

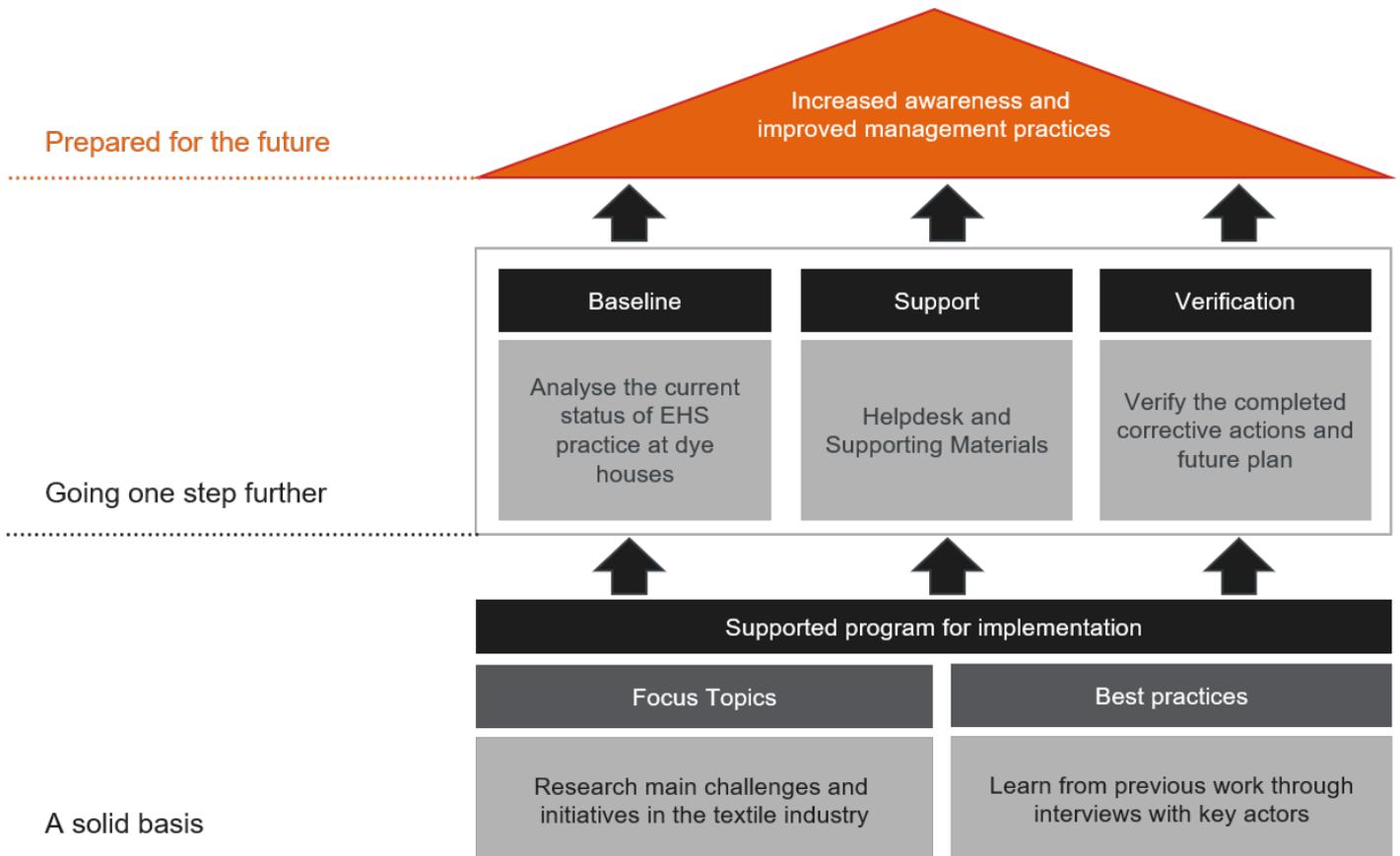
# Dye House

## Improvement Program

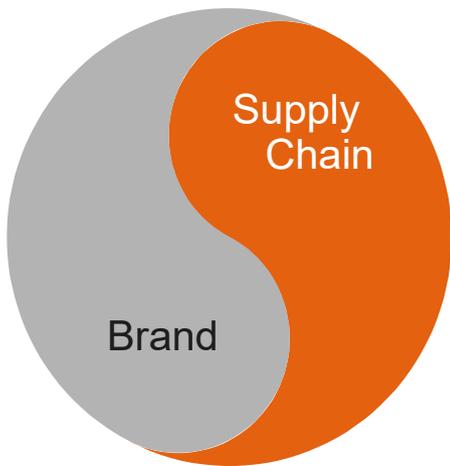
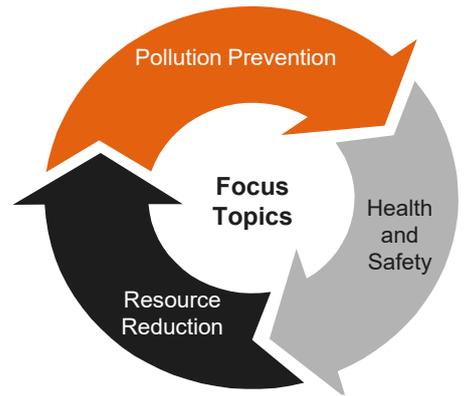
# The Program

Almost 2.5 years ago, Arcadis started to develop a program to help dye houses in the Chinese textile sector improve on their sustainability.

Sponsored by the Dutch Government with a grant and through the supply chain of Dutch clothing Brands included in the Dutch Agreement on Sustainable Garments and Textile (AGT), Arcadis was able to include all the pieces necessary to build the program puzzle, partnering with the Consulate General of the Netherlands in Shanghai and the AGT. Clothing brands within the AGT are obliged to do due diligence according to the OECD guidelines. The overall goal within the AGT is to make positive impact within the textile supply chain, due to close cooperation between companies, NGO's and governmental organisations. Therefore, this program fits