



CLEAN
by
Design

NRDC's Green Supply Chain Initiative to Clean up the Fashion Industry

Few people think of the fashion industry as a big polluter like cement or steel. But textile manufacturing has a huge environmental footprint, polluting as much as 200 tons of water for every ton of fabric with a suite of harmful chemicals, and consuming tremendous amounts of energy for fabric dyeing and finishing.

Over the past two decades, apparel retailers and brands have outsourced most of their production to developing countries, which lack the technical capacity and/or political will to curtail these heavy impacts. As a result, much of the clothing we buy today has been manufactured at far, far below acceptable standards.

NRDC's Clean by Design Initiative calls upon multinational apparel retailers and brands to take responsibility for the environmental impacts of their factories abroad. We promote a simple 10-step program with a proven track record to reduce the "hottest spot" of the industry's environmental impact: fabric dyeing and finishing. In partnership with high-volume companies

including Target, Gap, Levi, and H&M, as well as with the high profile designer Stella McCartney/Kering in Italy, NRDC has introduced Clean by Design to nearly 200 textile mills around the world and has tracked implementation at more than 50 to quantify the results.

The impact has been stellar: Each and every mill that has implemented the program—the old and new, the large and small, cotton and synthetic, woven, knit, and denim—has benefitted substantially. One mill reduced its water use by 36 percent, another reduced its energy use by 22 percent. The top mill for economic returns in 2014 earned \$3.5 million in the first year, with projects that paid themselves back in only 13 months.



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WHAT WAS SAVED

IN TOTAL, THE 33 MILLS IN THE 2014 CLEAN BY DESIGN PROGRAM SAVED:

WATER
3 MILLION tons



COAL
61 THOUSAND tons



ELECTRICITY
36 MILLION Kwh¹



CHEMICALS
400 tons



MONEY

\$14.7 MILLION

Payback time for the whole program of only 14 months.

FINANCIALLY, THE PROGRAM DELIVERED:

Annual return per mill averaged \$440,000, with the top five mills saving more than \$800,000.




Average percent water saved in each mill: **9%**
The top 5 mills saved more than **20%**


Average percent electricity saved in each mill: **4%**
The top 5 mills saved more than **6.5%**


Average percent coal saved in each mill: **6.5%**
The top 5 mills saved more than **10%**



¹ This electricity estimate is included in the coal estimate above but separated out as it is a specific point of interest for some readers.

HOW DOES CLEAN BY DESIGN WORK?

The cornerstone of Clean by Design is a set of Ten Best Practices for textile mills that are practical, low-cost, easy to implement, and pay themselves back quickly—usually within a year. Four best practices save water, five save fuel, and one saves electricity. One additional practice underpins all others and is recommended for immediate adoption upon entering the program: installing meters and measurement software to track water, steam, and electricity consumption at the process and equipment level.

Multinational buyers, government authorities, or industry trade associations encourage mills to join Clean by Design. Participating mills provide us baseline benchmarking information on their resource use, attend technical workshops with textile production efficiency experts, and do “homework” between sessions that builds their capacity to identify opportunities aligned with the Ten Best Practices. Mills are required to develop and submit detailed improvement plans and a timeline for upgrades, which NRDC reviews. An expert visits each participating mill at the outset to overview the status quo and again at the end of the program to verify that improvements have been implemented. This expert also collects and reviews the data needed to quantify the results.

WHAT’S NEXT?

A few hundred mills is not bad, but there are an estimated 15,000 textile mills in China alone, which are emitting thousands of tons of CO₂ and discharging tens of thousands tons of polluted water each day. What’s more, the industry is quickly moving to other less developed countries, like Vietnam and Cambodia, where problems could get even worse. The potential to reduce energy, water use, and pollution from this sector is immense—if we can bring this very successful program to scale.

NRDC’s goal is to expand Clean by Design to improve textile mills 100 at a time in the developing world, jump starting this expansion immediately. Concurrently, we need to improve sourcing programs in leading multinational apparel corporations to include environmental performance when qualifying suppliers. Over a two-year time frame, we aim to transition Clean by Design to the Sustainable Apparel Coalition, a progressive industry association representing more than 30 percent of global apparel production. In this way, Clean by Design will become a self-sustaining tool embedded in the industry to improve environmental performance in textile mills around the world. It will also model a business-friendly program for other types of industries serious about reducing the environmental impact of their global production.

