Following the Fabirc Lifecycle:
Once upon a time, companies worked to develop a product line with some kind of “eco-story.” Often, if a product had recycled or organic fiber content, then the company felt it was “doing its part” for the environment. Guess what? The bar has been raised.
It’s not enough to have a product with biodegradable, organic, or recycled fibers anymore. “A lot of people think about sustainability as a ‘check the box and it’s done’ exercise,” says Scot Case, executive director for the EcoLogo program, vice-president of TerraChoice, and member of the WalMart Sustainability Consortium. “Just because one aspect is green, doesn’t make the whole product green.” “Biodegradable fibers don’t readily biodegrade if they end up in a landfill,” notes Carol Derby, director of environmental strategy for contract textile distributor Designtex. “Recycled content doesn’t necessarily make something perpetually sustainable.”

Today’s sustainability efforts require a more holistic approach than merely replacing virgin polyester with recycled polyester. According to Tom Weinbender, president of Schoeller Textil USA, sustainability can be addressed at each step along the textile design-production pathway.

“When we make choices, we try to make sustainable choices,” he says.

Adrian Huber is head of brand and product development for Mammut Sports Group AG and head of the European Outdoor Groups End-of-Life (EOL) sustainability working group. He says that true sustainability will involve changing the way most companies think. “The starting point is to first learn, understand, educate, and establish the idea that a product is no longer a result of economical-driven requirements only,” he says.

Benjamin Marias of Azimut, a consultancy for responsible innovation in the fields of sports and leisure time activities, is another member of the EOL working group. He says that to ensure true sustainability for a textile product, in addition to looking at the conditions in which it is made, “you need to factor the end user into your analysis. You need to look at the impacts at every stage of the production process, but also at every stage of the lifecycle, including the stages where the company has no ‘direct’ influence: usage and end of life. These are the most important steps because they affect the whole of the products’ lifecycle.”

**Designing with Sustainability in Mind**

How is a product designed with sustainability in mind? Huber says that first, “designers have to be educated in terms of sustainable design, and then material sourcing policies have to be adapted, taking into account the social and environmental issues.”

One way to design with sustainability in mind, says Marias, is “to focus on the end user and his integration in the design process. It is important for a designer to really analyze the context in which the product is going to be used.”

**Transparency and Certification**

Case says that companies trying to act more sustainably face increasingly sophisticated consumers. “Be very careful with any environmental claims that you make,” he warns. “You don’t want any nasty surprises. Make specific, accurate, and relevant claims.”
Case notes that consumers are demanding more transparency. “Radical transparency is the wave of the future. Whoever figures it out first has a huge competitive advantage,” he says. Todd Copeland, for outdoor sportswear brand Patagonia, says that transparency is what Patagonia is trying to achieve with its Footprint Chronicles. “Being transparent is important to us. We also published a list of our supplier factories on our website.”

Russ McCann, president of Actio, a chemical tracking software firm, believes that the Global Reporting Initiative’s (GRI) mission to promote transparency is a vital “framework for sustainable products.” The GRI’s vision for industry is that “disclosure on economic, environmental, and social performance become as commonplace and comparable as financial reporting, and as important to organizational success.”

“It’s better right now to show all the information and share the ‘bad’ news than to have the bad news disclosed as a surprise by your critics,” says Case. “Transparency like that builds long-term customer loyalty.”

Case says it’s a good idea to back up environmental claims with third-party certifications. Why get third-party certification? According to Jeff Trogolo, chief technology officer of antimicrobial supplier Agion, his company obtained a certification “to get an independent verification of the sustainability of our technology.”

Agion achieved a gold-level “cradle-to-cradle” Approved Ingredient certification from MBDC (McDonough Braungart Design Chemistry), which assesses the sustainability of product ingredients for human and environmental health, as well as their capacity for being recycled or composted. According to Weinbender, SchoellerTechnologies USA uses Bluesign certification. Copeland notes that many of the mills Patagonia uses have Bluesign certification, which he considers “robust.” Oeko-Tex is another popular certification.

Manufacturing
As the end of the production chain with the most power, it is “the ordering party [that] specifies what goes into each textile product,” says Marias. It is that same “ordering party,” usually the brand or retailer, that decides what does and does not go into the final product in terms of prohibited and regulated substances—usually screened out with the use of a good restricted substances list (RSL)—and also “substances which according to current knowledge are harmful to health, but which are not yet regulated or prohibited,” says Marias.