perfectly with the ambitions of the AGT. Arcadis maintained close links to respectively the Chinese textile sector initiatives and the Dutch clothing brands involved in improving their supply chain.



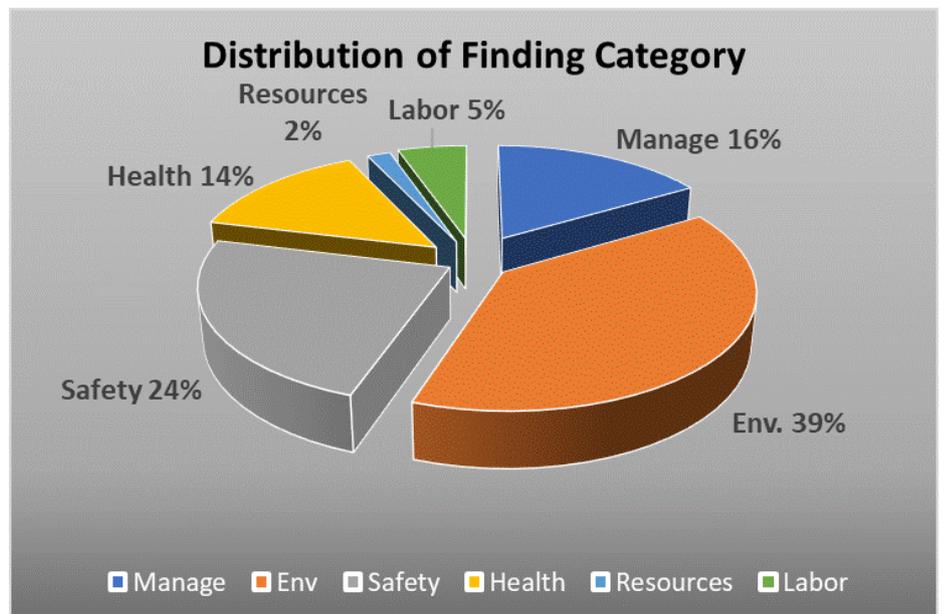
Through detailed assessment of the challenges in the Chinese textile sector and interviews with organisations already working on sustainability topics in the same sector, Arcadis was able to detail 3 focus topics that required attention in their program. **Pollution prevention** including topics such as wastewater treatment and hazardous substance management, **Resource consumption** which studied water conservation efforts, chemical use and energy consumption amongst others and lastly **Occupational Health and Safety** required to ensure the safety and health of personnel working at the facilities, through hazard assessment, training and awareness raising and PPE as a few examples of subjects discussed.



