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TCHIBO WATER REPORT

Water risk analysis & Stewardship strategy

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Executive summary

Mega trends such as a growing global population and increasing industrial and food production require increasing amounts of fresh water. Extreme climate patterns, absent rainfall and global warming add to

the mix and increase water stress around the world. UN predictions claim that by the year 2050, as much as 40% of the population will be living in regions with high water stress.

80% of Tchibo's net sales represent the highest sectoral water intensities of any supply chains.

At the heart of fresh water-related challenges are companies linked to agricultural and industrial production – such as Tchibo. According to the “Umweltatlas Lieferketten”, food and textile retail are the sectors with the highest liter consumption of water per Euro net sales. Tchibo's specific net sales consist of coffee (44%), textiles (36%), Hardgoods (18%) and other services (2%). Consequently, a whopping 80% of Tchibo's net sales represent the highest sectoral water intensities of any supply chains. Cotton (10.000 l/kg) and coffee (18.000 l/kg) are amongst the most water intensive crops cultivated. Additionally, important countries for Tchibo's value creation, such as Brazil, Vietnam, India, China and Bangladesh experience high water risks, as this report will demonstrate.

Identifying the water risks linked to production and processing is the first crucial step to mitigate risks and increase transparency. This report takes a closer look at Tchibo's entire supply chain and the corresponding water risks. Using the WWF Water Risk Filter, an online tool to analyze water risks globally, we identified the trends connected to physical water risk (scarcity, floods, droughts and pollution), regulatory water risk (policies and governance) and reputational water risk (media attention and cultural implications). The analysis focuses on coffee cultivation, cotton cultivation and textile wet processing, as those segments show greatest importance regarding **water intensity** during production, **water risks** linked to locations and **share of net sales**.

Key aspects coffee cultivation:

- » Coffee is a water intensive, mostly rain fed crop, and most of the water is used in the cultivation of the coffee cherry. Around 75% of Tchibo's coffee is sourced from small scale farmers in Brazil (Arabica) and Vietnam (Robusta).
- » Droughts are the most significant water risk connected to Tchibo's coffee supply chain, with 43% of locations facing very high drought risk. Coffee growing regions, such as the Cerrado of Brazil, recently suffered extreme droughts which led to harvest losses, temporarily driving coffee prices up by 70%^{3,4}
- » Tchibo's Joint Forces program on coffee allows for integration of a water stewardship approach. However, more supply chain transparency is needed.

Key aspects cotton cultivation:

- » Cotton accounts for 6% of global pesticide and 14% of global insecticide sales, is highly water intensive with three-quarters globally under irrigation – often grown in regions with high water stress. Organic cotton, mainly produced in India and China and represents 0,5% of global cotton cultivation⁵. More sustainable cotton (BCI certified) 7,5%.

- » 82% of Tchibo’s potential cotton cultivation regions are situated in “moderate to high” water scarcity risk locations. India, showing highest risk scores, is characterized by scarce groundwater resources, high likelihood of severe droughts and poor water governance.
- » WWF runs three sustainable cotton projects in India, aiming at the conversion of conventional to organic cotton, as well as the implementation of BCI cotton and water stewardship.

Key aspects of textile wet processing:

- » Wet Processing is the most water intensive and polluting supply chain step in textile processing. 116 out of 166 Wet Processing Units (WPU) that have been analyzed in China, other hot spot regions are Bangladesh, Turkey and India.
- » 90% of Tchibos textile production takes place in WPU that face a “high to very high” pollution of river basins and 78% show a “high to very high” flood risk. The locations with the most suppliers facing these risks are Lake Taihu and the Yangtze River basin in China.
- » WWF already runs a project on wet processing in China, in which more than 10 current Tchibo suppliers already participate.

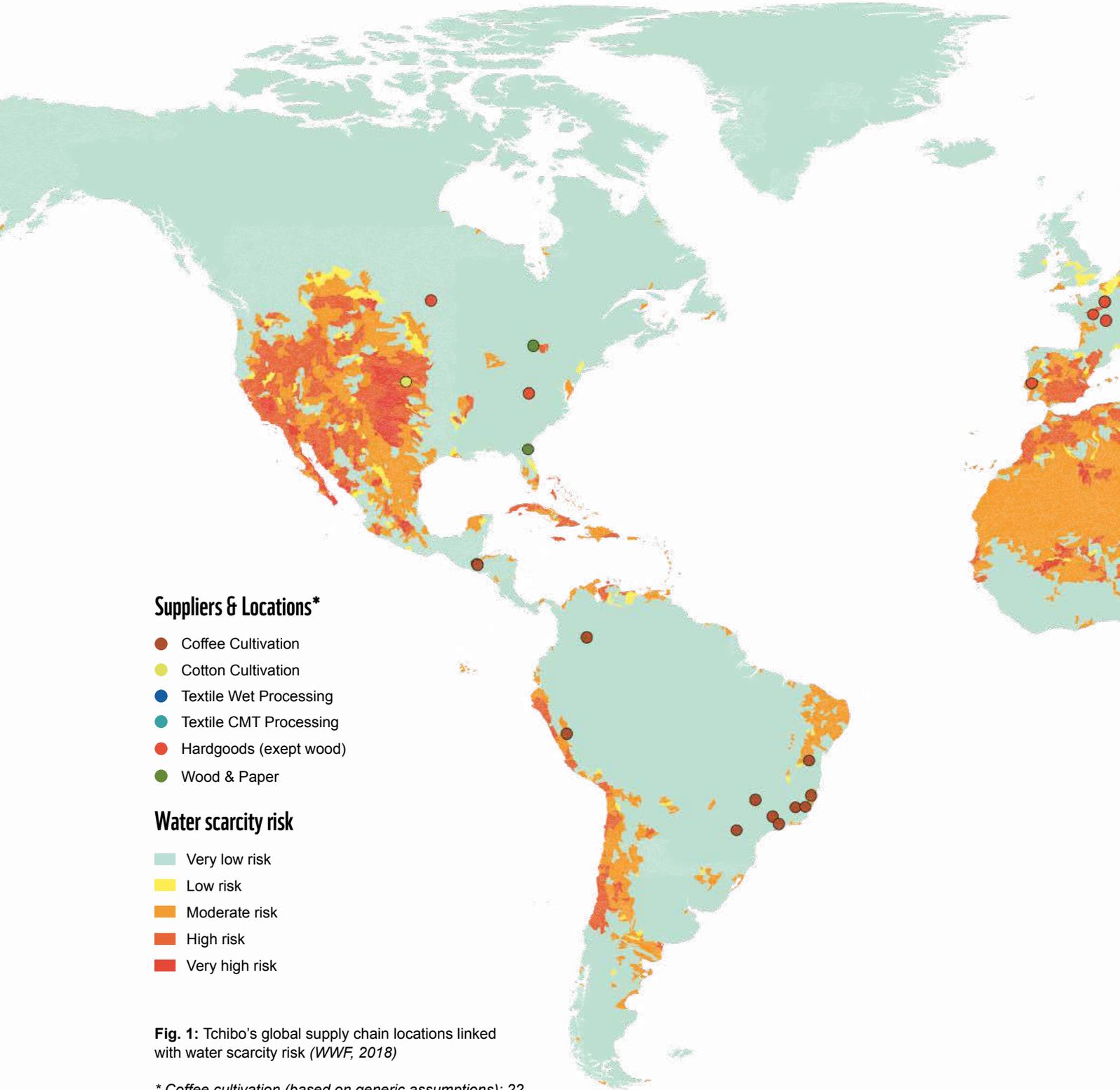
**WWF recommends
that Tchibo
becomes a good
water steward.**

Based on the high materiality water resources show for key supply chain segments of Tchibo’s product portfolio, WWF recommends that Tchibo becomes a good water steward. Water stewardship means to use water in a socially equitable, environmentally sustainable and economically beneficial way. Good water stewards look at water in an integrated fashion, by understanding own water use in relation to the context of the river basin, in which production takes place. The importance of context-specific action is the deciding factor when aiming to engage on water in a sustainable way.

At headquarters level, Tchibo should actively push the water topic in key initiatives such as the Partnership for Sustainable Textiles, the Cotton Accelerator, the Global Coffee Platform or the Sustainable Apparel Coalition. Sustainability reporting, such as CDP Water, would be advisable.

At the supply-chain level, efforts should focus on the identified three priority areas of coffee cultivation, cotton cultivation and textile wet processing. Targets should focus collective action at scale, aiming to reduce shared water risks connected to suppliers, including risks stemming from water governance in countries of production. More transparency around coffee suppliers could lead to targeted site selection for integration of water stewardship within the Tchibo Joint Forces Program. Next to the recommendation of aiming towards 100% sustainable cotton, Tchibo should try to enhance water stewardship in cotton cultivation and wet processing in India and China. Engaging collectively with other partners from the textile industry presents the best cost-benefit ratio for the company.

Tchibo's global supply chain loca



Suppliers & Locations*

- Coffee Cultivation
- Cotton Cultivation
- Textile Wet Processing
- Textile CMT Processing
- Hardgoods (except wood)
- Wood & Paper

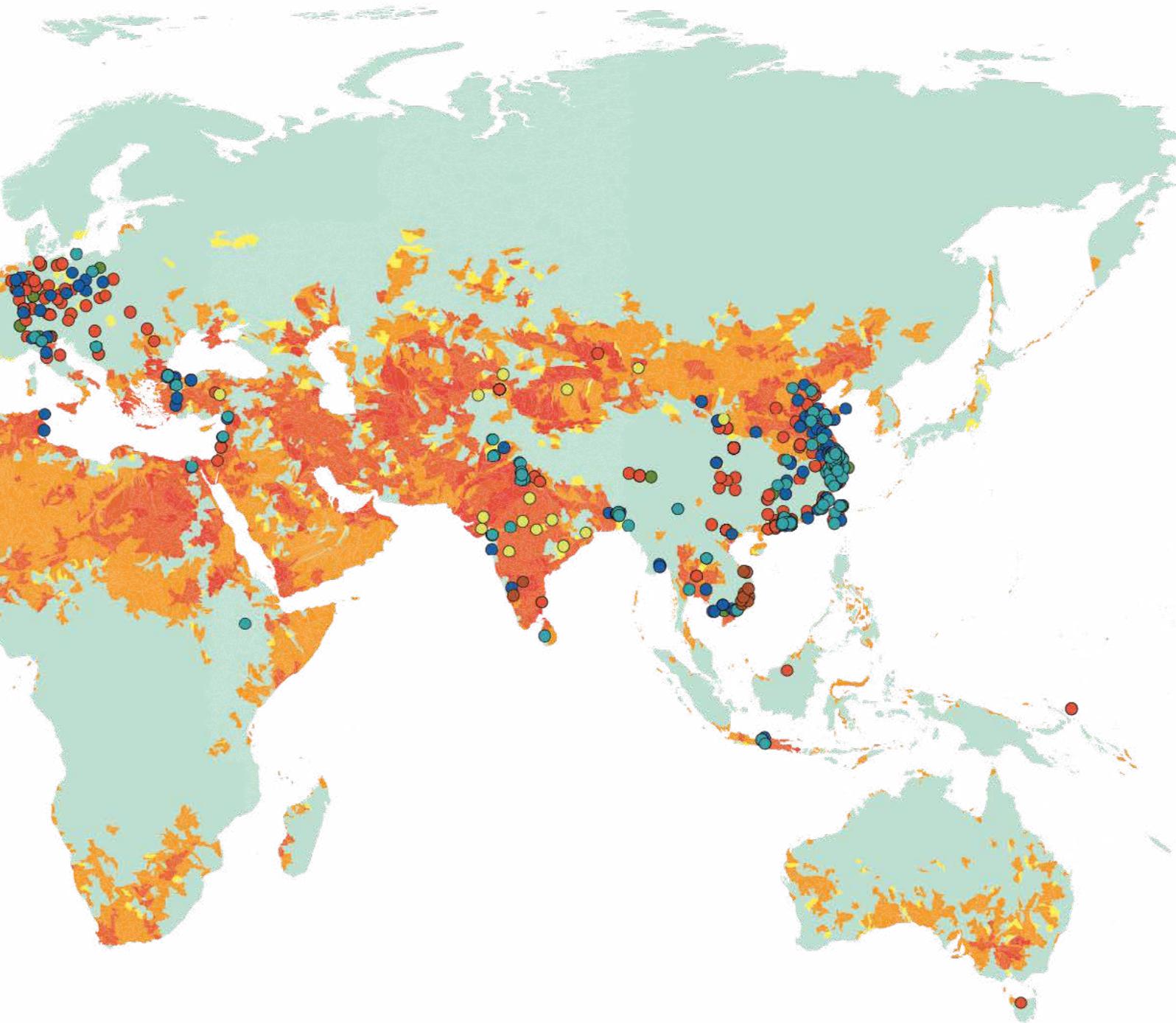
Water scarcity risk

- Very low risk
- Low risk
- Moderate risk
- High risk
- Very high risk

Fig. 1: Tchibo's global supply chain locations linked with water scarcity risk (WWF, 2018)