It’s no longer good enough to just use an RSL. “We need to find out what we should be specifying. The more we learn, the better we can specify, so we can ask for the right things,” notes Copeland.

However, as Janan Rabiah, executive director of the Association for Contract Textiles (ACT) notes, “Our industry is segmented, with a complicated supply chain that makes communication difficult.”
Processing
Sustainable textile processing doesn’t just mean low-environmental-impact dyes and chemicals. “Sustainable processing includes the elimination of harmful substances from the process and minimization of the consumption of resources like energy [and] water,” says Jain.

“Ask about the process, as well as inputs,” warns Trogolo. “Some chemicals and fabric treatments evaporate off and pollute the air.”

“In some cases we must say ‘no’ to products which would compromise the sustainable production processes,” says Weinbender. Some coatings, finishes, and yarns are not, and will never be, sustainable. If a textile producer is serious about sustainability, he won’t use them. “We are challenged sometimes because we must turn away business because it is not environmentally acceptable,” says Weinbender.

Energy, Water, & Dealing with Waste
Sustainable production, says Derby, includes appropriate water and energy use, and good waste management practices. McCann says that the bulk of a textile’s carbon footprint during production is based on energy consumption. Optimizing production so that the minimum in terms of energy and water are used is one way to increase production sustainability. Another way, says McCann, is to look into alternative energy sources. “The more clean energy you use, the more sustainable products you can produce,” he says.

Weinbender says that as well as watching water and energy inputs, good textile manufacturers also capture and properly dispose of harmful wastes. This involves air filtration systems, water treatment systems, and possibly recycling water. “A good air filtration system sometimes costs more than the production machinery,” he notes. “But it’s worth it not to send pollutants into the air we breathe.”

Useful Life
The environmental responsibility doesn’t stop once the fabric or other textile product is made. “Unless the useful life of product is addressed, you’re not making a big difference to sustainability,” says Kristofer Skantze, head of sales and marketing for textile chemical company HeiQ.
How can the useful life of a textile product be addressed? One way is through paying attention to the product's care needs throughout its useful life. "The consumer use [of a textile product] has the most significant impact on the environment," says Skantze.

Derby says it's important that the textile product isn't coated or finished with something that will off-gas VOCs (volatile organic compounds) or other harmful substances. "You also want to make sure environmentally harmful solvents aren't needed to clean the fabric," she adds.

Skantze says that studies have shown that consumer care has more environmental impact than textile production. "The yearly production of textiles requires water equivalent to two Mediterranean Seas," says Skantze. "The yearly use and consumer care of textile products requires the water equivalent of three Mediterranean Seas."

Therefore, the longer a fabric can go between washing or drycleaning, the better for the environment. Skantze notes that an environmentally friendly soil- or oil-repellant finish or fiber treatment for certain fabric or textile products can have a significant impact on the energy and water resources those products will consume over their lifecycle (due to lower washing temperatures and less frequent washing). Meanwhile, simple things like care tags that say "wash in cold water" or "hang or line dry" (if followed by the consumer) will reduce the energy used to care for that textile product over the course of its useful life.

Besides keeping the fabric cleaner for longer and ensuring the fabric can be cleaned without harmful solvents, another way to improve the environmental impact of a textile product is to extend its useful life. Making sure that a textile product's useful life lasts as long as possible is an important way to preserve the environmental resources invested in its manufacture.

"A degradation in aesthetics or fiber (fading, staining, or loss of strength), or excess odor that won’t wash out all spell the end of life for a textile product," says Skantze. "Eliminating or slowing any of these processes extends the useful life of the garment, especially in the athleticwear sector."

Antimicrobials help preserve the life of textile goods and extend their lifetime of utility, says Curtis White, president of Aegis Environments. "If odors build up in a shirt, then it is no longer useful," he notes. Microbes can mar a fabric with odor and stains, and even affect fabric strength. White says that these issues aren’t confined to clothing, but also affect carpeting and technical textiles like textile underlayment for roofing. "An antimicrobial can be part of a bigger solution to a microbiological problem where it can extend the life of carpet, upholstery, and building materials."

