

A black and white photograph of several water droplets of varying sizes resting on a textured, possibly woven fabric surface. The droplets are in sharp focus, reflecting light and showing the intricate details of the fabric's weave. The background is a soft, out-of-focus bokeh of light and dark spots. The image is overlaid with a teal triangle on the left and a blue triangle on the right.

SWEDEN TEXTILE WATER INITIATIVE

A global sustainability initiative

6 February 2020

**Water –
Fashion Victim of the Textile Industry**

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Agenda

1. Who is Stockholm Textile Water Initiative?
2. STWI Program Cycle
3. STWI Results
4. Textile Industry's Pressures on Water Resources
5. Textiles Manufacturing Process
6. Q&A

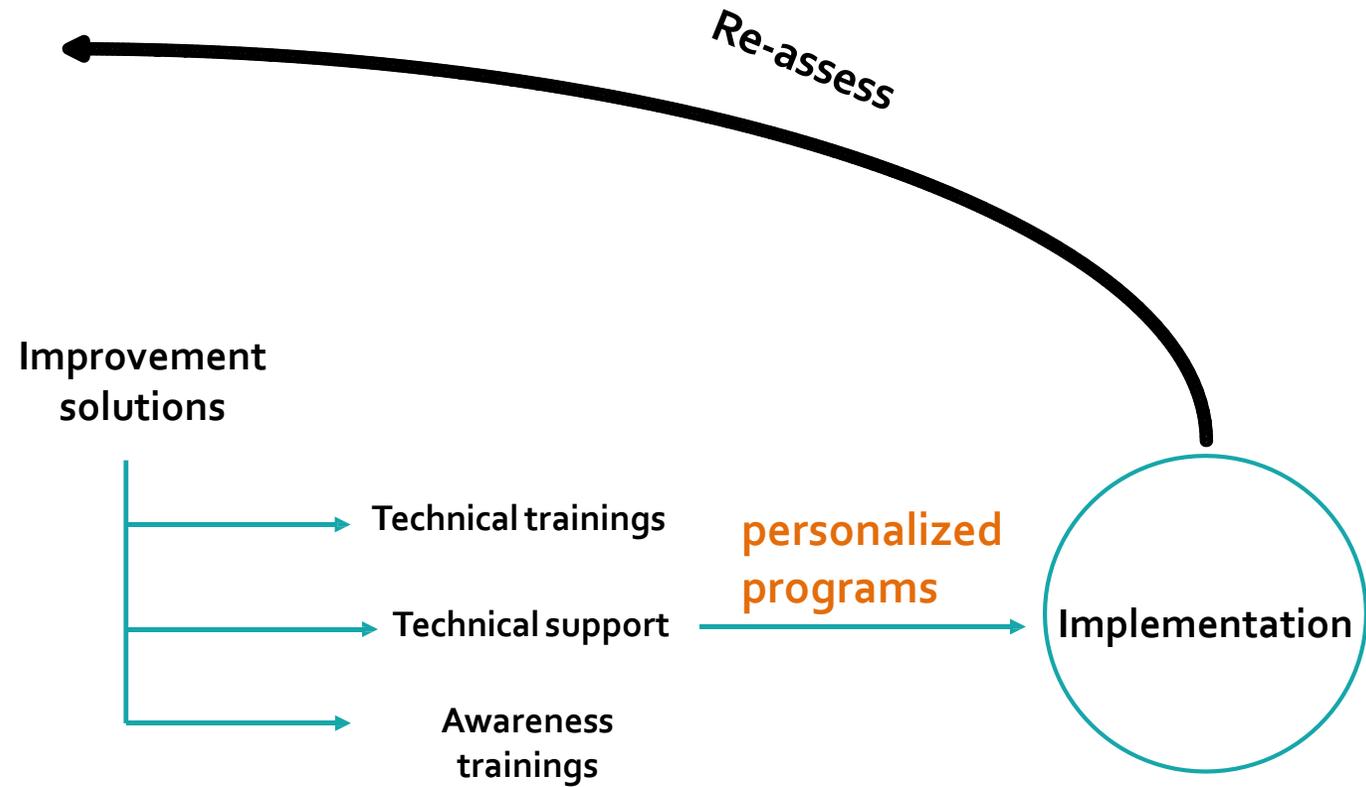
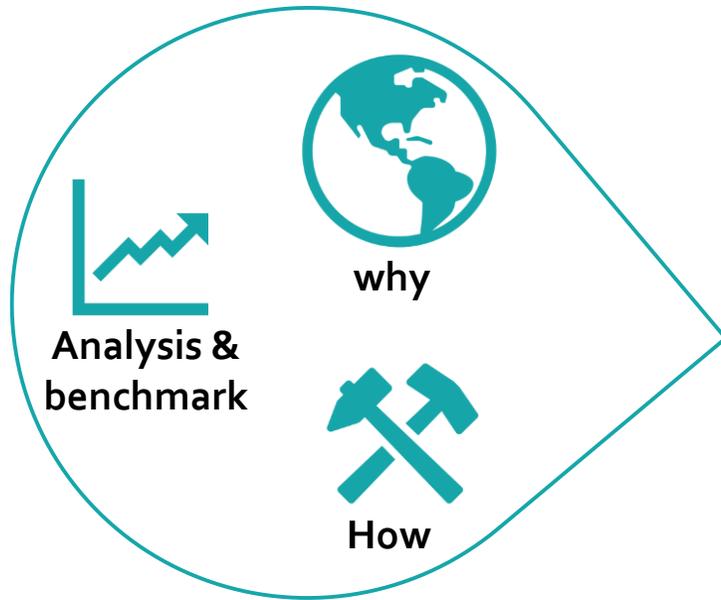