* Coffee cultivation (based on generic assumptions): 22, Cotton Cultivation (based on generic assumptions): 16, Textile Wet Processing: 166, Textile CMT Processing: 199, Hardgoods (except wood): 481, Wood & Paper: 86

itions linked to water scarcity risk



Tchibo + global water trends

Imported, virtual water is 'hidden' in practically all products that Tchibo produces. Whether 130 liters for our morning coffee from Brazil or 2.500 liters for the cotton shirt from India: the production of Tchibo's signature products shows a direct link to water. Simultaneously, water resources are under higher pressure than ever before in the history of humanity.

Today's mega-trends of changing climatic patterns, population growth and rapid economic development, especially in low-middle income countries, all directly drive fresh water use and pollution. Consequently, water risks are increasing around the world. UN predictions claim that by the year 2050, 40% of the population will be living in regions with high water stress. And for five consecutive years the World Economic Forum (WEF) has identified water related risks always amongst the Top 5 global risks in terms of impact to the global economy.⁶

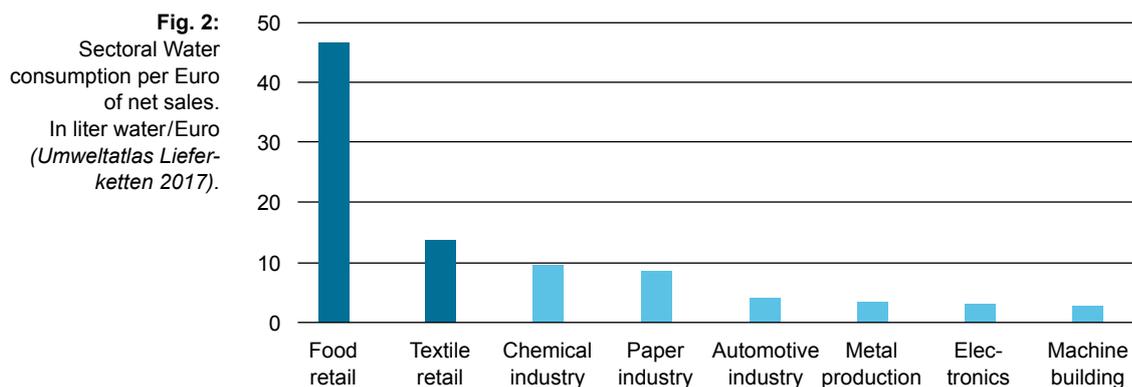
At the heart of fresh water-related challenges are companies linked to agricultural and industrial production – such as Tchibo.

Action to measure and mitigate risks

Companies are increasingly realizing the importance of actively engaging with the topic and starting to take steps to develop methods to mitigate their supply chain's water risks. Measures taken by corporates include:

- » Analysis and prioritization of portfolio-related water risks
- » Formulation of corporate and supply-chain related water targets
- » Disclosure of risks and actions taken to mitigate them
- » Adoption and development of sustainable certification systems
- » Development and implementation of water stewardship projects
 - Within a respective sector (corporate level)
 - Within the supply chain (field level)

Although risks for businesses will strongly vary depending on the industry, location and management, all businesses are affected in one way or another.



Tchibo's specific case

According to the “Umweltatlas Lieferketten”, food and textile retail are the sectors with the highest liter consumption of water per Euro (net sales). Tchibo's net sales consist of coffee (44%), textiles (36%), hardgoods (18%) and other services (2%). This means that 80% of Tchibo's sales is directly connected to the highest sectoral water intensity of supply chains in the German economy. Additionally, coffee and cotton are amongst the most water intensive crops. The production of textiles requires 10.000 l/kg⁷ globally, and roasted coffee almost double that with up to a tremendous 18.000 l/kg⁸. On top of that, countries connected to Tchibo's water intensive supply chains, such as Brazil, Vietnam, India, China and Bangladesh experience high water risks, as the analysis of this report will show.

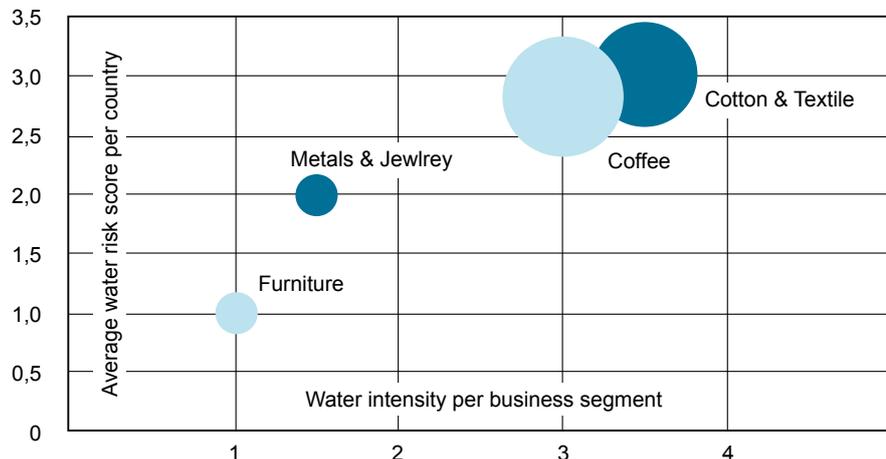
Scope of the water risk analysis

For the following reasons, we are focusing our analysis on the coffee and textile supply chains:

- » Represent 80% of net sales of the company
- » Connected to agricultural supply chains & show high average water footprints (liter/kg)
 - Textile: 10.000 (India 20.000)
 - Coffee: 18.000
 - Wood: 1.500⁹
- » Raw material locations are known or accessible in next phase to enable active engagement
- » Show most developed water stewardship approaches and actions to date

Hardgoods such as furniture or jewelry and metals are also relevant groups of production but will not be discussed in further depth in this report, as supply chains are much less clear and water footprints are mainly linked to raw material production with unknown and likely inaccessible locations (e.g. metal sourcing for jewelry, exact forest location for wood).

Fig. 3: Overall water risk matrix for Tchibo portfolio, showing water risk score per country (averaged) versus ranked water intensity per product. Size of bubbles represents Tchibo's net sales volume per segment. The numeric values are used to compare sectors and should be understood as an indication to provide an overall picture.



Methodology

Supply chain data – e.g. sourcing volume, supplier locations – was provided by Tchibo. WWF reviewed data, structured it and identified priority segments. Prioritization was conducted based on net sales in Euro, volume of total water footprint (WFP) and water risk score (WR), the latter are explained in more detail below.

After supply-chain materiality per business segment, data gaps and solutions were discussed with Tchibo. To work around the main data gaps, such as transparency on farmer locations for coffee and cotton cultivation, WWF matched available information from Tchibo against external sources on trading and production volume per country and province to generate feasible generic assumptions on sourcing locations. As a first step only a “basin level risk assessment” is carried out for Tchibo.

Water Footprint

The water footprint (WFP) measures the total amount of water consumed during the production of a good, service or commodity along its value creation. For example, each step of the supply chain of a T-shirt – cotton cultivation, washing, dyeing, etc. – adds water during value creation, resulting in approx. 2.5000 liters per T-shirt (250 gram). However, not only the mere number of liters is important but many other factors such as type of water used (irrigated, non-irrigated), location of production/cultivation including water governance linked to that specific location. All these help to assess the environmental, social and economic sustainability of water connected to the product.

Water Risks

WWF focuses on water risk analysis, since it gives a more complete picture of the actual problems the company is facing. Water is a shared resource, a common good, a human right, and a geo strategic resource used by many stakeholders in a given river basin. Each river basin has its own geomorphologic, socio-economic and climatic conditions, which leads to its own dynamics. Only when accounting for these individual dynamics, can companies prioritize water risks in their portfolio.

There are three distinct water risk categories. These are applicable to the river-basin context as well as the company's operations:

1. Physical water risks consist of ...

- a. River basin level: water scarcity, pollution, floods, droughts and other physical characteristics of water in a given context
- b. Operations level: facility water sources, use volume and waste water volume

2. Regulatory water risks consist of ...

- a. River basin level: quality of water regulations, level of enforcement of water laws, level of possible stakeholder participation in water planning
- b. Operations level: compliance of facility to legal standards, company exposure to regulatory changes and penalties

3. Reputational water risks consist of ...

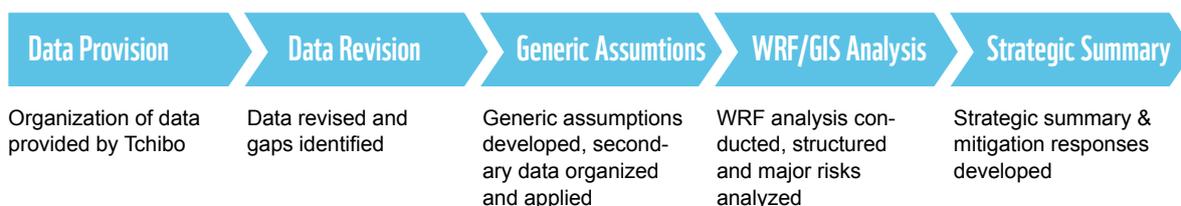
- a. River basin level: cultural/religious importance of water, local/national/international critical media coverage on water issues
- b. Operations level: facility exposure to media coverage on water issues, facility engagement with key stakeholders, importance of facility as water consumer in the operations context

To analyze water risks, WWF developed the Water Risk Filter (WRF), an online tool that uses the best available water data to analyze water risks globally – see Box 2.⁹

Fig. 4:
Methodological chain for water risk analysis incl. generic assumptions.

Main identified data gaps are:

- » missing farm locations for both coffee & cotton cultivation
- » only very limited knowledge of raw material split, material amounts in tons and origin of hardwoods



Example for generic assumption – Coffee from Brazil

So far, Tchibo only knows the sourcing volume of coffee per country. To perform a water risk analysis, we need to know in which river basin the coffee cultivation actually takes place. Therefore, WWF used secondary data on the volume of coffee production per province in Brazil. Coherent with the share that Tchibo sources from Brazil, centroids were placed in individual states’ coffee growing provinces. The generated point-data was then used for Water Risk Filter analysis.

To validate the WRF results, like droughts in Brazil, further desktop research was conducted. Additionally, WWF offices in the hot spot regions of each segment (Brazil, Vietnam, India and China) were interviewed and possible projects for water risk mitigation on the ground were discussed. Finally, a first strategic approach for Tchibo’s water strategy was drafted jointly with Tchibo staff.



