Active supply chain management in the textile industry

Shandong Province, China

water scarcity impact

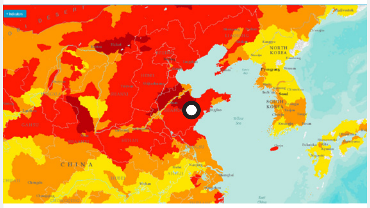
Reduced withdrawal	●
Reduced consumption	
Improved water quality	
Increased productivity	●
Net basin benefit	

volumetric impact
325 000 m³/yr

capital cost
$697 000

estimated unit cost of water
45 ¢/m³

Water Stress
Shandong, China



- Arid & low water use
- Low (<10%)
- Low to med (10-20%)
- Med to high (20-40%)
- High (40-80%)
- Extremely high (>80%)
- No data available

Water Stress Map:
F. Gassert, P. Reig, T. Shiao, M. Luck and M. Landis, 2015. “Aqueduct Global Maps 2.1.”

Confidence level
Low Medium High

Water Scarcity Impact Key
Main Minor

Credits
We would like to acknowledge Rong Chen and Zhenzhen Xu of IFC for their input in the preparation of this case study.

Project Overview

Shandong is one of the largest textile producing provinces in China, and one of four targeted under the International Finance Corporation (IFC) China Water Program. Yuyue Home Textile Co. is located in Binzhou City and specialises in weaving, printing, embroidery sewing and supplying home textile products. As part of China’s five-year plan launched in 2011, all textile manufacturers must reduce their energy and water use by 16% and 30% respectively by 2015 or face a penalty fine or closure.

The Yuyue factory is a supplier of IKEA and joined the IFC China Water Program in 2012 following encouragement from the global furniture chain. The IFC and IKEA contributed to the cost of conducting water and energy efficiency audits to identify possible cost effective interventions.

As a result, Yuyue self-funded upgrades to machinery and control systems in order to improve the factory’s resource efficiency.

Key Elements

- Supply chain incentives from IKEA led to Yuyue joining the IFC’s China Water Program.
- Water efficiency audit of the factory financed between IFC, Yuyue and IKEA.
- Government policy mandates a reduction in water use by 2015.
- Installation of upgraded technologies and automatic control systems.

Key Outcomes

- A reduction in water withdrawals of 325 000 m³/year.
- A reduction in energy use of 8 824 MWh/year.
- Payback period of 1.8 years achieved through associated energy savings.

Shandong, China

Intervention Features

- Water audits
- Education, technical training and capacity building
- Enforcement of quotas
- Textile processing technologies

Project Levers

(1) Government policy

Government policy introduced in 2011 mandated that the textile industry should reduce its water use by 30% by 2015 compared to 2010 levels. Failure to comply will result in fines and potential closure.

(2) Supply chain management

The IFC China Water Program was set up to facilitate financial investment in water efficiency projects across four major textile producing provinces in China. Several participating textile mills are nominated by global clothing brands concerned about the sustainability of their supply chain in China. This is a key driver behind many factories joining the program.

(3) Water and energy efficiency audits

The IFC and IKEA carried out a water and energy efficiency audit at the factory in order to demonstrate intervention opportunities. In addition to this, Yuyue's technicians were trained in the use of new technologies.

(4) Upgraded machinery and automatic control systems

Textile production requires high volumes of water. By installing newer textile rollers and automatic control for the mercerising process, washing machines and de-sizing machines, water absorption was reduced from 82% to 65%.

Above: Roller used in Yuyue factory (©IFC)

Outcomes and Challenges

The below diagram outlines the reductions in water use achieved in different processes within the factory.

Initial water withdrawal per machine: 119 355 m³/year	Initial water withdrawal per machine: 41 347 m³/year	Initial water withdrawal per machine: 92 710 m³/year
De-Sizing	Mercerising	Washing
Water withdrawal after intervention: 113 772 m³/year	Water withdrawal after intervention: 37 347 m³/year	Water withdrawal after intervention: 85 585 m³/year
Total water reduction: 5 583 m³/year (5%)	Total water reduction: 4 000 m³/year (10%)	Total water reduction: 7 125 m³/year (7%)

Energy use was reduced by 8 874 MWh /year across the factory's processes, presenting a significant cost saving for the factory.

Overall, the intervention has reduced Yuyue's costs by approximately $380 000 annually resulting in a payback period of 1.8 years.

A major challenge to the uptake of water reduction strategies in China is access to finance. IFC is working with the Bank of Beijing to increase the availability of loans to small to medium scale enterprises by sharing the risk of these loans through the provision of guarantees and assistance in the evaluation of applications. It is expected that this initiative will facilitate other factories to implement interventions such as those at Yuyue.