THE 10 BEST PRACTICES TO REDUCE ENVIRONMENTAL IMPACT AND SAVE MONEY			
METERING AND LEAK DETECTION			CONDENSATE COLLECTION AND RECOVERY
COOLING WATER REUSE			PROCESS AND WASTE WATER REUSE
RECOVER HEAT FROM HOT WATER			IMPROVE BOILER EFFICIENCY
MAINTAIN STEAM TRAPS AND SYSTEM			IMPROVE INSULATION
RECOVER HEAT FROM EXHAUST GAS AND HEATING OIL			OPTIMIZE COMPRESSED AIR

To achieve these goals, Clean by Design must expand activities in four key areas

Increase awareness of problems and solutions with multinational apparel companies

The large number of sustainability initiatives, corporate social responsibility reports, and certification systems published each year certainly indicate that companies feel accountable to their consumers, who hold high expectations for corporate responsibility. Nonetheless, today, only a handful of publicly traded companies worldwide address the environmental impacts of their global supply chain.

Many point to the opacity and invisibility of the faraway pollution problems as the prime reason for the lack of executive focus in this area. However, given the internet and social media, transparency and accountability for pollution around the world is increasing. NRDC’s game-changing opportunity is to transform increasingly available data and reports on environmental impact into actionable information and narratives that focus corporate attention where it matters the most. We will thereby strengthen the number and role of multinational apparel retailers and brands in the program.

As a first step towards increasing the visibility of supply chain problems, NRDC recently developed a corporate transparency index with our Chinese partner the Institute of Public and Environmental Affairs (IPE). IPE has now ranked nearly 150 multinational corporations for their supply chain performance. We must expand upon this work to enable further leverage for change in the industry, reaching out to consumers and opinion leaders to increase their awareness of the problems and solutions.

Disseminate solutions more effectively on the ground

NRDC sits on a gold mine of real-world experience and inspirational stories of change for reducing the fashion industry's environmental footprint. It is time to take our successful program to the next level, broadening our outreach to many more factories and driving implementation with an innovative, less intensive one-on-one touch.

To do this, we must increase referrals into Clean by Design from government officials, brands, and other mills. We need to streamline the expert technical assistance in China to better address recurring hot spots and hone the technical capacity of clean production experts located there. We must transform workshop materials into more consumable and engaging trainings, culling the best of our presentations, capturing inspirational stories and testimonials on video, and recruiting additional influential people to educate and motivate factories to make change. We are keen to create a distance learning hub in the model of the Khan Academy that would draw motivated learners from around the world through engaging videos, interactive teaching models, and more, to effectively spread practical knowledge and advice on environmental problems in manufacturing. Finally, we must assess strategic targets of opportunity in developing countries outside of China where the textile industry is migrating, starting with Vietnam.

Facilitate the transition in companies ready to lead

A handful of pioneering apparel retailers and brands are motivated to undertake our recommendations in their sourcing programs. These companies have identified the majority of factories in their supply chain, begun benchmarking these facilities using the Sustainable Apparel Coalition facility index, and have developed audit protocols to verify performance and results.

Many of these companies have introduced mills to Clean by Design, and some have begun to investigate and reduce their reliance on toxic chemicals as well. These companies now need policies that will disqualify suppliers with egregious non-compliance problems and reward model suppliers with strategic supplier status. NRDC must expand work with progressive multinational companies, to further develop sourcing programs that consider environmental performance when qualifying supplies for business.

Few industries have leaders as clearly recognized as the apparel industry; retailers and brands around the world all seek to align themselves with high-profile designers who are recognized for their unique artistic talents. NRDC is fortunate to have a strong working partnership with Stella McCartney and the Kering Luxury Group, as well as with the Council of Fashion Designers of America, to help promote the visibility of Clean by Design in the industry. For the coming year, we are overseeing an initiative to improve the environmental performance of 20 textile mills in Italy, which will provide an important opportunity to showcase the program and inspire others around the world to follow suit.

Transition Clean by Design into the Apparel Industry

To maximize impact and longevity, it is necessary to incorporate Clean by Design into industry practice itself, rather than run it in perpetuity from a U.S.-based environmental advocacy organization.

Fortunately, the Sustainable Apparel Coalition (SAC), is interested in adopting Clean by Design over the coming two years. Specifically, SAC has recruited NRDC to dovetail Clean by Design into its Facility Improvement Project of 2015-2016 and plans to concurrently undertake efforts to recruit mills into the program and provide the technical and programmatic assistance necessary for success.

NRDC looks forward to designing a smooth transition of the program into the SAC, in a manner that keeps momentum moving and allows the program to come to greater scale around the world. Once we successfully turn it over in its entirety, NRDC can turn its green supply chain endeavor to another globalized manufacturing sector with heavy environmental impact.