "Fashion Revolution" – a global movement in 90 countries. *"We have created a worldwide platform which we can all use to ask questions, raise standards and set an industry-wide example of what better looks like"*, [Fashion Revolution](#)²⁵. This year tens of thousands of people took part in their Fashion Revolution Week, where consumers asked brands: "Who Made My Clothes?" Consumers and NGOs want more answers, which mean more transparency.

Brands increasing their transparency on supply chains

Reporting by NGOs on brand's supply chains has driven increased transparency by brands. In China, the Institute of Public & Environmental Affairs (IPE) released its second *"Greening The Global Supply Chain – Corporate Information Transparency Index (CITI)"*²⁶ in October 2015. The report covers over 100 brands across nine industries of which Textiles is one.

To facilitate transparency in the supply chain, IPE in March 2016 launched [version 3.0 of its Blue Map mobile app](#)²⁷. *"Amongst other functions, the app charts polluting factories in China using real-time emission data, offering promising practical implications for brands' management of textile supply chains"*, said Kate Logan of IPE. This means brands have a responsibility to ensure that their suppliers are complying with local standards.

More sustainability reporting tools are not only being made available but brands are utilising them, and in some cases even publically publishing the results. One example is *"MODE Tracker"*²⁸, developed by Made-by (a UK-based textile sustainability consultancy). Four large apparel brands took part in the first year pilot and five more will also be publishing their results next year.

Increased transparency is also being pushed from within the industry. Inditex recently published a list of its wet processing units. [Levi Strauss open-sourced its Water-Saving "Water<Less" Process](#)²⁸ that were considered trade secrets. These 21 water-saving finishing techniques took many years to develop but are now shared to tackle urgent water issues.

"We've long been committed to being water stewards, but realize more needs to be done. We're setting competition aside ..."

...Kobori continued, We believe that water is too important to our industry to not share these techniques."

*Michael Kobori, vice president of sustainability and Levi Strauss & Co,
Press Release, 22 March 2016*

Chinese government officials have to report on environmental performance



Violations & stop production orders doubled over 2011-14

ESG reporting on the rise in China

Another transparency trend in China to be aware of is the increasing role of environment, social & corporate governance factors (known as ESG). ESG factors, though maybe not in that name, are also becoming more visible in the [government and business sectors](#).

In 2014, ten Chinese ministries issued a work plan that states the result of water assessments will be a performance indicator for the evaluation of provincial government leaders. Also in 2014, several provincial governments announced they will remove the GDP indicator from performance reviews. Meanwhile in business, those with a good environment report card will score better and will be able to obtain favourable financing.

ESG factors also have implications for investors. For example, MSCI analysis of over 700 records of pollution violations and controversial polluting behaviour among MSCI China Index companies and their known subsidiaries showed that the number of violations being penalised or resulting in stop production orders [doubled over 2011-14](#)²⁹. Clearly a penalisation or stop order impacts business, which is important to investors. As MSCI said, *"By all indications, pursuit of economic transformation in China will enhance the materiality of ESG factors for investors."*

Beware! Chinese consumer habits are changing



The new, more green-conscious, Chinese consumer

There is a [new, more green-conscious, consumer emerging in China](#), according to a report by professors at Renmin University³⁰. And it is going to be a major force in China and the rest of the world.

"That the new Chinese consumer purchases goods and services to satisfy largely non-essential needs presents opportunities for the providers of green products to develop strategies to position their products and brands beyond mere utility."

Professor Hart, Ma, Ying & Zhu of Renmin University, "Corporate Strategy & The New Chinese Consumer, article for China Water Risk, 13 August 2015"

73% surveyed were willing to pay more for green products...

...brands may lose out if don't adjust strategy

Without adjustments in corporate strategy to include this new consumer, brands may find they lose or miss out on business. According to the report, 73% of respondents surveyed said they were willing to pay more for green products and over 8% of these said they are willing to pay 10% more.

However, the report showed that green purchases are indeed growing but are not yet at the sacrifice of income. Brands have time to adjust their strategies but first movers will benefit.