Nevertheless, the program was not only initiated to support the dye houses in China but had another goal of bringing clothing brands closer to their supply chain and helping them understand what challenges lie ahead and how they collaboratively can overcome these challenges with their partners. Many of the clothing brands highlighted that it was difficult to have a complete overview of their supply chain, most commonly having contact with their Tier 1 suppliers, who would then only be the ones in contact with Tier 2 and 3 suppliers. The program was developed in such a way that clothing brands could see what happened at their Tier 2 suppliers. With the focus on educating both dye house and clothing brand, the program could start.

## Baseline

With a solid basis, it was time to go one step further. Arcadis assessed the baseline situation of dye houses by preparing a set of requirements related to the focus areas that would be reviewed during site visits to the 9 different dye houses. What was interesting to see is that many of the dye houses had similar types of problems, predominantly around subjects related to General Management, Environmental Management and Safety. Some typical findings are highlighted below the graphic.

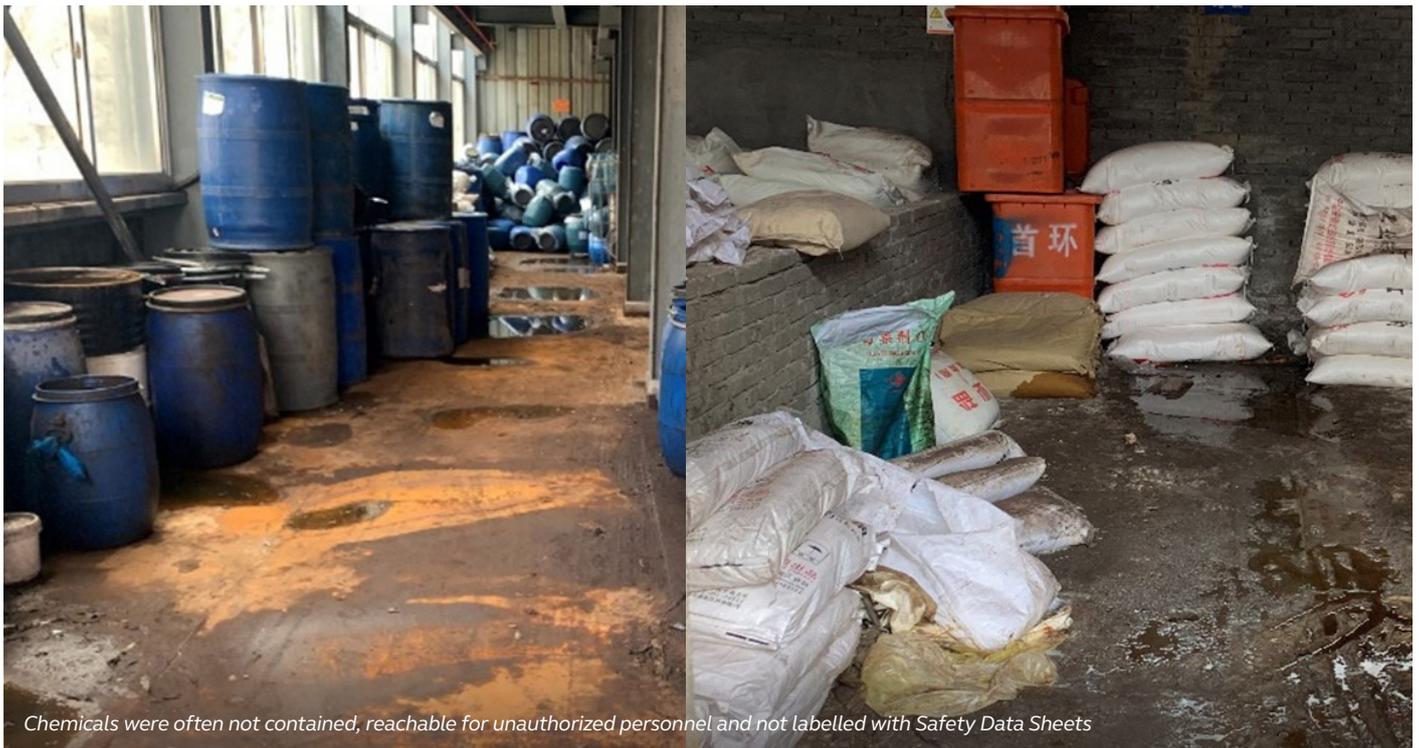


## Non-specific management systems

With the wealth of information out on the internet these days, putting together a management system that fits international standards is not as hard as it seems. Nevertheless, these systems are often not specifically developed for the processes that are managed in their sector. Starting with the assessment of your facility process and linking hazards to these processes is the basis for your management system, allowing you to assess the risks and implement necessary controls. Often times dye houses do not do such a detailed assessment of their facility and are stuck with off-the-shelf management systems that are hard to implement.

## Improper chemical management

Mostly related to the chemicals used in the dye houses, these chemicals were often not properly stored, contained, and tracked to ensure hazards were understood and could be controlled. Storage facilities could be reached by unauthorized personnel, chemicals could leach into stormwater drains and people were not made aware of the risks of using the different types of chemicals. The way hazardous substances were sometimes managed had overarching risks for both the environment and the workers.



## Over usage of resources

During the site visits, the Arcadis consultants came across situations where unused taps and machinery were left running, old equipment spilling large quantities of water and little understanding of where electricity and water usage was largest, due to little process specific metering. With the increasing pressure of the Chinese government on the reduction of water usage in the water stressed Jiangsu and Zhejiang provinces, dye houses were often clueless on how to reduce their consumption further below the threshold values set by the government. Nevertheless, they were unaware that many small changes can eventually have a big impact on overall consumption.



