

Building a Sustainable Supply Chain

IKEA's newest instruction manual: assembling a cleaner planet

IKEA saw China's policies as an opportunity: big business partnering with government to catalyze change.

How the world's largest furniture retailer is tackling scope 3 emissions in China.

Summary

For IKEA, it isn't just about making affordable furniture, it's about making products in ways that are good for people and the planet. That's why Stefan Karlsson, the Sustainability Compliance Manager for IKEA Purchasing Service (China) Co., Ltd. was interested in finding ways to help green IKEA's global supply chain. But with over 300 suppliers in China alone, this isn't easy. Since 2016, Karlsson has brought on board four EDF Climate Corps fellows to help with IKEA's Coal Removal Project – reducing coal use as a direct source from the energy portfolios of local supplier factories in China. The secret to their success? Working with China's policies, making the business case and creating change at scale.

Chances are you've assembled an IKEA product. Thinking back to that time, did you notice all the nuts, bolts and pieces that go into creating your new chair or book shelf?

Now think about the total number of those parts that are in the roughly 10,000 products in IKEA's worldwide inventory. Each building block comes from one of the thousands of suppliers and sub-suppliers that IKEA sources these pieces from, making it possible for a customer to build their new piece of furniture.

What you're visualizing is IKEA's global supply chain. Little known fact: the global supply chain for consumer products is responsible for 60 percent of all greenhouse gas (GHG) emissions. That piece of furniture you assembled is just one link on this chain. Luckily, your purchase was from IKEA, a company dedicated to finding sustainable solutions for its supply chain through the power of partnerships. With the help of EDF Climate Corps, a network of professionals united to advance climate solutions, IKEA and other companies find innovative ways for both the environment and business to prosper.

IKEA finds EDF Climate Corps

As the Sustainability Compliance Manager for IKEA Purchasing Service (China) Co., Ltd., at the world's largest furniture retailer, Stefan Karlsson ensures IKEA fills the demand for affordable, well-functioning furniture, while equally meeting the company's climate change goals. But with a company of this size, reducing emissions in the supply chain is hard work.

Karlsson started researching ways to meet his company's commitment of enabling and encouraging its direct suppliers to become 20 percent more energy efficient by August 2017, and thought EDF Climate Corps would be the perfect way to accomplish IKEA's goals. He was familiar with the fellowship program from previous work with EDF China's Green Supply Chain Initiatives, in an effort to improve water efficiency of IKEA Range & Supply's down and feather supplier factories in China. And after talking with Xixi Chen, a Program Manager at EDF Climate Corps, Karlsson decided to partner up.

Karlsson told Chen that he needed a fellow to make progress towards the IKEA Range & Supply's Coal Removal Project for its China-based suppliers – an effort in line with the company's goal of phasing out coal use throughout its supply chain. IKEA Range & Supply is responsible for developing and supplying the global IKEA range through product development and the sourcing of raw materials, to a product's end-of-life.

This was an opportunity to reduce emissions, ensure long-term cooperation with its suppliers and align IKEA's corporate sustainability goals to China's aggressive climate targets. And as a multinational company, Karlsson knew IKEA has the resources and appetite to drive change in smaller supplier companies that need help updating their business approach.

In 2016, EDF Climate Corps matched fellows, Tian Qiao from Duke University and Shuyi Li from Tsinghua University with IKEA to track coal use and find alternative energy sources for the company's China-based suppliers.

Engaging with China's local policies

IKEA's global footprint is enormous, scaling 49 countries around the globe. China in particular accounts for nearly 30 percent of its global purchases with roughly 300 local suppliers. But recent policies aimed at reducing the nation's GHGs are changing the rules for how businesses operate in China. Domestically, the country has both short- and long-term plans, like the Strategic Energy Action Plan, to ensure its energy goals are met. At the local level, cities have their own carbon-cutting plans, including Shenzhen, one of the country's



EDF Climate Corps fellows Zhang and Han walk with Karlsson through IKEA's office in Shenzhen, China.

top manufacturing hubs where a number of IKEA suppliers are based. That's when the company came to a realization: it could work with, as opposed to against, these regulations and use them to its advantage. By aligning its internal climate goals to those coming out of China's different policy levels, IKEA could become a leader in its industry.

In 2012, IKEA showed action at the corporate level, and released the People & Planet Positive Direction 2020. It is a blueprint for driving change, complete with a number of climate targets, including vowing to become a net exporter of renewable energy by 2020. Hitting such ambitious goals will take hard work, so IKEA looked to where it could make the biggest environmental impact: its supply chain.

IKEA saw these policies as an opportunity: big business partnering with government to catalyze change.

The Coal Removal Project was a global decision made in line with the People & Planet Positive Direction 2020. The goal was to reduce coal use as a direct source from the energy portfolios of local supplier factories in China – a perfect opportunity to help smaller companies scale-up their sustainability efforts.