Reputational risk is still a considerable factor for brands. In the report *"consumers indicated a strong willingness to decrease their purchases of goods and services from brands with poor environmental performance...and slightly less willingness to increase their purchases from brands with environmental performance."*

BRAND RANKINGS ON SUSTAINABILITY: LEADERS & LAGGARDS



There are various organisations that evaluate the performance of brands in terms of sustainability, chemical management and more. These include Greenpeace & its various Detox campaigns and the Corporate Information Transparency Index (CITI) & Phase reports led by the Institute of Public & Environmental Affairs (IPE), which look at brand's supply chain – violations, disclosure & more.

Brands: leaders & laggards across IPE led reports 2012-2015

We can see from the table below there are five brands: Adidas, Esquel, H&M, Nike and Walmart, that make the Top 10 in every report.

Top 10 Textile Brands Ranked Across CITI Reports 2014 & 2015 and Reports Phase I-III Led by IPE

Rank	CITI Index 2015	CITI Index 2014	Phase III 2013	Phase II 2012	Phase I 2012
1	Adidas	H&M	Esquel	H&M	H&M
2	H&M	Esquel	H&M	Nike	Nike
3	Levi's	GAP (#3)	Puma	Esquel	Esquel
4	Marks & Spencer	C&A (#3)	Adidas	Levi	Walmart
5	Walmart (#5)	Puma	Nike	Adidas	Levi
6	Esquel (#5)	Marks & Spencer	Walmart	Burberry	Adidas
7	Nike	Adidas	GAP	Walmart	Burberry
8	Uniqlo	Burberry	Marks & Spencer	GAP	C&A
9	Puma	Nike (#9)	Levi	Reebok	Tesco
10	Target	Walmart (#9)	Zara	Esprit	Target

Source: China Water Risk, CITI Index Reports 2014 & 2015, Phase I-III Reports (2012-2013)

5 brands: Adidas, Esquel, H&M, Nike & Walmart, make Top 10 in every IPE-led report

There is also a group of consistent laggards (see table below). J.C. Penny (dark red) makes the laggard group in every report, whilst Cortefiel, DKNY, Giordano, Macy's & Victoria's Secret make the group 4 out the 5 reports (light red).

Laggard Textile Brands Across CITI Reports 2014 & 2015 and Reports Phase I-III Led by IPE

CITI Index* 2015	CITI Index** 2014	Phase III*** 2013	Phase II**** 2012	Phase I***** 2012
Hugo Boss	Hugo Boss	Polo Ralph Lauren	Cortefiel	J.C. Penny
361°	Abercrombie & Fitch	Abercrombie & Fitch	DKNY	Giordano
Kappa	361°	361°	Victoria's Secret	Ann Taylor
Guess	Kappa	Kappa	Macy's	Cotton Inc.
Anta	Guess	Guess	Kmart	Esprit
Cortefiel	Anta	Youngor	J.C. Penny	Calvin Klein
DKNY	Cortefiel	Sears-Roeback	Giordano	Armani
Victoria's Secret	DKNY	Anta	Calvin Klein	Marks & Spencer
Macy's	Victoria's Secret	Cortefiel	Armani	Carrefour
J.C. Penny	Macy's	DKNY	Carrefour (#49/49)	Zara (#48/48)
Meters/bonwe	Kmart	Victoria's Secret		
Polo Ralph Lauren	J.C. Penny	Macy's		
	Giordano	Kmart		
	Meters/bonwe	J.C. Penny		
	Polo Ralph Lauren	Giordano		
		Carrefour		
		Meters/bonwe		
		Hugo Boss		

Source: China Water Risk, CITI Index Reports 2014 & 2015, Phase I-III Reports (2012-2013)

*all these brands in the CITI report were ranked joint #42

**all these brands in the CITI report were ranked joint #36

***all these brands in the Phase III report were ranked joint #31

****these are the lowest ranked 10 brands

There is also a group of consistent laggards...

...this includes well-known brands like Macy's, DKNY & Victoria's Secret

1 YEAR ON WHERE ARE THE TOP FASHION BRANDS

CHINA WATER
RISK
REVIEW

Analysis shows more brand sustainability initiatives & action to go circular

For the last two years we have conducted analysis on the sustainability of leading brands, which includes: 1) Brand sustainability initiatives, & 2) Brand action to close the loop.

The [2016 results](#)³¹ show positive change in both of these areas. There are two notable differences for sustainability initiatives. The first is increased partnerships/engagement with NGOs (see table below).