*Outdated equipment and an inability to reuse water often have a great impact on the quantities of water consumed in the dye houses.*

## **Awareness of occupational risks**

Linked to the topic of hazardous substance management and the non-specific management systems is the awareness of certain occupational risk. During the sites visits, Arcadis found that workers were not always trained to handle certain substances or were not wearing the appropriate Personal Protective Equipment (PPE) for the type of work they were doing. By not clearly detailing the processes in the facilities and assigning the right management measures, workers were still prone to occupational diseases.

## **Light at the end of the tunnel**

What Arcadis noticed was that the predominant risks were also aspects that could be fixed with minimal investment and some proper guidance. Thereby, it was noted that dye houses were not always aware of these risks and the lack of control measures was not due to unwillingness to support their workers and facility. Support could therefore be structured to provide guidance on management system improvement and quick wins that could reduce some of the dye house's challenges. The corrective actions that were necessary to improve were captured in a Corrective Action Plan for each participating dye house.



*Workers wearing regular masks that do not protect against the inhalation of small particles.*

## Support

Based on Arcadis experience in Environmental, Health and Safety (EHS) management and including relevant frameworks such as the OECD Guidelines, IFC Performance Standards, World Bank EHS Guidelines, globally available guidance of ZDHC and local Chinese regulations, Arcadis was able to develop supporting materials for dye houses to improve their management practices and increase the understanding of main risks in their facilities and to their workers. Materials were drafted in both English and Mandarin, so both dye houses and clothing brands could utilise the materials. Arcadis wanted to ensure the guidance drafted in this program would remain a viable option for the improvement of other supply chain partners as well.

With supporting materials alone, the dye houses could make a start on the highlighted corrective actions, but Arcadis understood that more guidance was needed to reach a level of improvement that was sought after by the program. Even when COVID-19 struck, Arcadis provided virtual support through in-depth topical calls, focusing on developing a proper **Risk Assessment** for each facility, providing advice on how to structure their **Chemical Management**, reduced **Resource Consumption** by the facility like water and energy, and ensure the risk of **Occupational Diseases** was minimized through training and awareness raising.

