Chapter 15
Business Implications of Sustainability Practices in Supply Chains

Mark Pagell and Zhaohui Wu

15.1 Introduction

This chapter uses a number of examples to detail how a series of path-dependent decisions underpins the strategic trajectory of today's leaders in sustainable supply chain management. A truly sustainable supply chain, could customers willing, operate forever (Pagell and Wu 2009). Such a chain would at a minimum create no harm and might even have positive or regenerative impacts on social and environmental systems while maintaining economic viability (Pagell and Shevchenko 2014). True sustainability is the end goal of SSCM, a goal which few, if any, supply chains, especially those with tangible flows, presently meet.

The examples presented in this chapter are then leaders when compared to the norms in their industry, but they are not truly sustainable. The first key question even these leaders need to answer is *what has to change in our supply chain to reach true sustainability*. This chapter offers insight, but the leaders of tomorrow will need to build on these examples and those in the rest of the book if they are to survive for multiple generations.

The awareness that today's leaders are far from the end goal of harm free production and distribution is one of two guiding assumptions for this chapter. The second assumption is that the decisions managers make are path-dependent. At its simplest path, dependency means that previous decisions create constraints for decisions made today (for more information see Pierson 2000). The assumption of path dependency indicates that the further a supply chain travels along a strategic path or trajectory, the more likely it is to stay on that trajectory because the costs of

M. Pagell (✉)
University College Dublin, Belfield, Dublin, Ireland
e-mail: mark.pagell@ucd.ie

Z. Wu
Oregon State University, Corvallis, OR 97331, USA
e-mail: zhaohui.wu@bus.oregonstate.edu

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switching to a different trajectory become ever higher. For example, a supply chain that decides to outsource production has made path-dependent decision because it will be difficult, if not impossible, to bring production back in house in the future. Hence, the initial drivers and values that lead a supply chain to pursue sustainability also create future constraints (Wu and Pagell 2011) and limit future strategic options.

This path dependency also raises questions. For managers in supply chains that have already started to evolve and change to meet the needs of the future, the question becomes *how have previous decisions enhanced or limited our options*? For the managers of supply chains just starting on their path to sustainability, the question should be *how will the decisions we make today limit our options in the future*? To answer these questions, the chapter will cover what we know about how supply chains pursue sustainability, and then detail the three path-dependent trajectories that supply chains follow when addressing sustainability; the balanced trajectory, the focused trajectory, and the opportunity-first trajectory.

15.2 What is Known: *The How and Why of Sustainability*

Regardless of a supply chain's trajectory, managerial efforts to create a more sustainable supply chain typically support three main operational goals; increased efficiency, risk reduction, and innovation. Exemplar firms tend to try and achieve all of these goals, and the goals are not mutually exclusive. This section details each of these goals using examples.

One of the main goals of supply chain managers has always been to use resources efficiently to minimize the costs of providing goods and services. This mind-set has proven useful in some sustainability-related initiatives as well; especially initiatives that attempt to reduce the amount of environmental harm created by the supply chain. Environmental harm tends to come either from using a non-renewable resource or from pollutions that is created in the production, delivery, use, or disposal of the chain's goods and services. So when supply chain managers can reduce the amount of an input needed for production, they reduce the costs of production and the impact on the environment. Similarly, pollution is in essence wasted resources. For instance, when a firm sends material to the landfill it means it has bought materials that have not been used in production and may even pay a second time for them to be disposed of. Preventing or reducing pollution is often achieved by making more complete use of inputs or by changing inputs, again reducing waste and environmental impacts. This simultaneous achievement of reduced environmental harm and reduced costs is referred to as *eco-efficiency* (Sharma and Henriques 2005).

One of the more visible and successful eco-efficiency efforts is 3M's Pollution Prevention Pays program (3M 2014). This program is aimed at preventing pollution at the source, rather than paying to clean it up after it is created and was started in 1975. Since then the company estimates that they have eliminated nearly 4 billion pounds of pollution and saved nearly USD1.7 billion.

The second way supply chains address sustainability is via *risk reduction* or elimination. Many environmental and social impacts can be viewed as risks, for instance, the risk of an industrial accident harming the environment or workers and disrupting the supply chain. Similarly, many supply chains decisions are made to codify, understand, or reduce risk.

For instance, many firms have codes of conduct for their suppliers. These codes are a form of non-governmental regulation in that they set standards and rules as to what behaviours are unacceptable for suppliers, regardless of local laws. For example, many clothing and footwear supply chains have suffered because of customer boycotts due to the way suppliers treat the environment or their workers (USAS 2014). In response, organizations like Nike (2014) and Levis (2014) have created codes of conduct. In doing so, they are trying to mitigate the risks associated with unsustainable actions in the supply chain (see also Chap. 11 by van Weele and van Tubergen (2017) and Chap. 20 by Lee and Rammohan (2017)).