Brand Sustainability Initiatives

Brand	ZDHC founder	Top 5 in CITI Report 2015	E P&L	Sustainability Initiatives								
				SAC	NRDC	Solidaridad	ZDHC	Cotton related	Leather related	Polyester related	Packaging related	Supplier/Factory auditing
Adidas	✓	✓		✓✓		✓	✓✓	✓✓	✓✓	✓	✓	✓✓
C&A	✓			✓✓			✓✓	✓✓	✓✓	✓	✓	✓✓
Esquel		✓		✓✓	*		✓✓	✓✓			✓	**
Gap Inc.				✓✓	✓✓		✓✓	✓✓			✓	✓✓
H&M	✓	✓		✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓	✓	✓✓
Levi Strauss & Co.		✓		✓	✓			✓		***		✓
Li-Ning	✓						✓✓	✓✓	✓			✓✓
Nike	✓			✓✓	****		✓✓	✓✓	✓✓	✓	✓	✓✓
Puma	✓		✓ via Kering	✓✓			✓✓	✓✓	✓✓	✓	✓	✓✓
Kering				✓✓	✓	✓	✓	✓✓	✓✓	✓	✓	✓✓
LVMH				✓✓			✓✓	✓✓	✓✓	✓	✓	✓✓

Source: For each brand: latest annual report & sustainability report and brand's website, NRDC website, Solidaridad website, ZDHC website, IPE & NRDC CITI Report 2015, China Water Risk

✓ 2015 analysis

✓ 2016 analysis

*No clear partnership stated, only support initiative

**Audit only on social & labour issues

***No mention of polyester but has WasteLess™ collection of products that are made of 20% post-consumer waste - specifically, recycled plastic bottles

****Joined NRDC in 2010 but no mention in latest report

Our analysis shows increase in partnerships/engagement with NGOs

The second is a greater attention and action on materials - water content, chemicals used, waste, recycled components & impact from customer care etc. In addition to the initiatives in the table above, some brands are conducting life cycle water assessments (some full cradle-to-grave), others are mapping their global supply chain vis-à-vis water stress regions, as well as conducting global consumer surveys of sustainability interests.

Also, paying greater attention & taking more action on materials...

Also positive, is a marked increase in brand action to close the loop, which last year was "distinctly lacking". Last year only 2 brands (H&M & Puma) had ticks across all 3 sections. This year 7 out of the 11 brands do, see table below. This drastic change seen in just one year shows how critical it is for textiles to become a circular economy and that these brands realise this. But some brands are doing more than others and there is still a long way to go.

Brand Action Towards Closing The Loop

Brand	ZDHC founder	Top 5 in CITI Report 2015	E P&L	Closing the Loop		
				Design	Recycle	Re-use
Adidas	✓	✓		✓✓	✓✓	✓
C&A	✓			✓	✓✓	✓
Esquel		✓		✓	✓	✓
Gap Inc.						
H&M	✓	✓		✓✓	✓✓	✓✓
Levi Strauss		✓		✓	✓	✓
Li-Ning	✓			✓✓		✓
Nike	✓			✓✓	✓	✓
Puma	✓		✓ via Kering	✓✓	✓✓	✓✓
Kering			✓	✓✓	✓✓	*
LVMH				✓✓	✓✓	

Source: For each brand: latest annual report & sustainability report and brand's website, ZDHC website, IPE & NRDC CITI Report 2015, China Water Risk

✓ 2015 analysis

✓ 2016 analysis

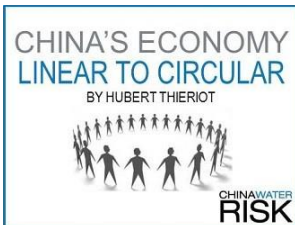
*Stella McCartney's Falabella bag - features a recycled polyester microfiber

Last year action on closing the loop "distinctly lacking". This year 7/11 brands acting...

... But some doing more than others & still a long way to go

THE FUTURE OF FASHION: CLOSING THE LOOP & WHO CAN HELP

Chinese government wants textiles to transition to a circular economy



The Chinese government has said that [10 industries](#)³² need to transition to a circular economy. One of which is textiles.