It was great to see that many of the dye houses used the downtime they had during COVID-19 to develop standards and procedures for their management systems based on the supporting materials provided by Arcadis. They took the opportunity to emerge more sustainable after the crisis. Nevertheless, a few dye houses were severely impacted by the global pandemic, seeing orders decline and had to decide they were not able to implement all changes as recommended by the program.

## Verification

During the support period, dye houses provided proof of corrective action implementation through photo materials and documentation, but official verification still had to be completed through on-site review. With some of the COVID-19 restrictions eased, Arcadis was able to re-visit the dye houses and verify whether the corrective actions that were claimed to be completed, resulted in the needed improvements.

During the verification process, Arcadis consultants found that different levels of effort were performed, although all dye houses had taken care to implement some of the corrective actions. With COVID-19 impacting the business performance, some dye houses had to postpone some of the improvements but were still very willing to continue their journey towards more sustainable production. Some of the best performers had taken significant strides to change their chemical management, building new and secure storage facilities whilst containing chemicals in use. Other dye houses started the procurement of new equipment with step-by-step replacing of older equipment, resulting in significant reductions in water consumption. Lastly, many of the dye houses improved their training plans and PPE provision, to ensure workers risk to occupational diseases were minimized.



*New equipment and improved usage procedures resulted in less spillage and reduced water consumption.*



Newly locked storage areas with proper Safety Data Sheets and containment measures were seen in some of the dye houses.



Improved warning signage, PPE provision and monitoring of usage was noted in some of the dye houses.