Finally, efforts to become truly sustainable require changing both products and processes. These changes are a form of *innovation* and innovation can also be a source of competitive advantage. For some firms, attempts to make the supply chain sustainable have positive spill over benefits in that the same innovations that reduce environmental and social harm also differentiate the chain from its competitors. For instance, the Broad Group (Broad 2014) has developed innovative products for cooling buildings that do not rely on electricity as well as a complete system for creating more sustainable buildings. The firm differentiates itself by having unique, more sustainable, products and services.

These three interrelated goals; eco-efficiency, risk reduction, and innovation are what supply chain managers pursue when making their chains more sustainable. In the next section, we detail how the decisions made to improve the chain in one or more of these areas, overtime, create unique path-dependent trajectories.

15.3 Findings and Practical Implications: *The Three Trajectories*

One of the guiding assumptions of this chapter is that it is the series of decisions managers make that determine the supply chain's sustainability trajectory. Every new process, decision to switch to less harmful materials, or redesign of products will not only have operational implications in terms of waste, risk, and innovation, but will also effect and be affected by the chain's strategic trajectory.

A supply chain's sustainability strategy can be examined from many perspectives. For instance, the Shared Value perspective (Porter and Kramer 2011) focuses on how goods and services are tailored to meet the needs of customers while reducing the harm from production and distribution. For example, when Pepsi works to reduce the amount of water used in creating food and beverages, especially in parts of the world where water is becoming scarce (Pepsi 2014), they are creating shared value by allowing customers to continue to enjoy their products while making sure

The balanced trajectory – The Collins Companies (http://www.collinsco.com) (*Source*: https://www.linkedin.com/company/the-collins-companies)

that water is available for more pressing needs. (Sodhi and Tang (2017), Chap. 21, discuss how the stakeholder resource-based view can help make the concept of "shared value" more tangible.)

The strategic perspective taken in this chapter is different, in that we are not focusing on any one decision, product, or process. Instead, the focus is on how sustainability was initially operationalized/introduced into the supply chain and how the series of decisions managers make will, overtime, determine how/if true sustainability would develop in that specific supply chain. The decisions managers make create a path-dependent trajectory that has implications for priorities and capabilities while also setting some limitations on future actions and outcomes.

There are three main trajectories or archetypes of sustainable supply chain management; opportunity-first, balanced, and focused. The trajectories are in essence the way that sustainability is woven into the strategy and culture of the focal firm and its supply chain.

In supply chains on a *balanced* trajectory, sustainable behaviour is the way of going about one's business day in and day out; and it positively and directly benefits the employees, suppliers, and local communities. As a result, environmental and social issues are highly integrated and equally important in these supply chains.

Strategically, these supply chains set limits on growth based on access to both environmental and social resources. Typically, these chains would have much more stable patterns of sales than their overall industry. In times of soaring demand, they will not increase production beyond what their natural and human resources could maintain in a downturn. This means they miss out on some sales in times of plenty, but they do not deplete natural resources nor do they have to fire people in downturns. Hence, they miss some profit and growth opportunities, at least in the short term that the other chains would likely capitalize on. Supply chains on a balanced trajectory are willing to internalize some of the environmental costs that are not presently mandated by existing regulations to provide long-term benefits to employees, suppliers, and the communities in which they operate.

Operationally, the balanced approach means that these chains are well placed to be both eco-efficient and innovative. The stability they foster means that workers

are a long-term investment. These workers are highly trained and motivated to make both continuous improvements in operations as well as to support innovations when needed. Critically they are willing and able to share their knowledge through the supply chain. Balanced firms can significantly reduce the impact of production processes (theirs and suppliers), while increasing efficiency and offering better working conditions for employees and overseas suppliers. These organizations are able to attain resource efficiency in many areas of their supply chains.

A leading company on a balanced trajectory is The Collins Companies, a forest products enterprise headquartered in Wilsonville, Oregon. It owns and manages 307,000 acres of timberland in Pennsylvania, Oregon, and California. While most other wood product companies maximize yield by clear-cutting, Collins lets its forests grow naturally and uses selective harvesting. Since its creation in 1855, it has maintained ethical forestry practices that have allowed the forests to thrive—and provide lumber—for over 150 years. Their overriding operating principle is never log more than the forest grows.

Collins was the first privately owned wood-products company in the US to be certified by the Forest Stewardship Council (FSC), an international organization with membership that includes NGOs, logging and wood-product companies, and environmental groups. Throughout its operations, Collins is committed to maintain the forest ecosystem and support social and economic benefits for its employees and the surrounding communities.

The company's strong stance on environmental and social priorities subjects it to risks and trade-offs. Collins will never use all their resources—there will always be trees in reserve, but they may not always be able to meet demand. And while FSC certification raises their profile, it is expensive to maintain those standards and it may not repay those costs: lumber and building supplies are considered commodity items, and most builders buy based on price, not environmental ideals. The company's balanced approach to profit, people, and planet may limit growth, but the company factors its environmental and social involvement into its business plan. Although the industry has declined in recent years, Collins has maintained a steady workforce.