This means fashion's entire value chain needs to close the loop; use less resources & chemicals plus more recycling and integration of waste (see diagram from State Council below). Ultimately, reduce the industry's environmental footprint. This is a significant challenge requiring out of the box thinking, as well as CAPEX & OPEX. The industry is currently working and struggling with this, there is no model to 'copy & paste'. But there are also opportunities.

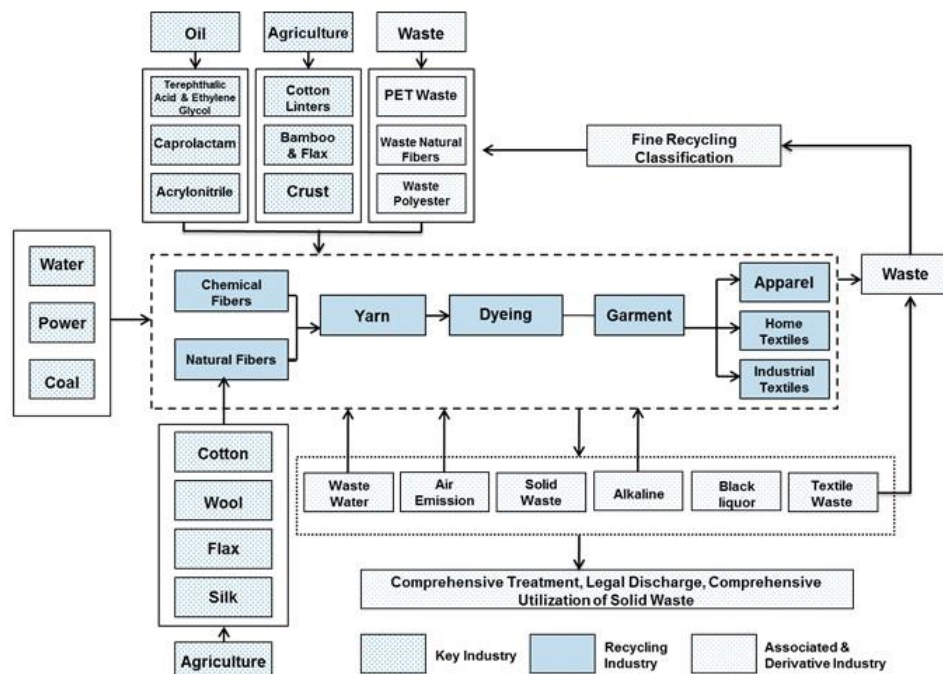
China wants fashion's entire value chain to close the loop = new business model...

...the industry is currently working & struggling with this

But there is much opportunity...

... RMB60bn potential market in recycling secondhand clothes

TEXTILES INDUSTRY STATE COUNCIL'S CIRCULAR ECONOMY DEVELOPMENT STRATEGIES & ACTION PLAN



Source: State Council's 'Circular Economy Development Strategies and Action Plan' 2013



Achieving a circular economy will need new business models, new materials (Chinese government is already pushing this), new technologies and more. Herein lies the opportunity.

In China the total annual production of pre and post-consumer textile waste is estimated to be around 26 million tonnes. This is around four times that amount of [cotton lint China produced in 2013](#)³³ and just over half of its [2014 chemical fibre production](#)³⁴. One example, is the market for the recycling of second-hand clothes with a maximum [potential revenue of RMB60 billion](#)³⁵.



Circular fashion today: programmes & initiatives

Circular efforts are [already being seen](#)³⁶. H&M Foundation launched the Global Change Award in 2015 - an innovation challenge for ideas that can help close the loop on fashion. Redress is now in its sixth cycle of the EcoChic Design Award (the largest global sustainable fashion design competition). C&A is setting up a circular economy incubator centre in 2016. At Esquel, used yarn and fabrics find new life as garment tags or are re-woven into labels or bags. Adidas, with its partnership with Parley for the Oceans, makes shoes from reclaimed & recycled ocean waste.