Karlsson envisioned the company's entire footprint becoming cleaner. Would it be possible to create self-sustaining factories that could operate independent of the national grid, relying on clean energy only?

Identifying the coal users

Understanding how IKEA Range & Supply's suppliers use energy was the first step in Karlsson's mission. Luckily, this wasn't too difficult. The IKEA Supplier Sustainability Tool (SSI) – the company's internal benchmarking tool – collects information from IKEA suppliers once per year to measure the individual development level in sustainability and encourage further improvements. Using the tool to track energy, water and raw material use throughout, each factory can report on their current use patterns as well as targets for how they will improve the following year.

Tapping into this data inventory, Qiao and Li picked out which suppliers were using the most coal as a direct source of energy and what they were using it for. They also mapped out the location of these suppliers. Both national and local policies play a vital role in moving the initiative forward, but they vary per region. So by identifying where suppliers were based, they could see exactly what both the clean energy subsidies and policies were for each of those specific regions and how it would impact suppliers' willingness to cooperate.

After establishing their locations, Qiao and Li identified which of these suppliers had a solid plan and timeline for phasing out coal, which had not yet started and why certain initiatives had not been taken. Sixty IKEA suppliers were found to be using coal.

But mapping coal use was the easy part. The challenge for Qiao and Li was convincing suppliers that transitioning away from coal wouldn't cost them more – in fact, it would probably save them. Transitioning away from coal is smart business. Switching to cleaner energy saves money, reduces emissions and in some cases even improves product quality. And Qiao and Li were going to show them how to make the switch.

About IKEA

The IKEA business idea is to offer a wide range of home furnishings with good design and function at prices so low that as many people as possible will be able to afford them.

IKEA Range & Supply, which is a part of Inter IKEA Group, has the responsibility to develop, design, produce and supply IKEA stores around the world with home furnishing solutions available to the many people. Each year IKEA Range & Supply introduces 2,000 new products in the IKEA stores. The total range is almost 10,000 products.

About EDF Climate Corps

EDF Climate Corps is a network of professionals united to advance climate solutions. The fellowship program brings together an arsenal of top talent, resources and expertise in a variety of subject matters and industries to help organizations meet their sustainability and energy goals.



EDF Climate Corps fellows Zhang and Han with Yuting Xu at the Dexin factory.

Making the business case

To convince suppliers that the business case was there, Qiao and Li conducted an in-depth cost analysis. But even with data backing the financial returns, suppliers were reluctant – fearful of the possibility for incurring costs. Qiao and Li realized that they needed a success story for convincing more facilities to get on board by pointing out the potential outcomes and benefits.

One supplier, Jinjiang Huafeng Weaving & Dyeing Industry, a textile company, agreed for Qiao and Li to examine the potential for greening its energy profile. After completing the cost analysis, the fellows found that by using alternative energy sources to coal, the company could significantly reduce its GHG emissions and save on costs. And, with local government subsidies providing compensation, financial savings would be even higher. With local subsidies, the company would save roughly 25 percent more by switching from coal. Unexpectedly, they discovered that since the alternative sources were more stable than coal, the company would also see improved product quality.

When the analysis was finalized, Karlsson, Qiao and Li shared this experience with other IKEA suppliers. Sure enough, the success spoke for itself. Eight suppliers representing each product category – wood & fibers, textile, cardboard & paper, metal ware and glassware – agreed to have Qiao and Li conduct more in-depth studies. With the green light, the pair conducted an environmental and cost-benefit comparison to show supplier's energy use and costs before and after making the energy switch.

By the end of their three-month fellowship, Qiao and Li helped eight suppliers develop concrete plans for removing coal from their manufacturing process. The results? Suppliers are positioned to see an overall reduction in CO₂ of at least 50 percent on average, with more than 80 percent reduction in

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Nitrogen Oxide (NO_x), Sulfur Dioxide (SO₂) and particulate matter.

And for those suppliers worried about costs, they had a solution ready. By investing in solar, suppliers can generate their own energy, helping to offset in the event that swapping out coal with an alternative energy source results in a price increase. Suppliers can engage in energy contracts, where they can rent the land to a solar company who will handle construction and buy electricity at a cheaper price.

Continuing the EDF Climate Corps legacy with two more fellows

Karlsson was impressed with the fellows. They were young, bright students who he felt comfortable handing the reins over to. And they thought differently than he did, providing out-of-the-box ideas. Eager to continue this work, he enlisted the help of two more EDF Climate Corps fellows the following year: Kaifu Han and Junyin Zhang. This time, he wanted the fellows' help evaluating how suppliers have been using the SSI, and identifying if there are any low-hanging fruit projects that can be done as an easy way of improving their score.