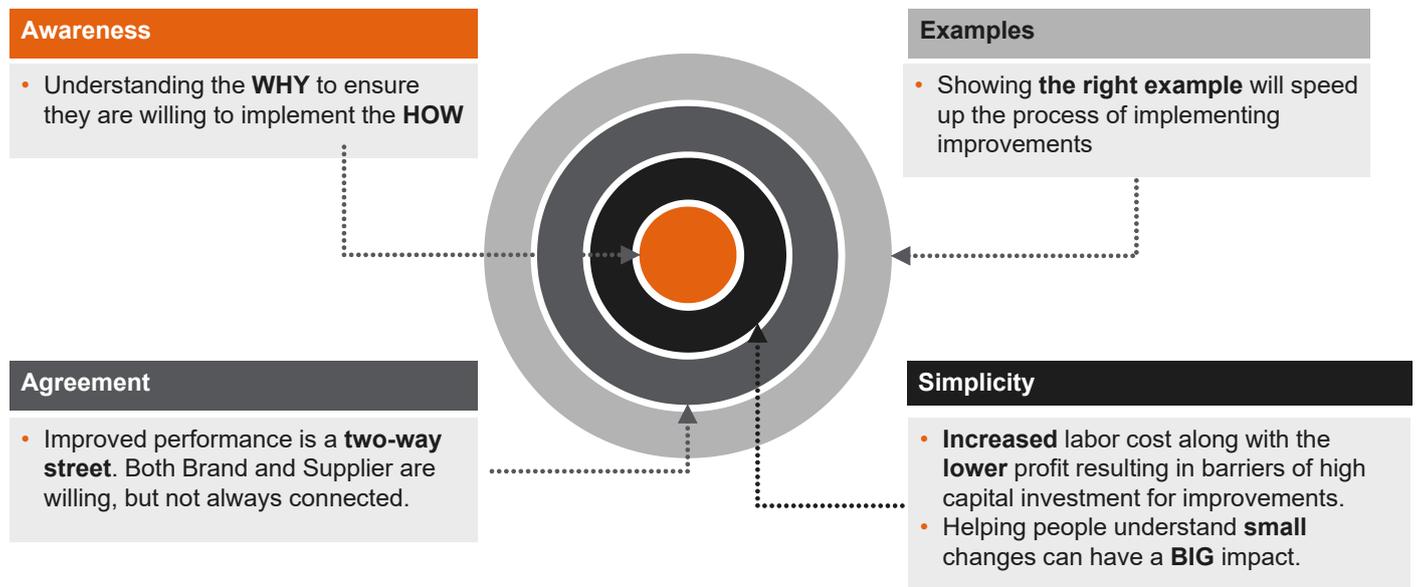
# Findings

Although subject specific results were achieved in the focus areas of Pollution Prevention, Resource Consumption and Occupational Health and Safety, the program gave valuable insights for similar efforts in the future to follow. The first and foremost is related to general **Awareness** of both clothing brand and supply chain on EHS management. Most often clothing brands were not aware of the complete picture in their supply chain, making them unable to actively support their supply chain in making the necessary improvements. On the other hand, the dye houses often times do not see why certain changes had to be made to reduce risks. The lack of knowledge on how a process might impact the health of your workers will not result in the needed changes on improving occupational safety. For example, Arcadis noticed that by putting additional effort into clearly describing why it was important to make the necessary changes, dye houses were more willing to make the necessary changes.

Secondly, programs focus on changes that require large investment, which is often something these Tier 2 or lower supply chains do not have budget for. Although larger investments are needed to fix some of the challenges these dye houses have, initial programs should focus on **Simplicity** through quick wins and management improvement. These incremental changes can often mean the world in creating a cleaner, more efficient, and safer work environment. From there, with support from different parties, the larger investments can be tackled in the longer run.

Thirdly, much emphasis is put on the supply chain that requires to make changes for the better, whilst the clothing brands have stringent requirements that are difficult to meet for smaller facilities. By having mutual **Agreement** and communication between brand and supply chain, both parties can work to improve their processes and requirements setting to ensure that it is feasible and meeting the expectations and capacity of both parties. Providing incentives for example as a clothing brand to your supply chain for making sustainable improvements will help the supply chain in actively working towards the necessary changes.

Lastly, different languages, different standards and different regulations all influence how certain changes are eventually implemented. As a clothing brand you can have clear expectations on how your supply chain should handle EHS matters, but will they truly understand what you mean? Providing **Examples** and clearly managing expectations up front will help in reaching a common goal. Therefore, the Arcadis program focused on provision of supporting materials that can be used not only for dye houses, but other supply chain partners in the textile sector as well. Helping them understand these materials and leading the way in how it is implemented will reduce agitation by a long iterative process where both brand and supply chain do not understand each other.



Main findings and learnings after program completion

# Next steps

The Dye House Improvement program laid the groundwork for the brands and suppliers to continue, nevertheless there is still plenty to do for all parties in the textile sector.

## Communication

There is a high level of importance of communication between brands and their complete supply chain. If the brands do not understand the performance of the whole supply chain, how will they be able to support necessary changes? Thereby, requirements set by brands can often result in challenges for facilities such as dye houses. By communicating clearly about these challenges and collaboratively solving the issues, the supply chain can focus more on improving sustainability rather than scrambling to meet stringent expectations.

## Resources

Although many organisations are providing open-source materials that can be used to improve management practices in the textile sector, it is not always a guarantee that facilities can implement these measures or implement them in the correct way. As a brand or Tier 1 supplier, you can support facilities in understanding certain requirements and potentially helping them accommodate changes in their business processes. For larger investments, financial support could even be provided, or support in applying for grants and subsidies to make the necessary improvements.

## Training

Where the supply chain might require training to improve EHS management, brands and Tier 1 suppliers do not always have the right understanding either to identify aspects that require improvement, notwithstanding proposing the right solutions or guidance. Training programs are plentiful and even at times free of charge, therefore a push to both brands and supply chain to gain a greater understanding of EHS management is key to accommodating an increase in sustainable performance in the textile sector.

## Incentivisation

Many of the dye houses in the Arcadis program asked the question why they should be spending a lot of budget on EHS improvements. The dye houses felt that if they invest in increased EHS performance, they should be rewarded for it. One can think sound EHS management is supposed to be a given, but when your business must do everything in its power to stay afloat, choices must be made. By providing incentives for your supply chain as brand or Tier 1 supplier, you will create a broader willingness for facilities to make the requested changes and feel they are rewarded for their efforts. Something as simple as an increase in demand for their facilities offering or an honourable mentioning on a suitable platform is already a solid way forward to incentivisation of the wider supply chain. It is a two-way street, with many different parties and relationships that are key to helping the textile sector become more sustainable.



## About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people, active in over 70 countries that generate €3.3 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

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