More brands engaging means transition can scale up

An increase in partnerships/engagements by brands with NGOs was a positive finding in our latest research of the top fashion brands. Two brands (Esquel & Kering) established a partnership with the National Resources Defense Council (NRDC) and two brands (C&A & Kering) with Solidaridad. This is positive to see as these NGOs can help move fashion to a circular economy. They are working on-ground, in the mills and with the farmers. Increased brand involvement at this level should propel action forward and allow for greater scale. Below is a list of organisations that can help move fashion circular:

NGO/Organisation	Programme/Initiative
Alliance for Water Stewardship	Global Water Stewardship Standard
Better Cotton Initiative	Various
CEO Water Mandate	Various
China National Textile & Apparel Council (CNTAC) & others	Various
DyeCoo Textile Systems	CO2 Dyeing
DyStar Group	Various
Foreign Trade Association	Business Environmental Performance Initiative
Greenpeace	Various
Green Initiatives	The Fiber Project (Shanghai)
H&M Foundation	Global Change Award
HSBC & Hong Kong Productivity Council	Water Programme for Industrial Water Management
International Finance Corporation	We Industrial Programme
Institute of Public & Environmental Affairs	Various (CITI Report & Blue Map App)
Levi Strauss & Co.	Water<Less technology
Natural Resources Defense Council	Clean By Design
Pratibha Syntex	Vertically integrated textile manufacturing company - GLASA 2015 winner
Redress	EcoChic Design Award
Sustainable Apparel Coalition	Higg Index
Solidaridad	Better Mill Initiative
Stockholm International Water Institute	Sustainable Water Resources Management
The Squirrelz	Design Material Exchange Platform
Water Footprint Network	Virtual water
World Wildlife Fund	Various
Zero Discharge of Harmful Chemicals Group	ZDHC Roadmap

The Chinese government is also a source

The Chinese government is also a source that can help. As previously discussed the government releases various textile-related policies, as well as lists to aid the circular transition - [Nationally Recommended Industrial Water Saving Technology & Equipment \(2nd batch\)](#).



Challenges are significant but it's exciting times. We could be wearing clothes made from algae or lace from strawberries, there is also new cotton digesting technology and much more.

The time to come together and fight for the future of fashion is now. The dream is to [make fashion made in China beautiful inside & out](#)³⁷.

REFERENCES

- ¹ China Water Risk article, “[The War On Water Pollution](#)”, Debra Tan, 12 March 2014
- ² China Water Risk article, “[2015 State Of Environment Report Review](#)”, China Water Risk, 17 June 2016
- ³ China Water Risk article, “[Be Green And Prosper](#)”, Dawn McGregor & Hongqiao Liu, 4 February 2016
- ⁴ China Water Risk article, “[China Water-nomics](#)”, Debra Tan, Hubert Thieriot & Feng Hu, 15 September 2015
- ⁵ China Water Risk article, “[Dirty Thirsty Wars – Fashion Blindsided](#)”, Debra Tan, 17 September 2014
- ⁶ China Water Risk article, “[2013-2014 Key Water Policies Review](#)”, Dawn McGregor, 12 March 2014
- ⁷ China Water Risk interview, “[OEM: Stuck In The Middle](#)”, China Water Risk, 17 September 2014
- ⁸ http://www.zhejiang.gov.cn/art/2016/8/3/art_15775_2175480.html
- ⁹ <http://www.sxyrsh.com/index.php/Index/newsview/id/75->
- ¹⁰ <http://www.sxyrsh.com/index.php/Index/newsview/id/85>
- ¹¹ http://www.sx.gov.cn/art/2016/3/31/art_126_882098.html
- ¹² http://news.ctei.cn/domestic/gnzx/201605/t20160513_2223506.htm
- ¹³ http://www.zhejiang.gov.cn/art/2016/8/3/art_15775_2175480.html
- ¹⁴ China Water Risk interview, “[Risks Shifting Beyond The Wall](#)”, China Water Risk, 10 February 2015
- ¹⁵ Reuters, “Some Hebei steelmakers breaching shutdown orders: China ministry”, 3 May 2016
- ¹⁶ The Guardian, “China punishes officials over sewage in first environmental case of its kind”, 21 June 2016
- ¹⁷ South China Morning Post, “Chinese court accepts lawsuit over toxic soil near school”, 21 May 2016
- ¹⁸ China Water Risk article, “[New Trading Markets to Enforce Red Lines](#)”, Feng Hu, 10 February 2015
- ¹⁹ China Water Risk article, “[Pollution: It Doesn’t Pay to be Naughty](#)”, Feng Hu, 10 December 2014
- ²⁰ China Water Risk article, “[Still Exposed! Fashion Materials in China](#)”, Debra Tan, 15 September 2015
- ²¹ “The State Of The Apparel Sector – 2015 Special Report: Water”, Sustainable Business Group, September 2015
- ²² http://wwf.panda.org/about_our_earth/about_freshwater/freshwater_problems/thirsty_crops/cotton/
- ²³ China Water Risk article, “[China’s Soil Ten](#)”, Debra Tan & Dawn McGregor, 17 June 2016
- ²⁴ China Water Risk article, “[Made in China 2025: Are You On The List?](#)”, Debra Tan, 16 June 2015
- ²⁵ <http://fashionrevolution.org/about/>
- ²⁶ China Water Risk article, “[Brands To Buy Over Christmas?](#)”, Dawn McGregor, 15 December 2015
- ²⁷ China Water Risk article, “[Real-time Monitoring: Cleaning Up Textiles](#)”, Kate Logan, IPE, 14 April 2016
- ²⁸ China Water Risk article, “[Clean Fashion: 3 Reasons To Feel Positive](#)”, Dawn McGregor, 14 April 2016
- ²⁹ China Water Risk article, “[China’s New Era of ESG](#)”, Emily Chew & Wang Xiaoshu, MSCI, 14 July 2015
- ³⁰ China Water Risk article, “[Corporate Strategy & The New Chinese Consumer](#)”, Craig Hart, Ma Zhong, Ying Jiahui & Zhu Jiayan, Renmin University, 13 August 2015
- ³¹ China Water Risk article, “[1 Year On: Where Are The Top Fashion Brands?](#)”, Dawn McGregor & Woody Chan, 17 August 2016
- ³² China Water Risk article, “[China’s Economy: Linear to Circular](#)”, Hubert Thieriot, 16 June 2015
- ³³ <http://faostat3.fao.org/browse/Q/QD/E>
- ³⁴ <http://data.stats.gov.cn/english/easyquery.htm?cn=C01>
- ³⁵ China Water Risk article, “[Putting Waste Back into Fashion](#)”, Christina Dean, Redress, 16 June 2015
- ³⁶ China Water Risk article, “[Circular Fashion Today](#)”, Dawn McGregor, 17 August 2016
- ³⁷ China Water Risk article, “[Future Fashion & ‘Beautiful China’: Together Forever?](#)”, Dawn McGregor, 17 August 2016