The WWF Water Risk Filter today and in the future

Most of the report is based on the results of the Water Risk Filter, a freely available online tool for analyzing global water risk exposure. In 2012, the WRF was developed by WWF in collaboration with the German development bank DEG and draws on global datasets to generate specific water risk scores for geographical locations. Since then 300.000 sites were assessed by 3.000 unique users.

End of 2018, WWF will launch a new version of the water risk Filter, with the following improvements in the four main sections explore, assess, value and respond:

- » Explore: additional risk maps, indicators, high-resolution data sets and much more
- » Assess: improved analysis tools using maps, charts, tables, figures to show risk exposure
- » Value: tool to calculate potential financial impact of water risks
- » Respond: Tailored recommendations for specific sites or the entire portfolio

To calculate the specific risk scores, the tool uses more than 35 distinct risk indicators, based on publicly available data (see indicator organization and weightings organigram).

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graph TD
    Overall[Overall Water Risk] --- Regulatory[Regulatory Risk (15%)]
    Overall --- Physical[Physical Risk (75%)]
    Overall --- Reputational[Reputational Risk (10%)]
    Physical --- Pollution[Pollution (25%)]
    Physical --- Scarcity[Scarcity (60%)]
    Scarcity --- Droughts[Droughts (10%)]
    Scarcity --- Floods[Floods (10%)]
        