Who is STWI?

- The **Sweden Textile Water Initiative** (STWI) housed by the **Stockholm International Water Institute**, a capacity building program towards improving the environmental performance of suppliers to private companies of the textiles industry.
- Focus on improving efficient use of **water, energy** and **chemicals**.
- Geographically in the **main production hubs** of textiles and apparel. This year the program is implemented in China, India, Bangladesh.
- STWI program is intended to **build capacities in the supply chain**.

**SWEDEN
TEXTILE
WATER
INITIATIVE**





Textiles industry pressures on water

- Textiles and apparel industry - a **thirsty business**.
- The industry is the **3rd largest user of water globally** (after oil and paper).
- It's estimated that the fashion industry currently uses around **1.5 trillion liters of water per year**.
- This is **2% of all freshwater extraction globally** and represents >1/10 of the water used by all types of industry.

1.5 trillion
liters of water
are used by the fashion industry
each year

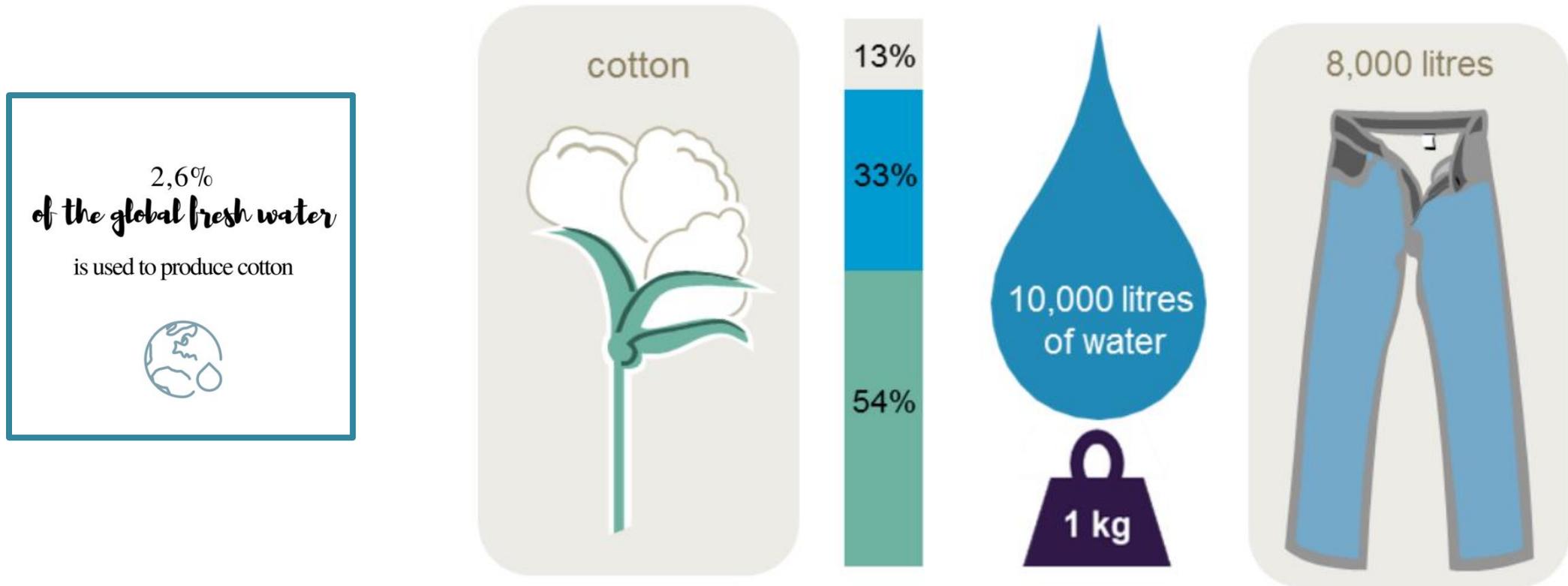


750 million
people in the world
DO NOT have access to
drinking water



- The industry relies on water **throughout the production process** for textiles and garments.

For example, it takes on average **10,000 litres** of water to cultivate just **1 kilogram of raw cotton**.



Just to set these volumes in a more relatable context:

1 cotton shirt



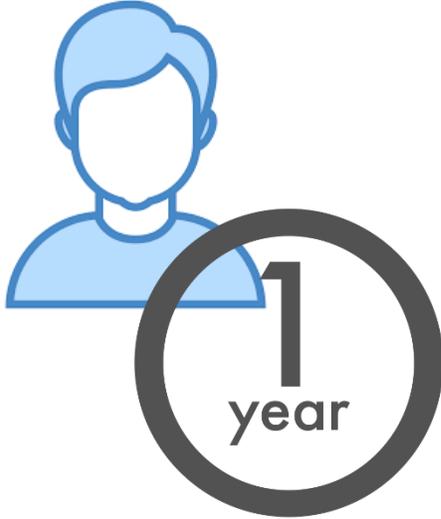
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12,680 glasses!!