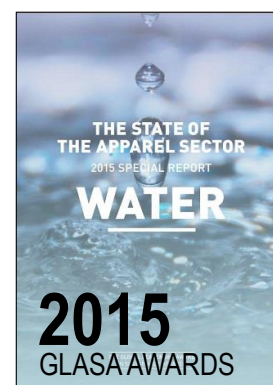
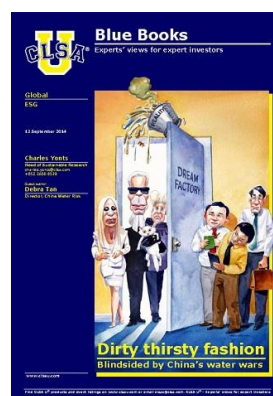
ABOUT CWR

China Water Risk (CWR) is a non-profit initiative dedicated to addressing business & environmental risk arising from China's limited water resources. We aim to foster efficient and responsible use of China's water resources by engaging the global business and investment communities. As such, we facilitate discussion amongst industry leaders, investors, experts & scientists on understanding & managing water risk across six industry sectors: Agriculture, Power, Mining, Food & Beverage, Textiles and Electronics. CWR also has been commissioned by financial institutions to conduct research analysing the impact of water risks on the Power, Mining, Agricultural and Textile sectors. These reports have been considered ground-breaking and instrumental in understanding China's water challenges. Join the discussion at www.chinawaterrisk.org.

CWR & TEXTILES

As one of China's top polluting and water intensive sectors, CWR has written extensively about the water risks in the sector since launch in 2011. Ahead of the changes in regulations, we co-authored "Dirty Thirsty Fashion: Blindsided by China's Water Wars" for CLSA U®. The report, highlighting risks for the global fashion industry, was well received by investors globally.

Today, we continue to engage with various stakeholders from NGOs, investors, manufacturers to brands. In 2015, CWR was nominated by the industry as a finalist for the 2015 GLASA Awards.



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