```

Fig. 5:
Water Risk Filter indicator organization.

Coffee

Coffee is one of the most traded commodities worldwide and is the livelihood of an estimated 25 million small producers in developing countries – mostly in South America and South East Asia. However, consumption mainly takes place in industrialized countries, like the US and Europe, with emerging countries rapidly catching up. Due to extreme weather events, such as droughts, the supply of coffee rarely manages to keep up with annual demand.

“Coffee-bean output will fall by up to 30% in the next marketing year due to severe drought, which has killed nearly 250.000 acres of coffee trees”
Chairman of the Vietnam Coffee Association, May 2016

According to the Water Footprint Network, 99% of water use is connected to the cultivation of the coffee cherry, mostly relying on rain water, sometimes irrigation water. During the process of pulping and washing, only negligible amounts such as 7,5 and 5 liters of water are consumed. Looking at pollution, numbers are difficult to apply, as research on supply chain pollution is very limited. We assume that both cultivation (in terms of pesticide and fertilizer use) and processing (pulping, washing) account for equal amounts of waste water. Therefore, the water risk analysis focuses on the coffee cultivation step.

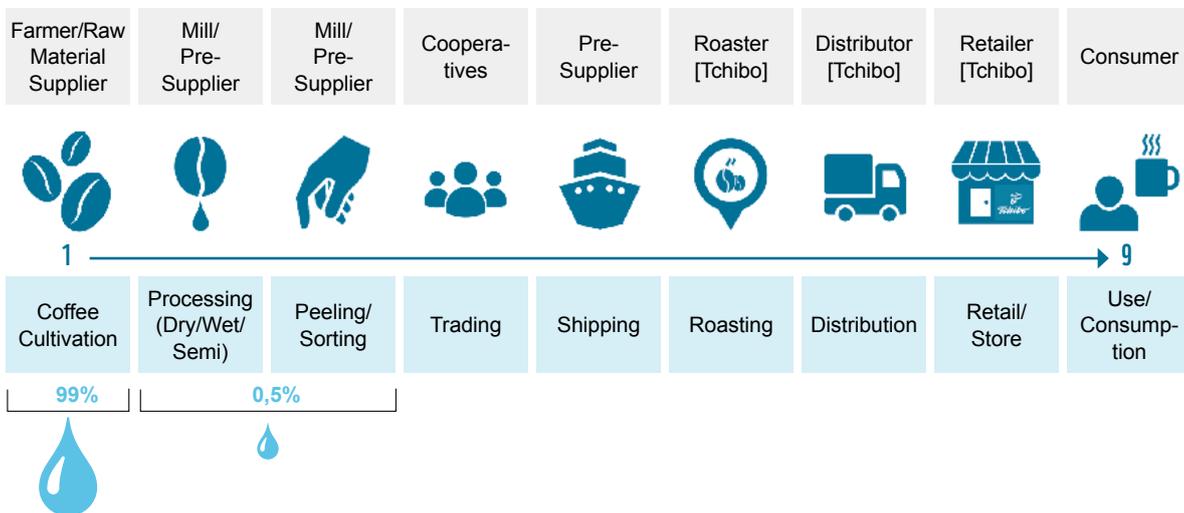


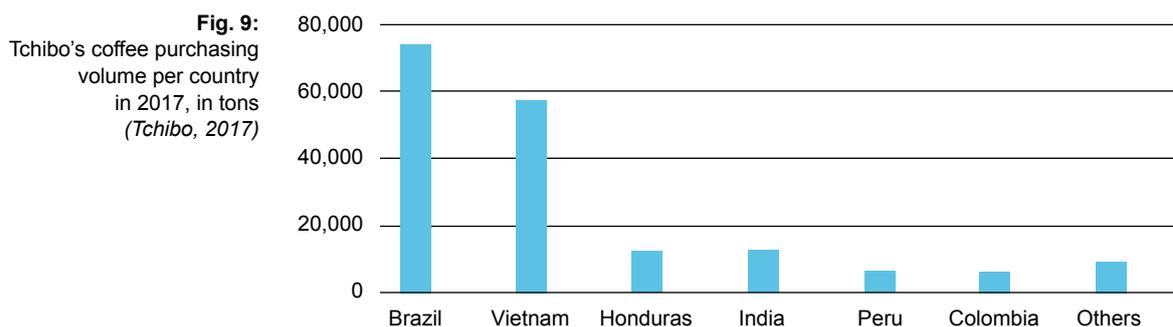
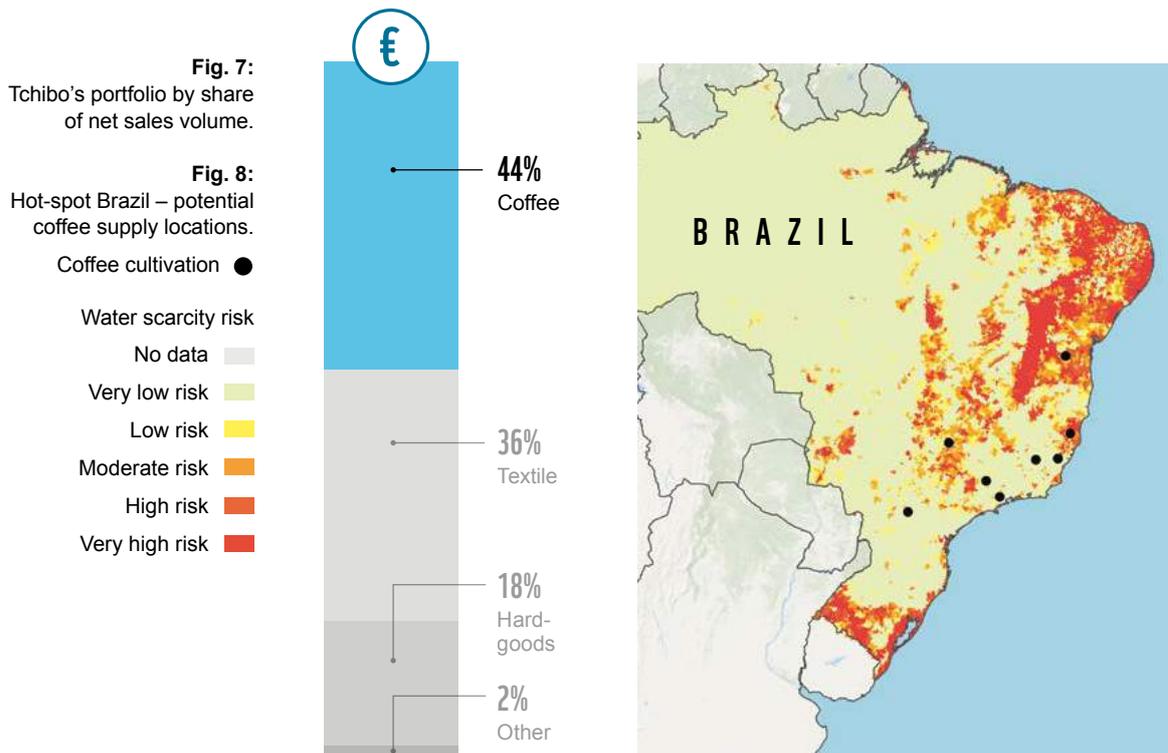
Fig. 6: Water intensity linked to Tchibo's generic coffee supply chain.

At the time of the analysis Tchibo only knew the total volume of coffee sourced per country. In order to ensure a water risk analysis at river basin level, WWF used generic agricultural production data (location and volume) to locate coffee production in the respective countries and perform water risk analyses based on these locations. To ensure more reliability on the analysis and response strategies, WWF advises generating a better understanding of the coffee cultivation locations. As 30% of Tchibo's portfolio is certified coffee, traceability down to area of production would be possible without much effort, as the corresponding systems make information available. This would not account for the remaining 70% non-certified coffee. However, we assume that locations may be overlapping.

Focus: coffee cultivation

Coffee Production around the globe – and especially in Brazil and Vietnam – is facing severe risks due to droughts and other climate change induced events. These can devastate entire harvests, drive up prices and disrupt supply chains.

Coffee is the one commodity that German consumers inevitably connect with Tchibo and coffee remains the company's strongest business segment in terms of net sales. The biggest portion of Tchibo's coffee is imported from the two major producing countries, Brazil (~42%) and Vietnam (~32%). Both are world-leaders in coffee production, Brazil producing mainly high quality Arabica beans and Vietnam the more resilient Robusta. As the following examples show, coffee is facing a strong water risk exposure in both countries. Next to the water risk analysis and exposure we will discuss potential pathways that could help to reduce water risks connected to Tchibo's coffee segment.



Overall water risk analysis

The overall Water Risk Analysis results show, that out of 100 potential locations 43% of Tchibo's coffee locations, all linked to Brazil, face a "moderate" overall risk. 7%, linked to India, are experiencing "moderate to high" overall risk. The other 50% are showing "relatively low risk" and none are showing "very low risk".

Physical water risks

Because of the score weightings of the Water Risk Filter tool (see Method), physical water risks, such as water scarcity, pollution, floods, droughts and other physical characteristics of water in a given context, do not score very high in the overall assessment. Only 7% of the potential supply chain is facing "moderate to high" water risks. However, when looking at the physical risk category in depth, the results clearly identify that a major part of Tchibo's coffee supply chain is facing "high to very high risk" of floods and droughts. Additional research beyond the Water Risk Filter shows, that production locations in Brazil and Vietnam (in total 78) are already severely affected by droughts – as can be seen in Figure 6¹¹

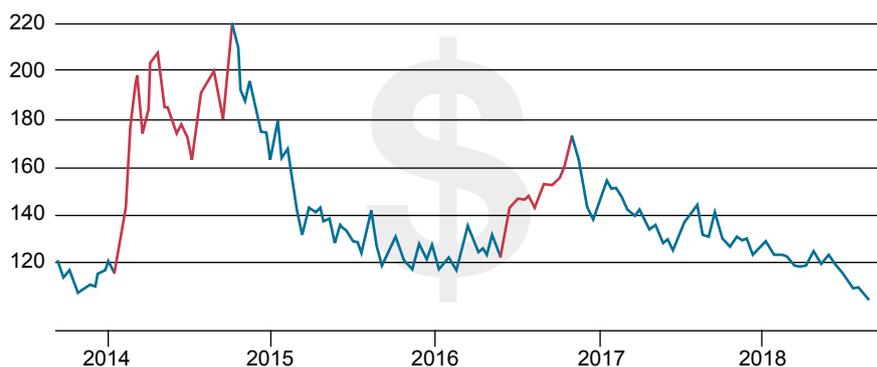
Reputational water risks

Reputational risks score highest in the overall risk assessment. 85% of 100 Locations show "high to very high" risks. Looking at the indicators, cultural and religious aspects of water are high in the regions, as well as global and local media coverage. However, this is not necessarily connected to coffee but industrial practices as a whole. In the case of Brazil, the broken Bento Rodrigues Dam reservoir flooded entire villages with toxic effluents increasing media coverage related to freshwater pollution in the region. Furthermore, Reputational risks can also be linked to the working conditions of small-scale coffee farmers. One example is the admission of Nestlé and Jacobs Douwe Egberts in 2016 that slave labor was used on Brazilian coffee plantations and could be connected to their supply chains.¹²

Regulatory water risks

According to the results, nearly 90% of Tchibo's supply chain is situated in moderately risky regulatory contexts. Around 10% show moderate to high risk. Although Brazil progressed toward more decentralized, participatory and integrated water resources management with the National Water Law in 1997 and the creation of the ANA in 2000, uneven distribution of water sources still poses a big chal-

Fig. 10: Development of global coffee price 2014 - 2018 (in US\$). Chart periods marked in red show price increases affected by drought in Brazil (2014) and Vietnam (2016). Sources: Bloomberg, Guardian, Reuters.

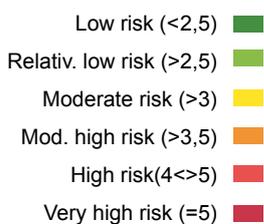


lenge.¹³ Vietnam presents a similar situation, since the water sector has no overall integrated strategy and action plan at national or regional basin level.¹⁴ In times of drought, some states suffer significantly more due to sedentary climatic conditions. The research is consistent with the results by the water risk filter, displaying all locations with a risk score higher than 3. Improving water governance will be one of the major challenges when taking action for risk reduction.

Water risk results of coffee cultivation locations (in%)



Fig. 11:
Overall water risk results
coffee cultivation



Scarcity

Water scarcity is an aggregated indicator composed of multiple sub-indicators such as monthly water depletion, aridity, groundwater over abstraction, floods and droughts. WRF values for scarcity display relatively low risk scores in general, also for locations in Brazil and Vietnam. Although only 3 locations (in India) show risk scores above 3,5 and 37 locations moderate risk, scarcity of water can be a problem when expected rainfall fails to happen and groundwater resources are poorly managed. This is the time when droughts occur, with devastating effects for the farmers and their harvest.

Droughts

Droughts score exceptionally high! 43% of locations that are experiencing a “very high risk” of drought are located in Brazil. Another 36% of locations are showing “moderate to high risk”. Secondary research and interviews with WWF colleagues on the ground showed that WRF results are very realistic. Two major droughts hitting Brazil in only the last 4 years, increased coffee prices by more than 70% at times, disrupting the world coffee market as can be seen in figure 6. Vietnam is experiencing similar problems. Having been hit by the worst drought in nearly a century in 2016, shortly after droughts in 2013 and 2015, the central highlands coffee cultivation region’s productivity decreased dramatically.¹⁵

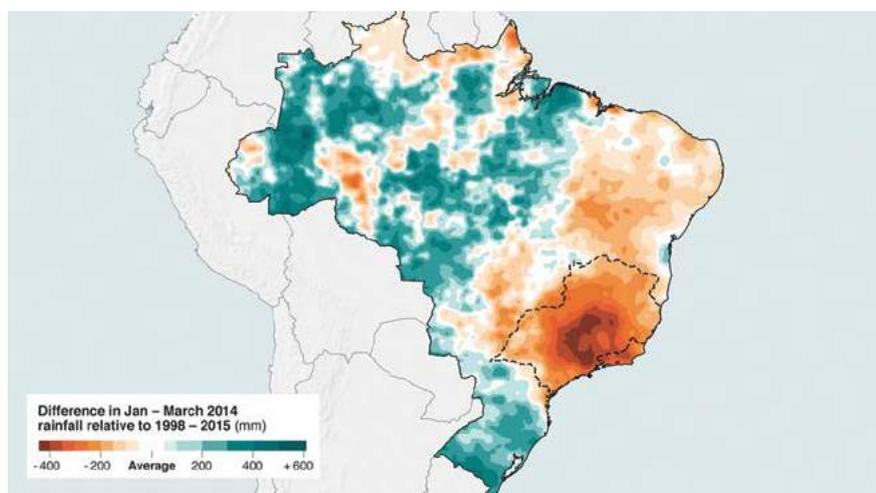
Floods

80% of locations face “high risk” of floods and no location shows below “moderate” risk levels. Risk of flooding is mainly prevalent in the downstream regions of a river basin, when water accumulates and elevation flattens out. Coffee is mainly



Coffee production Brazil, Minas Gerais state.

Fig. 12:
Brazil's 2014 drought was the worst in 85 years. Highest changes in rainfall overlapping with majority of Brazil's coffee production regions. (*Coffee and Climate Initiative, 2015*)



grown in higher mountainous regions (around 1000m above sea level, depending on the variety) so risk of floods is reduced. Further research indicates that floods did not have severe effects on the coffee cultivation in the respective regions.

Pollution

88% of locations show a “moderate to high” risk of pollution. Because the identified locations are mainly intensively used in agricultural and ore production, pollution stemming from nitrogen, phosphorus, pesticides, organic load or mercury, as well as potential acidification may be high. Especially in South American countries such as Brazil, the Mercury load carried in rivers is of major concern to human and animal health. Being released during the sourcing of mineral resources, the toxic heavy metal is transported through water and accumulates in freshwater fish as well as agricultural lands via irrigation, eventually entering the food cycle.

Conclusion coffee water risk analysis

More than 75% of Tchibo’s coffee is sourced from Brazil and Vietnam. Main production areas in Brazil are the states of Minas Gerais and Espírito Santo. In Minas Gerais, where ~27% of sourced coffee is cultivated, the cultivation is situated in the river basins of Parana and Rio Doce, in the Cerrado region. Large cities including the capital Belo Horizonte, Uberlândia and Contagem, are together home to over 4 million people. Although physical risk scores are moderate, droughts are a significant threat to coffee cultivation in those areas. In Brazil, Minas Gerais and Espírito Santo were amongst the regions severely impacted during absent rainfall and drought in 2014.¹⁶