The pair focused on two fastener suppliers – picture the small hardware piece that joins objects together – located in Dongguan that had poor SSI scores. Using the SSI, they set off in search of understanding the operations, current issues and root causes of high energy use at the suppliers' facilities. After conducting energy audits, two problems became clear. These two suppliers had: inefficient energy management systems and little knowledge about what they could do to improve energy efficiency and save money.

Zhang and Han sat down with each supplier to talk through their visions, goals, plans, procedures, and guidelines for their ideal management system. Once these were established, they redirected their focus to find practical, and implementable, energy-saving projects, like improvements to lighting systems and optimization of compressed air systems that could cut emissions.

Now, the challenge became getting suppliers to improve their sustainability practices without IKEA by their side. Karlsson and the fellows knew that this level of autonomy requires both education and motivation. So the fellows set out to develop the following resources for suppliers:

- **Sustainability Casebook:** a persuasive and informative document to motivate suppliers to take action, filled with over 90 case studies on suppliers that have improved their management, energy, water, lighting and air compressor systems. It will serve as a go-to guide for teaching suppliers how to avoid wasteful activities, choose projects to improve efficiency and provide calculations and price comparisons for conducting cost analyses.

- **Management System Framework:** a model that IKEA could give to other suppliers to use, that includes a spreadsheet for tracing and reviewing the progress of sustainability projects.

- **SSI Verification Guide Revised:** a supporting document to help local suppliers better understand the SSI tool that is rephrased to adapt the Chinese reading habit.

- **Detailed Action Plan:** for upgrading energy systems for the next three years, including lighting system upgrades, waste heat recovery, compressed air piping redesign, etc.



EDF Climate Corps fellows Qiao and Li visiting a supplier factory.

Together, these projects could help the two suppliers save annually 280,000 kWh and 150 metric tons of CO2 emissions, equivalent to saving over 160,000 pounds of coal from being burned in a year. Not to mention, the companies would see a combined net present value savings of \$160,000.

Creating change at scale

At the end of both EDF Climate Corps fellowship seasons, IKEA Range & Supply was equipped with materials offering tangible next steps for suppliers to follow. Qiao and Li's supplier case studies were shared throughout the company's entire supplier base, and plans to track progress were established. Now, Karlsson can quickly identify new suppliers that may have coal as a direct source and inform them of the processes in place to remove it, providing concrete solutions on how to do so. Zhang and Han's casebook will help many IKEA suppliers become better educated and aware of opportunities for saving both energy and money.

Where do things stand now? Karlsson is using the lessons he learned from the two pilot suppliers as examples that he shares with other suppliers in his quest to improve IKEA's overall SSI score.

IKEA's work is the type of high-impact, scalable work that our environment needs. It demonstrates how business can step up, working with – not against – policy. And the potential for scale extends beyond IKEA's walls. These projects serve as a model for other companies looking to improve their global supply chains. As more suppliers engage, and improve their SSI scores, more will follow. And as more buyers put the same demands on their suppliers, we'll see a transformation of the global supply chain unfold at a much faster pace.

IKEA is all too familiar with creating instruction manuals. But this time, it's a how-to-guide for building a more sustainable supply chain with the help of a trusted partner. As more suppliers engage, and improve their SSI scores, more will follow. And as more buyers put the same demands on their suppliers, we'll see a transformation of the global supply chain unfold at a much faster pace.

Taking Action

IKEA and its suppliers are wasting no time to take advantage of the potential savings. The manufacturer Jinan Dior Glass

Product Co., Ltd. for example, has been busy phasing out coal as an energy source in its factories, working hard to change its energy structure significantly over the past few years. In 2015, coal made up 91 percent of the energy generation. By the second half of 2018, coal will be entirely removed from its operations, reducing CO2 emissions by 35,200 tons. Efforts outside of coal removal were also made to improve its footprint. Gas water boilers were switched out for electric boilers, and the waste heat from the furnace is now used as a heating source, replacing the need for a energy-thirsty heating boiler.

Upgrading the compressed air systems at supplier locations – one of the most expensive energy sources – has also become a major project for IKEA. These systems are for the most part run down, in poor quality and lack proper management, which has led to significant energy leakage. So, IKEA is working on a step-by-step approach for all suppliers to upgrade or replace systems in the long run, resulting in improved energy efficiency, and therefore reduced CO2 emissions and production costs. IKEA plans to facilitate the process by sharing successful examples, including clear ROI results, with supplier that are hesitant, as well as increasing the awareness in understanding the importance of investing in high-quality equipment.



EDF Climate Corps fellows Zhang and Han with Ryan Hong at the Dexin factory.

Resources

Want more information on how to improve your supply chain like IKEA? Check out EDF's [Supply Chain Solutions Center](#), or tune into one of our webinars.

Are you looking for a partner to help? Sign up to be an [EDF Climate Corps host](#).