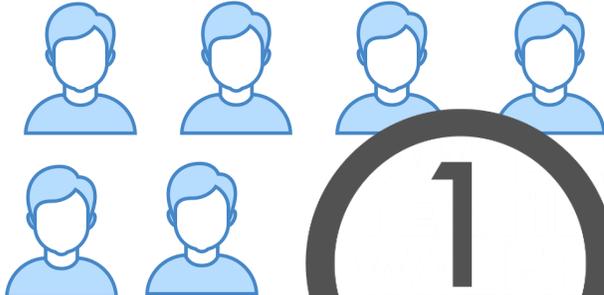


1 Textile Mill

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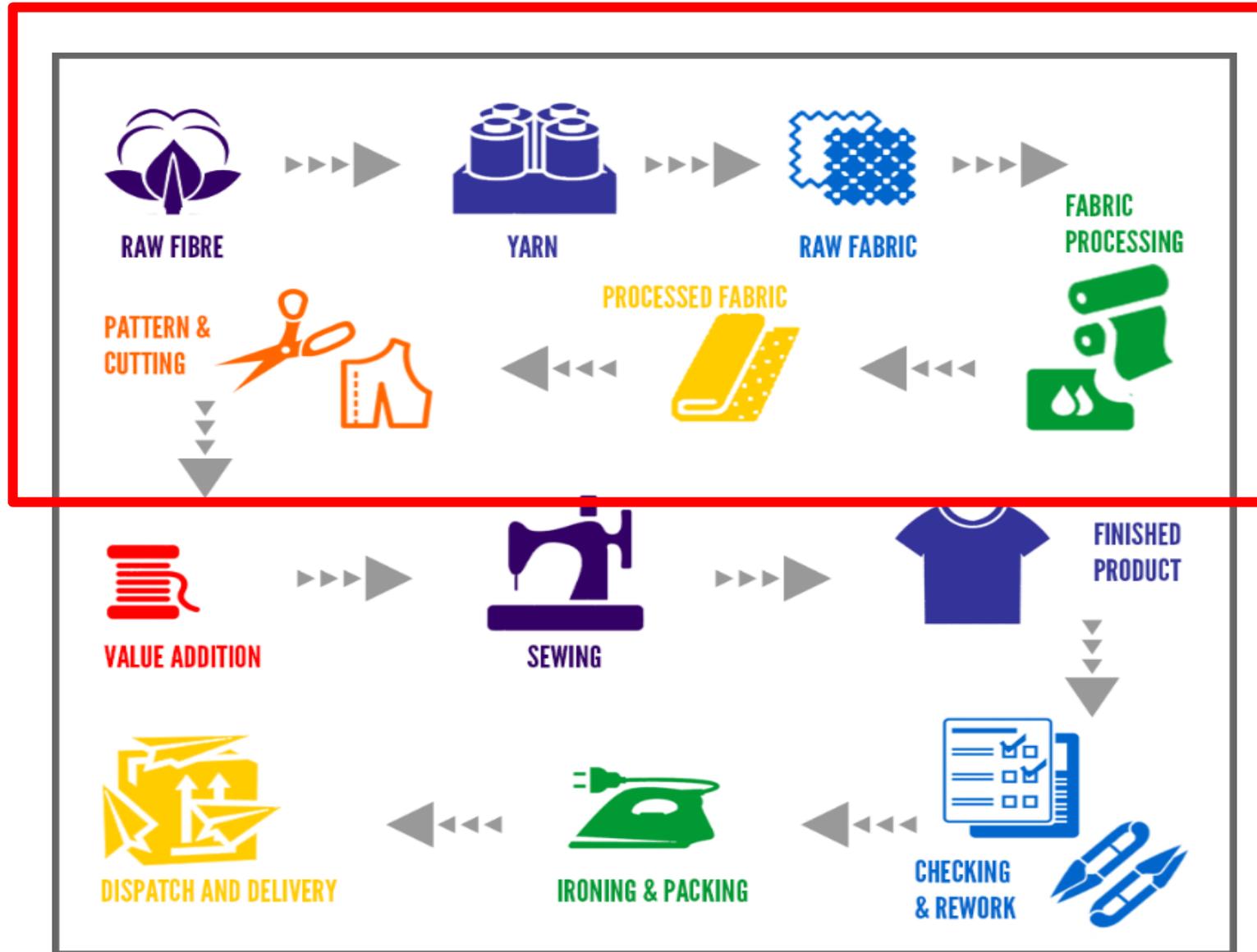
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5 000 a day

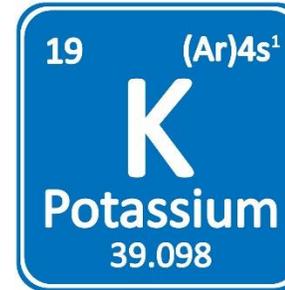
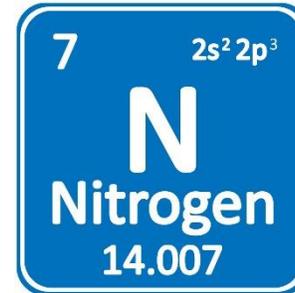
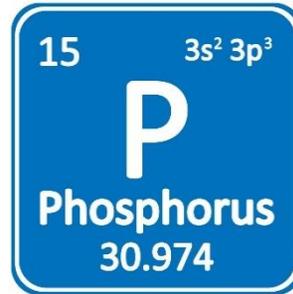
110 million