In Vietnam most coffee comes out of the Dac Lac and Lam Dong provinces. The adjoining provinces are located in the south of the country, north east of Ho Chi Min City in the Mekong Delta. For years now, the Mekong Delta has been threatened by sediment loss and salt water intrusion which can contaminate fields and destroy harvests¹⁷. However, a more pressing threat to coffee cultivation in Vietnam are – much like in Brazil – a seasonal lack of rainfall and prevailing drought. In 2016 the Mekong Delta suffered the worst drought in nearly a century, with

Top 15 highest overall risk locations for coffee cultivation

Country**	Province	Sourcing Volume Province	River Basins	Overall Water Risk	Physical	Regulatory	Reputational
Brazil	Minas Gerais	27%	Parana, Rio Doce	3,3	3,1	3,0	5,0
Brazil	Espirito Santo	9%	no data*	3,3	3,2	3,0	5,0
Brazil	Sao Paulo	4%	Paraiba do Sul	3,4	3,3	3,0	5,0
Brazil	Bahia	3%	Rio de Contas	3,5	3,4	3,0	5,0
Brazil	Parana	1%	Parana	2,8	2,4	3,0	5,0
Vietnam	Dac Lac	13%	Mekong	2,7	2,4	3,4	4,0
Vietnam	Lam Dong	8%	no data*	2,9	2,6	3,4	4,0
Vietnam	Others	5%	no data*	3,0	2,7	3,4	4,0
Vietnam	Dak Nong	4%	no data*	2,8	2,5	3,4	4,0
Vietnam	Gia lai	4%	no data*	3,0	2,7	3,4	4,0
India	Andhra Pradesh	4%	Krishna	3,7	3,6	3,3	5,0
India	Karnataka	3%	Cauvery River	3,8	3,8	3,3	5,0
Honduras	Ocotepeque	7%	Ulua	3,0	2,7	4,0	2,8
Colombia	country data	4%	no data*	2,7	2,4	3,2	3,6
Peru	country data	4%	no data*	2,9	2,6	3,8	3,0

Production volume Tchibo: 181.204 tons - World production: 9.586.080 ton

*At the current version of the WRF, no data on name of river basin available

**Sourcing volume per country: Brazil (44%), Vietnam (34%), India (7%), Honduras (7%), Colombia (4%), Peru (4%).

Countries with a sourcing volume less than 3% were left out for simplicity reasons.

the Mekong water level down to its lowest since 1926. Cultivation and exports of coffee were negatively affected.¹⁸ Climate data also indicates that coffee producing regions both in Brazil and Vietnam will be more vulnerable to droughts in the years to come¹⁹.

These two cases alone show that even though risks on a global comparison basis are moderate to low, they materialize in economic losses due to extreme weather events.

Potential pathways

Following the risk analysis, interventions should focus on the following areas:

Increase supply-chain transparency

As coffee is the most important product for Tchibo, transparency about farmers should be established. This in turn will enable a more concrete water risk and general S&E risk analysis. During our analysis we identified possible ways to map single producers or cooperatives using the data from 4c, Rainforest Alliance, UTZ or Fairtrade certified products.

Actions

- » Analyze own certified coffee producers to generate clear understanding of locations and actors and develop an approach to move towards more transparency even for non-certified share.

Widen share of certified coffee and integrate water stewardship criteria

So far about 30% of Tchibo's coffee segment is certified. According to a recent study on water stewardship in agricultural certification by WWF, systems used by Tchibo such as 4c (26/70), Rainforest Alliance (33/70), UTZ (38/70) or Fairtrade (47/70), all cover water criteria. There is room for improvement, especially when looking at segments like water governance and management, two crucial areas for sustainable water use on farms.

Actions

- » Increase share of sustainably sourced coffee
- » Work with partners to advise certification systems such as 4c, Rainforest Alliance/UTZ on sustainable water criteria and approaches

Collective Action coffee projects

WWF Brazil has expressed a strong interest in collaborating with Tchibo and WWF Germany to set up a project working on the ground with the coffee farmers in the hot spot regions of Brazil. Identified by WWF²⁰ Brazil as a high priority region is the Cerrado region which includes Minas Gerais, the main Arabica growing state. Relevant for Tchibo, Minas Gerais and other coffee growing regions such as Espirito Santo or Parana have suffered severe droughts accompanied by loss of harvest and an increase in coffee prices. When designing a project, other important sustainability areas such as social standards and working conditions at the farm level should also be considered.

Actions

- » Use better producer data to map out concrete coffee production areas
- » Perform new environmental & social analysis of respective producers
- » Focus most likely on Brazil: Minas Gerais, Espirito Santo, Parana
- » Generate a water stewardship pilot project in relation to coffee in collaboration with other actors such as members of the global coffee platform where Tchibo is already a member
- » Integrate Water Stewardship as a thematic area in the project planning process of Tchibo's "Joint Forces" coffee program

Textiles

Focus on Cotton – not MMF, Synthetics or animal Fibers

The raw material base of Tchibo's textile products consist of cotton (58%) synthetics (36%) cellulose fibers (7%) and to a small degree of animal products (1,5%). Cotton, both conventional and organic, requires great amounts of water during production while synthetic and natural counterparts use only a fraction of that water²¹. Looking at the water footprint per raw material, cotton ranks highest by far, consuming 800% to 2300% times more water than any other input material (Fig. 14). In addition to the water use, cotton is often produced in regions with already high water stress, such as India, China, Turkey or Pakistan.

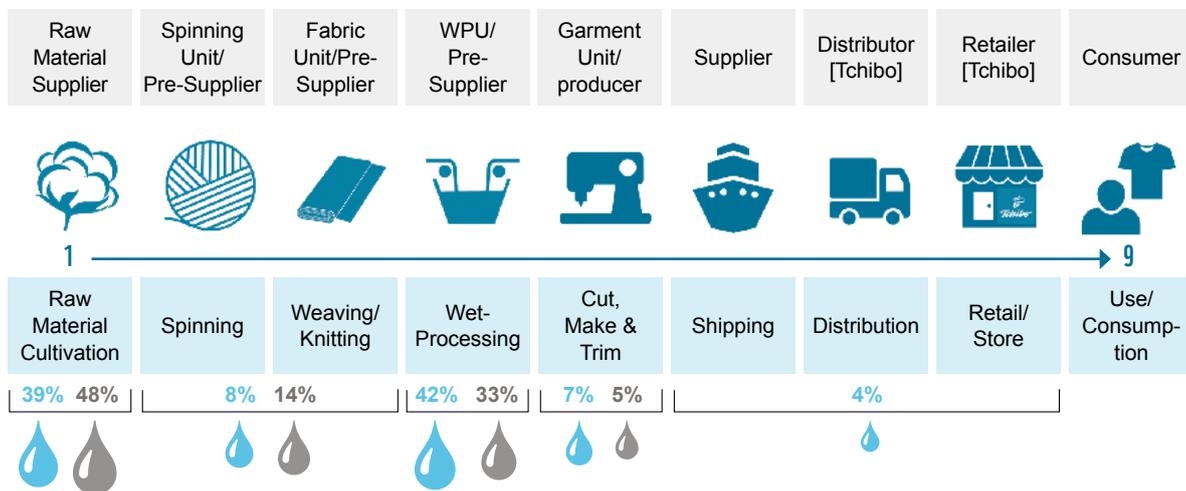


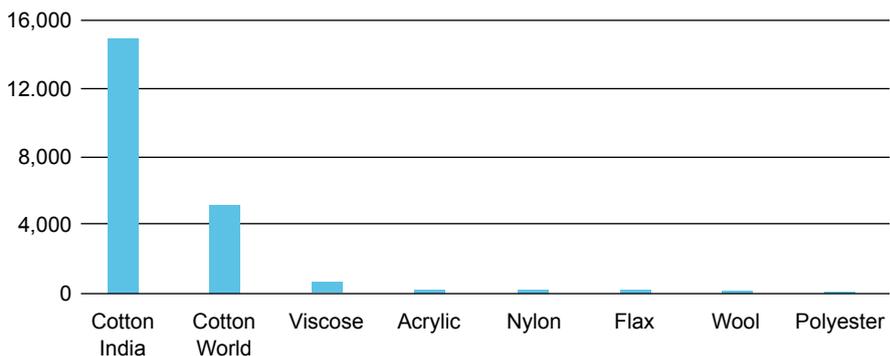
Fig. 13: Water intensity (use) and pollution per supply chain step

The water used during the production of for example cellulose fibers is mainly cooling water (90–95%) which does not cause local fresh water resource depletion²². Although leather is a water intensive and polluting raw material, its impacts are not covered in this report given its low share of volume in relation to Tchibo's portfolio.

Water Intensity 
Water pollution 

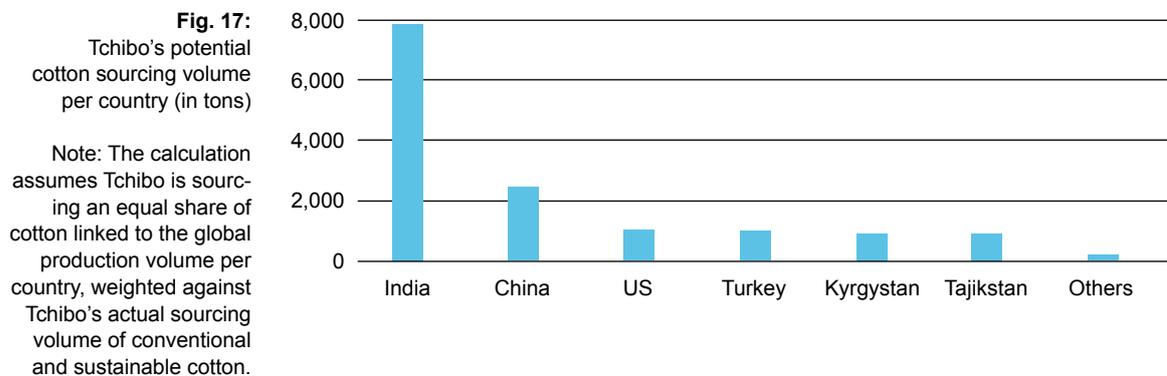
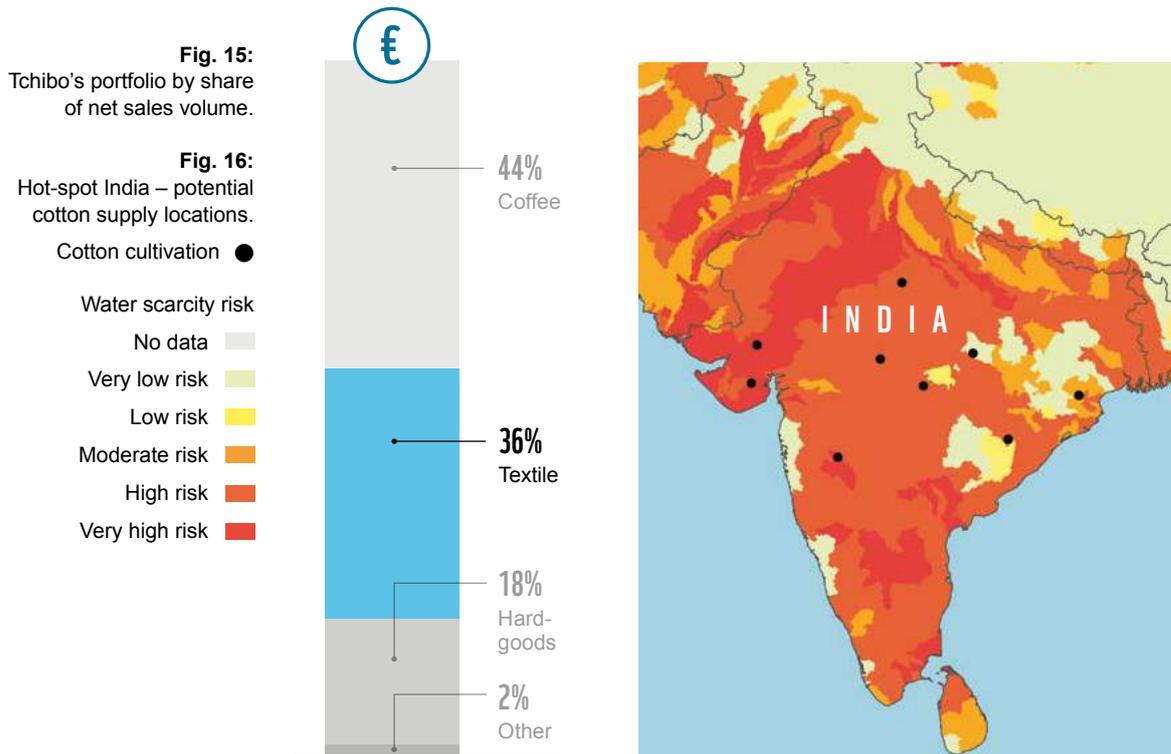
Looking at the textile production step, wet processing is the most water intensive and most polluting step in the supply chain, as water use in CMT is negligible by comparison. Consequently, the analysis focuses on Tchibo's Wet Processing Unit suppliers.

Fig. 14: Water Footprint (Liter/Kg) of textile for various raw materials



Focus: cotton cultivation Overall water risk analysis

According to the results, 75% of Tchibo's 100 potential cotton sourcing locations face "moderate to high" overall water risks. The only exception is the United States, showing "low to moderate" risk values. From a sourcing perspective, purchasing cotton from the US seems logical, but proves not to be feasible due to Tchibo's low influence on the



cotton purchasing process. Furthermore, the bulk of global organic cotton cultivation (65% of Tchibo's cotton sourcing volume) is produced in India. In relation to risk reduction, WWF advises that outsourcing certain locations should only be one of the last mitigation strategies. Instead we ask that companies understand the local water risks and start working on the ground, including addressing underlying water risks via strategies, such as collective action projects.

In relation to risk reduction, WWF advises that outsourcing certain locations should only be one of the last mitigation strategies.

Cotton is one of agriculture's most water and pesticide intensive crops, mostly grown in semi-arid, water-scarce areas. According to the World Resource Institute as much as 57% of cotton is grown in high water stress regions.²³ Its cultivation takes up about 2.5% of global arable land, involving about 30 million farmers, providing direct income for more than 100 million households worldwide and employing almost 7% of all labour in developing countries. In 2009, cotton accounted for 6.2% of total global pesticide sales and 14.1% of insecticide sales for all crops and has been estimated to consume 8-10% of the world's pesticides. For Tchibo, cotton is the second most important commodity after coffee.²⁴

Physical water risks

80% of potential cotton cultivation faces “moderate to high” physical water risks, such as water scarcity, pollution, floods, droughts and other physical characteristics of water in a given context. Again, India is strongly represented on the upper end of the risk scores. Both the high water intensity of cotton, as well as growing locations with relatively high water stress and physical water risks are strongly affecting cotton cultivation worldwide.

Regulatory water risks

95% of locations are experiencing “moderate to high” regulatory risk. Again regulatory risks are high in India, as governance and enforcement in the water sector traditionally lags behind the ambition of legislation. Weak institutions and drastically increasing competition for resources is already leading to over-exploitation of groundwater resources in drier regions of the country, where cotton is mainly grown.²⁵ With India's ground water resources rapidly depleting, regulatory issues can be both a threat and an opportunity. Addressing lack of governance and enforcement is key to reducing water related risks in the Indian context.

Reputational water risks

With regard to reputational risks, more than half of cotton growing locations show “very high” risks. Cultural/religious aspects of water are high, as well as global and local media coverage. However, this does not mean that especially cotton related water problems have led to negative publicity in the past as the metrics do not distinguish. Looking at India, the right to water of people versus corporates from abroad already has a tradition. The most prevalent example is “Killer Coke”, where Coca Cola was using ground water for the production of Coke beverages, while adjacent communities did not have access to water. Farmers blamed the company for their diminishing water resources. Consequently, the company had to leave the country.