"We generally wash towels when they start smelling. Being able to extend the time between laundering both lessens the amount of resources used in laundering and extends the life of the towel—which suffers from less abrasion from the washer and dryer, and therefore less fiber and color degradation," says Skantze.

Another way to ensure that the useful life of a textile product is extended is to design that product to last in the first place. "Design something that’s high quality and long lasting, so that it doesn’t..."
go to the landfill too soon,” says Weinbender. “A hard-wearing, longer-lasting garment is more sustainable.” Copeland agrees that high-quality, long-lasting textile products are more sustainable. “We try not to be cutting-edge trendy so that the fashion doesn’t get dated for a long time,” he adds.

End-of-Life
No matter how long the life of a textile product, eventually that life must end. Since that will happen to every product, it is the responsibility of the brand that designs that product to plan what will happen at the end of that product’s life. “Design with the end in mind must be an initial consideration in the development of new products,” says Bill Gregory, director of sustainability for Milliken & Co. “We cannot accept landfilling of material to be the only end of life (EOL) option.”

“The company that produced the product is responsible for what happens to it at EOL. Plan for EOL in the design,” says McCann. “Designers have to consider right from the beginning what the EOL options for the product will be,” agrees Marias. “Repair, Reuse, Recycle should be considered at every stage of the design process.”

Currently, EOL options are somewhat limited. “Recycling as raw material for another garment or composting do exist but are negligible in terms of quantity,” Marias says. He notes that for a t-shirt, the main EOL options are:

- Landfill (neither material nor energy are collected)
- Incinerator (some energy can be used—for heating, for example)
- Recycled as industrial rags or thermal insulation materials
- Given away to a charity for second use

Another issue is that not all textile products are garments. Rabiah points out that an EOL complication for commercial fabrics intended for upholstery is that “our textiles become part of another product, so the ways they are attached may complicate their recycling.” Derby notes that components of multi-component items will always be more difficult to recycle than discrete units. In addition, she says “take back” programs sound simple, but are “hard to deliver.”

“What is the future for the parts that make up the product? Can they be reused, recycled, or repurposed?” asks Gregory. “What is the process of separating the technical nutrients into components that can be reused? Could the product be manufactured with similar components such that separation is not necessary? Is the product engineered to be recycled into a new version of the existing product?” All these questions are best addressed in the design and development phase of a new textile product.

“We’d like to raise the bar on the industry,” says Copeland. He says that Patagonia hopes to lead the outdoor apparel industry with regards to its recycling program. Their Common Threads EOL program has a 2010 goal of taking back everything they make. “So far, we are taking back 65% of our entire line and 80% of our apparel,” says Copeland. Recycling partners turn the fabric Patagonia collects into padding, insulation, and other products.

Marias says that because they all face the same EOL issues, the companies that make up the European Outdoor Group have set up a sustainability working group to look at EOL options on a large scale.

Huber, in his role as head of the European Outdoor Group’s EOL sustainability working group, says that the group is trying to establish a trade-wide solution for used garments. “The working objective is to develop a viable business model (yes, recycling and EOL needs to be seen as a business and be made viable and sustainable) with at least 10 brands committed in three to four years time,” he says. He says the group plans to integrate and work with existing clothing recycling programs throughout Europe. Huber also emphasizes that the companies will all work together as an industry to find EOL solutions, because “single brand initiatives [will not] be able to make a true ecological improvement.”

Next Steps
Even though companies in certain sectors of the textile industry—like carpet, commercial fabrics, and outdoor fabrics—are already well into their sustainability journey, the entire multi-faceted textile industry is far from a sustainable one. Few companies, even if they’ve made some changes in favor of sustainability, design a textile product with that product’s total lifecycle, including its end-of-life, in mind.

Huber says that one key to making progress toward the goal of sustainability is working together. That, he says, is one reason the European Outdoor Group is working together with the US Outdoor Industry Association on sustainability goals. “The idea is to dovetail globally as we go along. In the end, we are a global industry looking for global solutions,” says Huber. “When it comes to EOL and recycling, however,” he cautions, “national and regional conditions and infrastructures are extremely diverse and need to be accounted for. On the other hand, this diversity may bear the seeds of success.”

With sectors of the textile industry working toward this common goal, Derby says she definitely sees hope, as well as progress. “I think that sustainability is a real, attainable goal for textiles,” she says. “I don’t think we have to settle for being less bad.”