Textiles manufacturing process





- Requires enormous amounts of **water**
- Requires enormous amounts of **fertilizers**

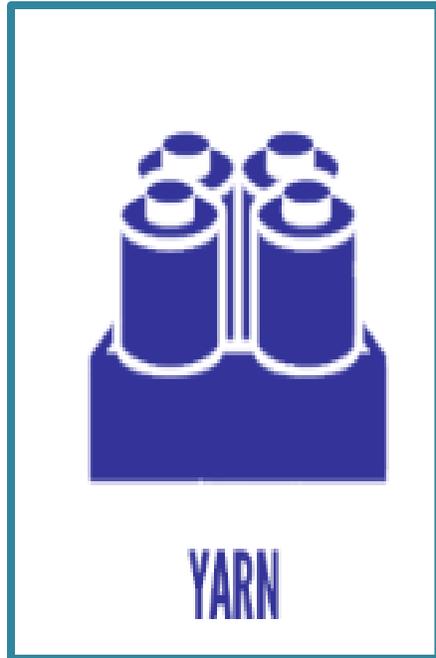


<https://www.pinterest.com/>

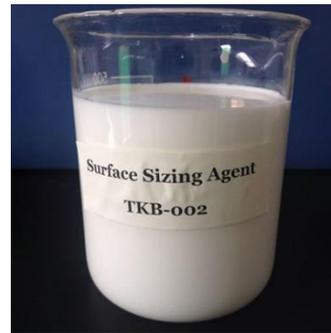
- Requires enormous amounts of pesticides (**pesticides** originally developed as toxic nerve agents during World War II)