Scarcity

Water scarcity is an aggregated indicator composed of multiple sub-indicators such as monthly water depletion, aridity, groundwater abstraction, floods and droughts. According to the analysis 83% of cotton cultivation regions are situated in “moderate to high” water scarcity risk locations. The highest risks are connected to locations in India (e.g. Madhya Pradesh²⁶) and China (Xinjian and Gansu region) as can be seen in the box below.

Water risk distribution of cotton cultivation locations (in %)

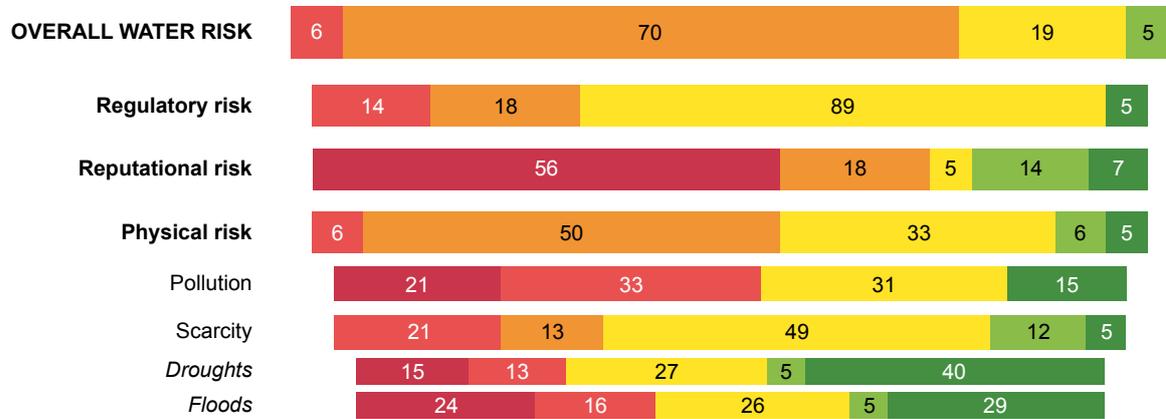


Fig. 18:
Overall water risk results
cotton cultivation

- Low risk (<2,5) ■
- Relativ. low risk (>2,5) ■
- Moderate risk (>3) ■
- Mod. high risk (>3,5) ■
- High risk(4<>5) ■
- Very high risk (=5) ■

Droughts

Droughts are the most devastating natural event for cotton. Especially in India, where farmers depend heavily on rain water in the monsoon season, a shortfall severely impacts the crops, lowering yields significantly. With 15% of locations showing very high, 13% high risk and 27% moderate risk, there are significant risks associated with droughts affecting about half of cotton cultivating locations: Overall, the world market price for cotton stayed relatively stable, since global cotton demand was decreasing in the past years and losses from a drought in India or China could be offset by good yields in the US or other locations.

Floods

Although droughts and the lack rainfall are by far the biggest problems for cotton cultivation, the WRF results display an equally risky landscape for the risk of floods. Floods have in the past damaged India's cotton plantations, mainly causing the seeds to be washed away when fields are flooded.²⁷ With floods and more extreme, heavy rainfalls predicted to increase due to climate change, they therefore pose one threat to cotton cultivation.

Pollution

Water quality risk is comprised of multiple indicators, such as nitrogen loading, pesticide loading, soil salination or mercury loading. Estimates attribute up to 10% of the world's pesticide use to cotton cultivation. 65% of Tchibo's cotton based products are produced organically and thereby only connected to water pollution from fertilizers.

Conclusion cotton water risk analysis

Priority cotton growing locations for Tchibo, especially for sustainable cotton, are India and China. The Indian provinces Madhya Pradesh, Gujarat and Orissa alone supply almost 50% of cotton. Cotton, originally a tropical plant is mostly grown in arid regions to reduce plant damages by pests. Cultivating a thirsty plant, with water requirements significantly higher than most crops, in arid conditions understandably increases conflict over water resources in those regions.



In India and Pakistan, cotton production is mainly linked to small-scale farmers. Cotton collection is going through many stages, which makes transparency of supply chains very difficult.

Top 10 highest overall risk locations for cotton cultivation

Country**	Province	Sourcing Volume Province	River Basins	Overall Water Risk	Physical	Regulatory	Reputational
India	Madhya Pradesh	25%	Ganges, Narmada, Godavari	3,5	3,3	3,3	5,0
India	Gujarat	12%	no data**	4,1	4,2	4,0	5,0
India	Orissa	12%	Bahman, Mahanadi	3,6	3,5	3,3	5,0
India	Maharashtra	7%	Krishna	3,6	3,4	3,3	5,0
China	Xinjiang	15%	Tarim	3,7	3,7	3,6	3,9
China	Gansu	3%	Huang He (Yellow River)	3,6	3,6	3,6	3,9
Turkey	country data	7%	no data**	3,4	3,6	3,3	2,6
Tajikistan	country data	7%	no data**	3,6	3,5	4,8	2,6
Kyrgyzstan	country data	7%	no data**	3,6	3,4	4,8	2,2
US	country data	5%	no data**	2,5	2,5	2,2	3,5

Sourcing volume Tchibo: 15.925 ton – World Production: approx. 24.500.000 ton

*At the current version of the WRF, no data on name of river basin available

**Sourcing volume per country: India (56%), China (18%), Turkey (7%), Tajikistan (7%), Kyrgyz-stan (4%), Peru (4%)

This is clearly visible through examples, such as India's depleting ground water levels²⁸, the disappearance of the Aral Sea, inefficient irrigation practices throughout Pakistan's cotton cultivation sector and overall high levels of pollution from pesticides in cotton cultivation.

Cotton cultivation in China on the contrary is less prone to water related risks, since in the major producing province of Xinjiang much less water is required due to lower temperatures and better overall conditions. Furthermore, although precipitation is scarce, melt water from the surrounding mountains provides a significant source of fresh water and more sophisticated irrigation practices are used than in India. Nevertheless, despite less risk China has also experienced droughts and water shortages in the past.²⁹

WRF results backed up with research and input from colleagues of WWF India show that Tchibo's potential cotton supply is linked to regions with high water risks, especially in India.

Potential pathways

Following the risk analysis, interventions should focus on the following areas:

Go for 100% organic cotton

Currently Tchibo sources 65% organic and altogether 80% more sustainable cotton. WWF support's Tchibo's overall goal to source 100% sustainable cotton by

Lobby certification systems, especially EU regulations, for better water standards in sustainable cotton certification

2020. According to a recent study on water stewardship in agricultural certification by WWF, systems used by Tchibo such as BCI (49/70), GOTS (20/70) or CmiA (25/70) do not yet fully cover water stewardship criteria. Therefore, Tchibo should commit to reaching 100% sustainable cotton, preferably organic, by 2030 or lobby certification systems to include better water standards. Next to better marketing for products produced under sustainability standards, Tchibo would increase the resilience of farmers as water plays an increasingly important role in certifications such as BCI.

Actions

- » Set targets to increase the share of organic cotton
- » Use other sustainability standards, such as BCI for conventional cotton
- » Lobby certification systems, especially EU regulations, for better water standards in sustainable cotton certification

Join existing collective action cotton projects in India

For many years, WWF India has been actively working with corporate partners on increasing the sustainability of cotton cultivation on the ground. To widen the scale of sustainable cotton production, WWF recommends Tchibo joins existing projects in India.

Actions

- » Project 1: Satpuda Pench Corridor – C&A + Lufthansa
Project in the state of Madhya Pradesh to sustain a natural corridor of tiger population, while promoting organic cotton with small-scale farmers
- » Project 2: Jalna – IKEA, H&M, M&S
The project in Maharashtra aims to promote more sustainable cotton, BCI certified, as well as seed sourcing and better agricultural practices. Water Stewardship component to be developed.
- » Project 3: Nal Sarovar
The project aims at reducing chemical pesticide flows and water consumption from cotton farming to protect an important and endangered wetland bird sanctuary. Water Stewardship component to be developed.

Focus: textile wet processing

Roughly 36% of Tchibo's net sales are generated through textile purchases. The water risk analysis is based on Tchibo's data for 166 WPU's, which accounted for roughly 50% of Tchibo's purchases

in 2017. Tchibo increased transparency regarding upstream suppliers who use water and chemicals (wet processing plants). The process started in June 2017. Since integrating a corresponding query into its standard processes, Tchibo has

Fig. 19:
Tchibo's portfolio by share of net sales volume.

Fig. 20:
Hot-spot China – Textile wet processing locations

- Textile wet processing units ●
- Water scarcity risk
- No data
- Very low risk
- Low risk
- Moderate risk
- High risk
- Very high risk

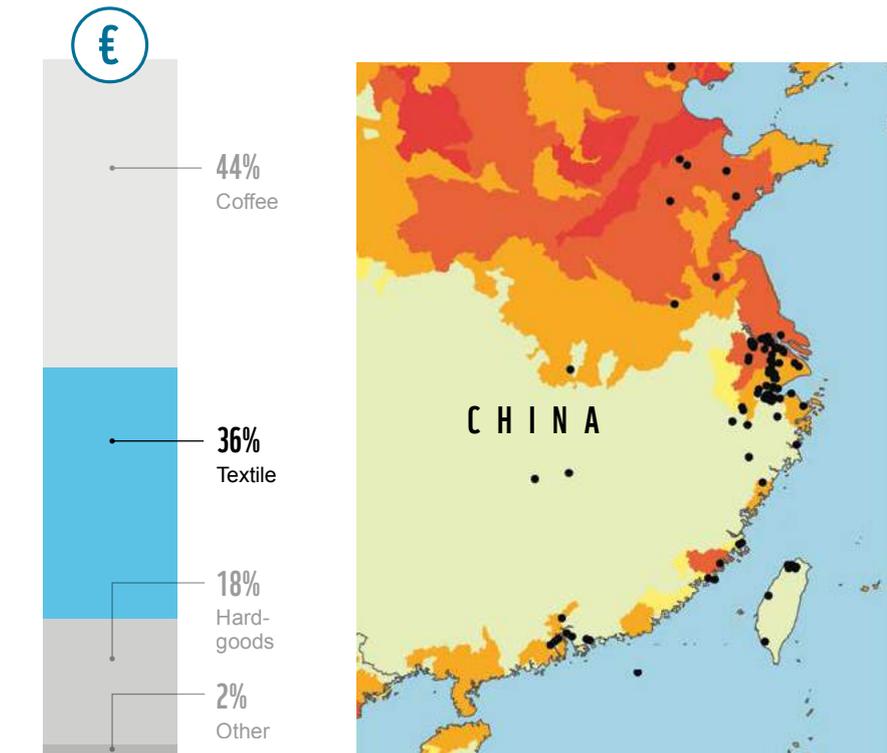
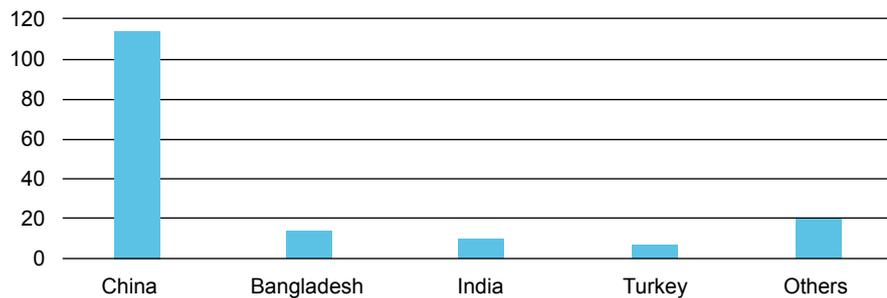


Fig. 21:
Number of Tchibo's WPU per country



In 2011 Greenpeace exposed the disposal of hazardous chemicals into waterways by Chinese suppliers of textile giants such as Adidas and Nike by publishing its report "Dirty Laundry: Unrav-elling the corporate connections to toxic water pollution in China". Following a public outrage and pressures from the media and other NGOs, to this day more than 80 international brands and suppliers (Puma, H&M, Adidas, Nike) took up the challenge of Greenpeace's "Detox Campaign" to achieve zero discharge of hazardous chemicals by 2020. The ZDHC (Zero Discharges of Hazardous Chemicals) foundation was created as a collective response for the brands affected and a blacklist of chemicals not to be used created. This example shows how seemingly unlikely sectors can tumble under outside pressure.

A majority of suppliers is based in northern China (Shanghai region), where water scarcity and pollution are a problem.

received information on the relevant wet processing suppliers for ca 50% of the textile products ordered in 2017. Altogether 166 wet processing plants (production sites where water intensive processes such as dyeing and finishing are carried out) were identified. Out of these 166, 115 are located in China, the rest being located in countries such as Bangladesh, Turkey, India or Vietnam. The 166 suppliers comprised 808 projects, with 545 located in China.

Overall water risk analysis

According to the results, 60% of Tchibos textile projects are produced at WPU that face “moderate to high” overall water risk. A majority of suppliers is based in northern China (Shanghai region), where water scarcity and pollution are a problem. The Yangtze River, one of WWF’s priority rivers, is experiencing increasingly water stress. The remaining 40% of suppliers showing “low” risk are situated in southern China, Italy, Ethiopia, Laos northern Vietnam, and the Balkans.

Physical water risks

99% of textile projects produced at WPU face “moderate to high” physical water risks. Especially WPUs located in river basins in northern China, southern Vietnam, Pakistan and the Middle East are experiencing high levels of water stress. The only WPUs with low water risks are based in Europe. Since the availability of fresh water is crucial for a functioning wet processing units, physical risk is also for textile wet processing the main risk category to focus on.

Regulatory water risks

80% of all projects are produced in WPU’s that face “moderate to high” regulatory water risks. Wet processing units that quickly adapt to environmental regulations can even gain a competitive advantage. In recent years China is becoming aware of its pollution problems and implementing laws and plans (e.g. Water Pollution Prevention and Control Action Plan) to protect its highly polluted ground water.³⁰ Due to that, and given the projected lack of clean freshwater resources, restrictions are very likely to become more stringent in the future. In other Asian countries, enforcement of often well designed water laws always lags behind, which decreases the motivation of WPU to adhere with the standards. However, it is not uncommon for governments to close factories that are not working according to certain standards to make an example, as in the case of Kanpur in India where authorities closed 20 factories that were discharging toxic waste water directly into the river Ganges.

Reputational risks

Half of all project locations show “moderate to high” reputational water risks. Reputational water risks related to wet processing malpractice are the dominant driver of sustainability efforts in the textile industry. Due to high negative media coverage following investigative reports such as Greenpeace’s “Dirty Laundry Report” resulted in immediate and widespread action by the sector to clean their house. To date, pollution incidents connected to WPUs are the most important environmental reputational risk for companies in the sector. As Tchibo rightfully discloses supplier data publically, the risk of negative backlash in case of unfavorable media coverage is significant. Making sure, that suppliers adhere to waste water regulation is considered standard practice today.

Water risk distribution of wet processing projects (in%)

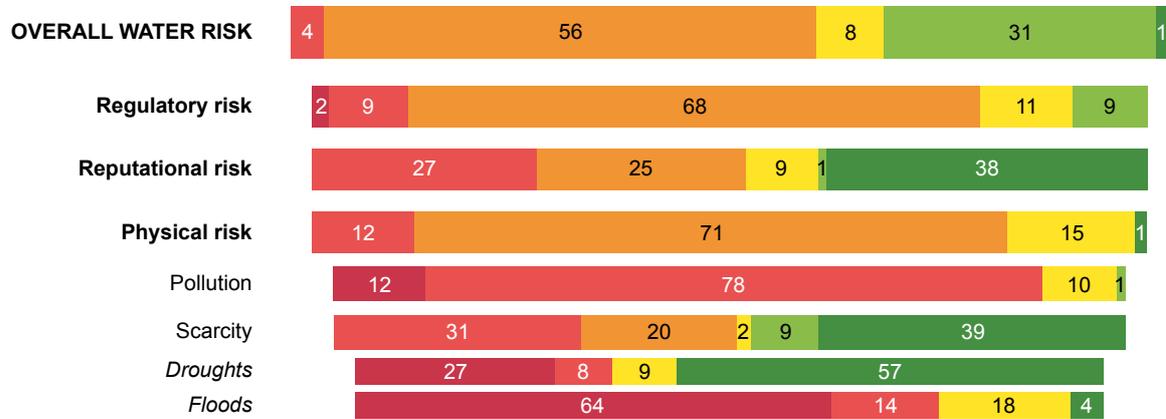


Fig. 22:

Overall water risk results
cotton cultivation

- Low risk (<2,5) ■
- Relativ. low risk (>2,5) ■
- Moderate risk (>3) ■
- Mod. high risk (>3,5) ■
- High risk(4<>5) ■
- Very high risk (=5) ■

Scarcity

Half of all WPU projects face “moderate to high” water risks. High water risks, such as annual water depletion, is mainly connected to WPUs producing in northern China (Shanghai region), India, Pakistan and the Middle East. Out of 253 projects situated in high risk areas, 94 are located in the Jiangsu Province in China and 56 in the Tekirda Province in Turkey alone.

Droughts

About a third of the projects face “high to very high” risk of droughts, located in China (in Guangdong, Shandong and Hong Kong), Bangladesh, India, Laos, Thailand and some in Italy. On the contrary, nearly two thirds of projects face no risk of drought at all. These are mainly in China (predominantly Jiangsu & Zhejiang Provinces), and some are in Ethiopia and Pakistan. Droughts are especially devastating for crop cultivation but much less relevant when looking at industrial textile production. Industrial water needs are often better protected and organized in times of drought, due to high value creation per water use volume and lower amounts needed relative to agricultural production.

Floods

78% of projects show “high to very high” flood risk – the highest score of all flood risks in Tchibo’s portfolio. Floods can be devastating for factories near water as they destroy infrastructure, cause damage to production facilities and therefore substantially disrupt economic production, also in areas where Tchibo’s suppliers are located (Yangtze & Taihu River Basin)³¹. In 2016, the Yangtze River flooded killing 1,200 people and flooding parts of Lake Taihu, a major WPU hot-spot for Tchibo. In 1998, floods in China killed 4.000 people in total.

Pollution

The pollution risk indicator shows arguably the 2nd worst result after floods, with 12% at very high risk and above 60% in the high risk category. Since most locations are located in industrial parks with a high concentration of polluting industries and plants, these numbers are not surprising. However, the results are still alarming since the textile processing units require large amounts of clean fresh water for processes such as dyeing.



Textile wet processing in China

Top 25 textile WPU by number of projects and respective water risks (out of 166 in total)

Name of Supplier	Projects	Country	Province	Overall Water Risk	Physical	Regulatory	Reputational
Sun Hing Textiles (Shen Zhen) Ltd.	45	China	Zhejiang	2,9	2,2	3,6	3,9
Beks Socks & Underwear	31	Turkey	Hatay	3,5	3,9	3,3	2,6
Suzhou Yuze Textiles Co., Ltd.	27	China	Zhejiang	2,9	2,2	3,6	3,9
Zhangjiagang Chengxin Printing & Dyeing Co., Ltd.	27	China	Zhejiang	2,9	2,2	3,6	3,9
Shandong Weiqiao Super Width Printing & Dyeing Co., Ltd.	26	China	Zhejiang	3,6	3,6	3,6	3,9
Xiang Hao Textile Co., Ltd.	25	China	Taiwan	2,8	2,2	3,6	3,9
Derun Industrial (Hong Kong) Co., Ltd.	23	China	Jiangsu	3,8	3,9	3,6	3,9
Aloha Tekstil	22	Turkey	Tekirda?	3,6	4,1	3,3	2,6
Zhejiang Jiananda Textile Technology Co., Ltd.	21	China	Jiangsu	3,8	4,0	3,6	3,9
Nan Yang Knitting Factory Co., Ltd.	21	Thailand	Samut Sakhon	3,9	4,2	3,5	3,4
Wujiang Sanlian Printing & Dyeing Co., Ltd.	20	China	Jiangsu	3,6	3,6	3,6	3,9
AKH Knitting & Dyeing Ltd.	18	Bangladesh	Chittagong	3,2	2,2	4,3	4,6
Divine Textile Ltd. Unit-02	18	Bangladesh	Dhaka	3,7	3,1	4,3	4,6
Hi-Tech Laos Apparel Co., Ltd.	18	Laos	Vientiane	2,9	2,3	3,8	3,2
Shaoxing Guozhou Knitting Technology Co., Ltd.	17	China	Zhejiang	2,9	2,2	3,6	3,9
Ayka Addis Textile & Investment Group PLC	17	Ethopia	Oromia	2,9	1,9	4,3	3,5
Xintiandi Textile Printing and Dyeing (Jiaying) Co., Ltd.	13	China	Shandong	4,0	4,2	3,6	3,9
Shantou Yingqun Dyeing & Finishing Co., Ltd.	9	China	Jiangsu	3,9	4,2	3,6	3,9
Taicang Jiahuang Printing & Dyeing Co., Ltd.	9	China	Guangdong	3,0	2,5	3,6	3,9
Zhejiang Yaxue Dyeing Co., Ltd.	9	China	Jiangsu	3,6	3,6	3,6	3,9
Hateks Hatay Tekstil Isletmeleri	9	Turkey	Bursa	2,5	2,1	3,3	2,6
Interstoff Apparels Ltd.	8	Bangladesh	Dhaka	3,7	3,1	4,3	4,6
Changzhou Dongfang Eastdye Weaving & Dyeing Co., Ltd. / Changzhou Oriental Eastdye Textile Co., Ltd.	8	China	Taiwan	2,8	2,2	3,6	3,9
Jiangyin Fangzhou Printing Co., Ltd.	8	China	Zhejiang	3,4	3,2	3,6	3,9
Weifang Tricol Textile Co., Ltd.	8	China	Al Isma'iliyah	3,7	3,8	3,4	4,0

Conclusion textile wet processing water risk analysis

China undoubtedly is the major water risk country in Tchibo's portfolio. Out of the top 25 suppliers with the most projects, 16 are from China, mainly located in the Jiangsu and Zhejiang provinces close to Shanghai. The majority of those suppliers (13) are prone to high water risks with above 3,5 for overall water risk. Emphasis should be put on those two provinces that bundle the majority (>75%) of WPU suppliers in China, as well as facing high to very high water risks. Located in the Yangtze and Taihu Basin, these provinces are struggling with increasing pollution and extreme weather events such as floods. A potential mitigation response is a water stewardship project initiated by WWF China in the Taihu basin.

Although far fewer projects are executed, other countries facing high water risks are Bangladesh, Turkey and Ethiopia. WWF is already working actively on water stewardship in Ethiopia and Turkey.

Potential pathways

Join existing collective action WPU projects

WWF has been the first organization mainstreaming water stewardship collective action projects in textile processing in the world, with active projects in Pakistan, China, India, Turkey, Myanmar and Vietnam. One of the major efforts is the project connected to Lake Taihu in China, which aims to improve water stewardship in industrial parks. Collaborating with other brands on the issue, in this case H&M, Tommy Hilfiger and Target, is a chance to effectively mitigate Tchibo's suppliers' water risks and position the company as a responsible water steward, as well as profiting from branding and marketing benefits. Collaboration is especially interesting for Tchibo since more than 10 suppliers that are also supplying Tchibo are already part of the program. WWF strongly recommends participating in ongoing efforts to scale up the level of ambition.

A description of the Taihu water stewardship project: At supplier level, WWF China aims to raise awareness on water risks, provides hands-on solutions for risk mitigation and encourages collaboration with other stakeholders in the industrial park via trainings and pilots. At the basin level "The International Forum on Taihu Basin Stewardship" has been held annually since 2015, serving as a platform for government agencies, business, research institutes, communities and NGOs to exchange ideas on basin governance, sector development, finance opportunities, technology trends and public participation.

Actions

- » Join Taihu Collective Action project in China
- » Explore other collective action projects in hot-spot countries such as Turkey or Ethiopia or India

Increase supply-chain transparency

Due to inconsistency of data for 2017, this analysis only featured 50% of Tchibo's wet processing units. In order to strategically select the right base of suppliers for any future sustainability program, WWF recommends increasing the database of

Collaborating with other brands on the issue is a chance to effectively mitigate Tchibo's suppliers' water risks.

WPU suppliers to 100% and performing an additional rapid water risk analysis. This will increase the validity of results and future site selection.

Actions

- » Collect WPU supplier data to get to 100% transparency on supplier locations