<https://www.natracare.com/>



- Threads are prepared for weaving through a process called **sizing**, when yarns are **coated with chemicals** to reduce surface roughness.
- In this way sizing enables the weaving process and improves the processing behaviour of yarns.



<https://lansenchem.en.made-in-china.com>

- Sizing agents have to be removed from the fabrics by washing, which results in considerable pollution of effluents from textile finishing plants.

20% of industrial
water pollution
comes from
textiles treatment & dyes



22,000 liters
of toxic waste
is dumped into rivers by
tanneries in Bangladesh every
day



200,000 tons
of dyes
are lost to effluents every year



<https://www.sustainyourstyle.org/>



- The **daily water consumption** of an average sized textile mill having a production of about 8000 kg of fabric per day is about **1.6 million liters**.
- 16% of this is consumed in dyeing and 8% in printing.
- Specific water consumption for dyeing varies from 30 - 50 liters/kg of cloth depending on the type of dye used. The overall water consumption of yarn dyeing is about 60 liters/kg of yarn.
- Dyeing section contributes to 15% - 20% of the total waste-water flow.



<https://eu.delawareonline.com/>





- Water is also required for **washing the dyed and printed fabric** and yarn to achieve washing fastness and bright backgrounds. Washing agents like caustic soda-based soaps; enzymes etc. are used for the purpose.

- Water color
- Mills of ca

Present
composition
and color
Other l
agents,



Alkalis to remove loose
dyeing vessels.

Highly toxic waste, full
salts.

**Chromic acid, soaps, chromium
d, cadmium, mercury, nickel,
make the effluent highly toxic.
Formaldehyde-based dye fixing
bleaching chemicals.**

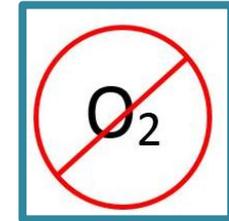
- The mill effluent is also often of a **high temperature** and **pH**, both of which are extremely damaging.

Textiles manufacturing process

- The **colloidal matter** present along with colors and oily scum **increases the turbidity**.
- This interferes with **the Oxygen transfer mechanism at air water interface**.
- Effluent water flow in the fields results in **loss of soil productivity**.
- The wastewater that flows in the drains **corrodes the sewerage pipes**.
- Affects the **quality** of drinking water.
- Such polluted water can be a **breeding ground for bacteria and viruses**.



<https://www.revolvy.com/>



<https://www.chromres.com/blog/the-fundamentals-of-oxygen-scrubbing/>



<https://www.corrosionpedia.com/>



<https://pxhere.com/en/photo/961691>

STWI Results

6 CLEAN WATER AND SANITATION



11 million cubic meters of total water savings
= daily need for **220 million people**
= annual need for **0.6 million people**

7 AFFORDABLE AND CLEAN ENERGY



Electricity use reduced by **79 million kWh**
Natural gas use reduced by **31 million cubic meters**
Fossil fuel reduced by **705,309 tons**
Green house gas emissions reduced by **464,766 tons**

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Chemical use reduced by **24 million kgs**
2,083 projects completed during the program
100% factories improved their Best Management Practices related to Environmental Management System

17 PARTNERSHIPS FOR THE GOALS



5 Countries (Bangladesh, China, Ethiopia, India and Turkey)
276 factories
More than **13** brands with factories in the program
19 additional brands in STWI network
Partnership with local stakeholders in these countries
Partnership with SIDA

8 DECENT WORK AND ECONOMIC GROWTH



37 454 workers trained through awareness sessions in factories
1367 management executives trained on energy and water efficiency, chemical management
412,283,545 SEK invested by factory in **long-term projects**
325,109,944 SEK saved by factories in **operational costs**
Average **ROI** projects within **15-18 months**

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www.stwi.se



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Thank you for your attention!