- » Perform rapid WRF analysis to verify conclusions

Join existing initiatives around textile wet processing

Tchibo is already part of a variety of sustainability initiatives, which can put considerable pressure on already pressured capacities. Therefore it is important to choose wisely where to be active.

WWF strongly recommends exploring participation with the ZDHC and the Sustainable Apparel Coalition (SAC), where the majority of our partners are participating. Next to using the tools offered to streamline engagement on topics such as non-hazardous chemicals or sustainable sourcing, these initiatives create room to discuss with globally operating brands on issues such as water risks.

Actions

- » Specify risk assessment for top 20 high risk suppliers → Prepare support and improvement measures on factory level
- » Explore active participation in SAC and ZDHC

WWF strongly recommends exploring participation with the ZDHC and the Sustainable Apparel Coalition (SAC), where the majority of our partners are participating.

Hardgoods

Hardgoods represent around 18% of Tchibo's net sales. Looking at all segments of the Tchibo's hardgoods sales, the only ones potentially important in respect of water risks are jewelry and metals, because mineral resource production is mostly high in water consumption and pollution. For the following reasons, the other segments are not as important.

In general, Tchibo's hardgood suppliers (400 in total compared to 166 in wet processing) are only the first known level. The potential water use and risks entailed by those products would be connected to the raw materials used to produce the products. The raw material split is often unknown, as well as connected suppliers. Furthermore, materiality in relation to water is often not as high as can be seen in the following examples.

Fig. 23:
Tchibo's portfolio by share of net sales volume

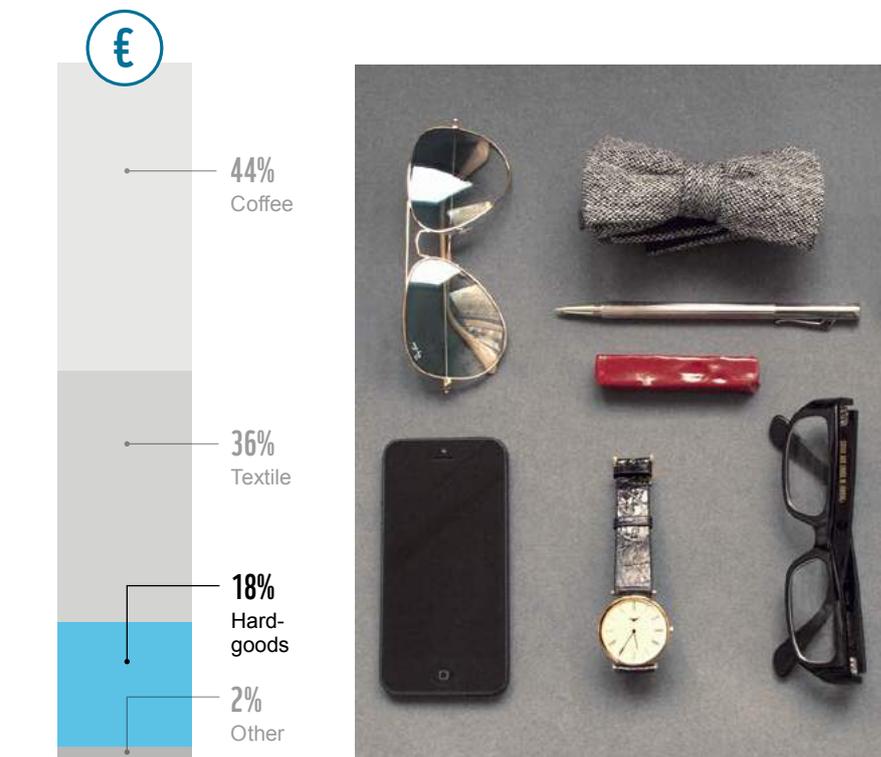
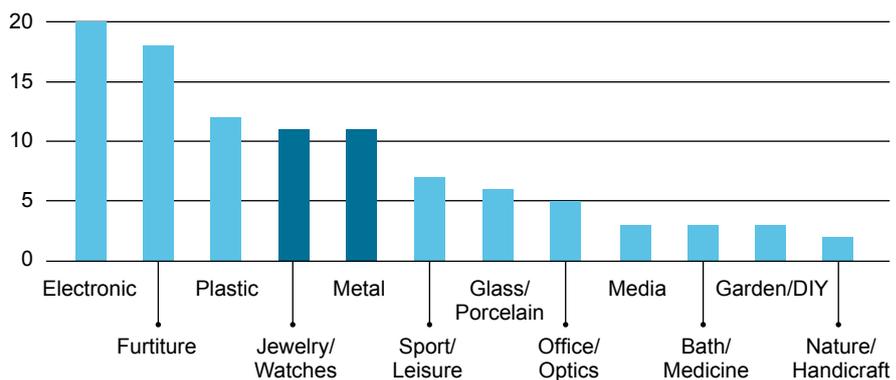


Fig. 24:
Hardgood split of Tchibo's portfolio. Segments marked in dark blue (metals & jewelry) show higher materiality for water than the rest (in %).



Without knowing what raw materials went into the products and where they came from, a water risk analysis would be based on just too many assumptions and not serve as a valid basis for strategic advice for Tchibo.

In furniture production, wood production is the major user of water. It obviously depends which type of wood is used but basically WWF regards forests as a net water generator, as forests are crucial to a functioning water cycle, as well as water storage and purification. In order to protect water resources in forestry, WWF recommends only sourcing sustainably produced wood, paper and tissue, certified by the Forest Stewardship Council (FSC).

Input materials for plastic are mainly oil, natural gas and coal, which need water resources in production but minimal amounts in comparison to agricultural or industrial textile production. The main issue here would be water pollution from spilling and sourcing incidents. However, topics like sustainable packaging or circular economy are much more strategic than water in that respect.

Electric products mainly consist of plastic and metals, so both argumentations would apply. However, due to the high complexity of supply chains connected to raw material sourcing for electric commodities, as well as the low market share of Tchibo, this segment will be postponed until strategy phase 2

In general, there are big data gaps in the hardgoods raw material split. Usually only splits such as “mix of diverse materials” or “mainly metals” are known. Without knowing what raw materials went into the products and where they came from, a water risk analysis would be based on just too many assumptions and not serve as a valid basis for strategic advice for Tchibo. Transparency has to be greatly increased.

Water Stewardship strategy

Looking at Tchibo’s net sales, materialities related to water and the underlying water risk filter results, a clear picture emerges to inform the strategy discussion. Instead of making complicated claims, WWF tries to simplify the matter of the complex topic of water for this strategy discussion.

Setting the right goals and targets for water is not as complicated as it might seem. Depending on the level of detail and ambition, goals and targets should fulfil a few basic functions:

1. Water is a place dependent resource

Unlike carbon there is no global water budget. When engaging on water in quantitative terms, we need to recognize the differences between one river basin and the next river basin where production takes place. Consequently, goals and targets need to reflect on the level of risk stemming from the context of production. That means engagement should focus on high risk locations instead of low risk locations.

2. Water is a shared resource

Water is a basic human right, needed and provided by nature, used by people and economies. It’s the ultimate shared resource on the planet. Consequently, goals and targets should address the shared nature of water, looking into the dynamics of the river basin (the context) of production and striving towards collective action. That means engagement should focus on action beyond the fence line of the company as well as within the company gates.

To strategically engage on water, WWF recommends following the WWF water stewardship ladder (see below). Through this study Tchibo already started to work on the first three steps to become a “good water steward”.

Fig. 25
The WWF Water Stewardship Ladder (2013)



Besides refining the analysis, next steps will be to start engaging in the supply chains on the ground.

Water has been selected as a priority topic in Tchibo's new sustainability strategy. At the corporate level Tchibo can take sustainable purchasing decisions (such as 100% sustainable coffee, cotton and forestry based products), engage in promising sector initiatives (such as SAC or ZDHC) and start reporting on their exposure and progress on water risks (such as CDP Water).

The main level of engagement should however be focusing on developing and implementing solutions to reduce the actual water risks Tchibo's supply chain faces. Therefore, a water risk analysis was performed for the focus business segments of coffee, cotton and textile processing. Preliminary hot spots for engagement within the supply chain are identified:

- » coffee cultivation – Brazil and Vietnam
- » cotton cultivation – India
- » textile wet processing – China

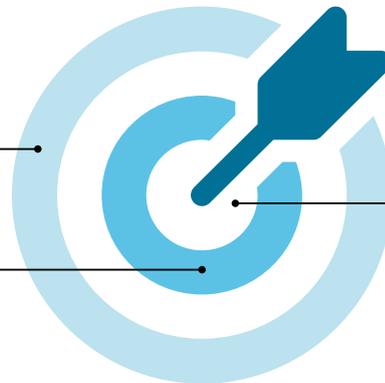
Besides refining the analysis, next steps will be to start engaging in the supply chains on the ground. The most promising way to have the greatest effect is by participating and scaling up already existing initiatives around water stewardship. For all identified hot-spots, there are potential pathways of how to engage (see respective chapter pathways discussion).

Consequently, WWF recommends Tchibo commits to the following goals and targets:

Goal: Tchibo is committed to being a good water steward

Subgoal: Water Stewardship for:

- Coffee cultivation
- Cotton cultivation
- Textile wet processing



Target: Achieving collective action

KPI 2: Collective action plans for all hot-spots developed

KPI 1: Collective action project plans for all hot-spots implemented

The recommended goals and targets reflect on the major issues related to water, namely the contextual and shared nature of water resources. Actions related to achieving collective action and influence governance could include AWS certification, context-based water targets, policy advocacy, on site technology improvements and many more. It really depends on the context and problem being faced. WWF also flags up caution regarding quantitative goals and targets, as they have to be set into context first to be really meaningful (see reasoning of context-based water targets. However, tracking water efficiency and water quality in hot-spot WPU's could be very promising and should be seriously considered – especially from a water quality point of view.

“Stewardship is about taking care of something that we do not own. Good water stewards recognize the need for collective responses to the complex challenges facing the water resources we all rely on” Alliance for Water Stewardship, 2018.

80%

percent of Tchibo's sales is directly connected to the highest sectoral water intensity of supply chains in the German economy

10,000 l

are needed on average to produce 1 Kg of cotton



70%

percent increased coffee price due to drought in Brazil in 2014

116

out of 166 wet processing units are based in China, mainly in water stressed regions in the Yangtze river basin

Footnotes

- 1) Global average L/kg of product derived from Water Footprint Network „derived crops“ dataset. Varies between countries.
- 2) Global average L/kg of product derived from Water Footprint Network „derived crops“ dataset. Varies between countries.
- 3) <https://www.bloomberg.com/quote/KC1:COM> Analysis coffee KC1:COM Commodity Coffee, US\$/Lb Prices 2014
- 4) <https://www.theguardian.com/world/2014/feb/25/brazil-drought-threatens-coffee-crops>
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- 6) Global average l/kg of product derived from Water Footprint Network „derived crops“ dataset. Varies between countries.
- 7) World Economic Forum, The Global Risk Report 2018, 13th. Edition (2018)“
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- 9) <https://www.sciencedirect.com/science/article/pii/S030917081730012X>
- 10) www.waterriskfilter.org
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- 30) <https://www.sciencedirect.com/science/article/pii/S0269749116310363>
- 31) <https://www.theguardian.com/world/2016/jul/05/flooding-china-leaves-more-than-100-people-dead-or-missing-yangtze-river-typhoon>



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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