The steady workforce is critical to Collins and the communities they operate in. Forestry is by nature a highly cyclical business with frequent downturns. Many of their facilities are in rural settings where Collins may be the only major employer. If Collins laid off people in every downturn, some towns would not survive. Stable work then keeps people employed and allows small rural towns to survive industry downturns. Balance allows Collins to protect their workers and the communities they operate in and is a key to their ability to leverage the workforce.

Collins has leveraged the workforce to address sustainability mainly from an eco-efficiency and innovation standpoint, which is exemplified in the journey their Klamath Falls facility (Oregon, US) has made since the mid-1990s. Collins purchased the facility from Weyerhaeuser. Until that point, Collins had concentrated its sustainability efforts on forest stewardship. However, in 1996, they implemented a program they called Journey to Sustainability (JTS) to bring sustainability to their manufacturing operations. By the next year, employees had begun sustainability training. Morale

at Klamath Falls had dropped before the purchase by Collins, and the company used JTS to boost the mood in the plant while improving operations. Supervisors received training in the principles of sustainability and sustainable manufacturing. The company implemented a plan to train all the workers within 3 months. The company solicited suggestions while assessing improvements to its capital equipment.

One of the first suggestions to arise was to adopt European standards for off-gassing of formaldehyde from finished products (three times as stringent as US requirements.) The company believes this has enhanced its position among "enlightened" architects, as well as opening potential new markets for its products.

The company stopped using water from the local river to improve resource efficiency and address regional water shortages. Their initial decision was to treat water and reuse it. They leased a nearby farm and built a wetland to store and treat the discharge, but it was too small to hold all of the treated water, forcing them to find a way to use some of it immediately. They realized that they could cut electricity use by modifying their heat exchange and cooling systems to use the extra water. The initial decision to stop taking water forced them to re-engineer production. The new process not only uses less water, but also requires less energy to run, freeing up capital. The experience also bolstered morale as workers saw immediate benefits in terms of efficiency and in their community's water supply.

A capital project at the plant significantly reduced power use: they replaced six old electric motors, saving $118,000 annually. It paid for itself in 2 years. Other projects were similarly eco-efficient. Condensate from a veneer dryer was used to heat water, saving $152,000 per year. Maintenance and repair to steam traps saved $25,000 per year. New equipment allowed sander dust to be incorporated into the finished particleboard. The process saves $563,000 per year—and using the dust not only improves the appearance of the board, but reduces air emissions.

The Klamath Falls facility not only cut water and energy consumption, it reduced waste, as well. A contest to promote water conservation prompted discovery and repair of a leak, saving over 500,000 gal per year. The plant no longer discharges warm water into the river. The Journey to Sustainability has now been incorporated into operations throughout the company.

In its first year, Journey To Sustainability projects saved The Collins Companies almost $1,000,000. Within 3 years, annual savings were $1,370,000—totalling over $3 million. Capital purchases, salary increases, seminars, and travel came to about $50,000—6% of the overall savings. The environmental benefits come from reduced use of resources, especially water in a community that faces water shortages. This is also a social benefit in that it will allow them to continue production without putting other water uses in the community at risk.

The path-dependent decisions that Collins has made over the last 150 years allow them to compete by being more sustainable, but these decisions also create constraints. For instance, the stability of their forestry practices combined with the investments in workers and communities means that operationally they are innovative and productive, but not very flexible. Their supply chain is not able to deal with large fluctuations in demand. And given the investments in workers, practices, and communities, any attempt to alter where work is done or who does it will have to be

The Focused Trajectory – Kettle Foods (http://www.kettlebrand.com) (*Source*: http://www.kettlebrand.com/about_us/sustainability/)

viewed through the lens of protecting the existing workforce and community. Intuitively, this means they never want to close a plant in small town, even if there are no legal constraints on doing so. Instead, the constraint is the intangible. To close a plant in a small town means breaking the bound with the workers and community and undermining their entire philosophy.

A balanced trajectory focuses on conserving social, environmental, and economic resources. Decisions to behave in this way often mean higher short-term costs, weather they be investments in FSC or in training the workforce. However, the payoff is the ability to continue to operate over very long timeframes. Collins is not going to run out of inputs with their present business model, nor do they have to worry about a dip in their demand causing an entire community to collapse.

Supply chains on a focused trajectory have capitalized on either environmental or social issues to create a viable business. For them, business success is contingent on the accomplishment of environmental or social objectives. In supply chains on an *environmentally focused* trajectory, the founders and managers will have strong environmental values that have been imprinted on the organization. For instance, Patagonia, a privately owned apparel company whose founders are self-proclaimed climbers and surfers, has a mission statement to "*Build the best product, cause no unnecessary harm, use business to inspire and implement solutions to the environmental crisis*" (http://www.patagonia.com/eu/enSK/patagonia.go?assetid=8952). These supply chains are a means to carry out a particular environmental agenda. While these companies are engaged in community service and do discuss social issues, tackling environmental issues is an essential part of business operations; dealing with social issues is secondary.

The *socially focused* trajectory is similar, but in these supply chains the values are socially oriented. Supply chains that have adopted Fairtrade certification (http://www.fairtrade.org.uk/en) as a primary means of certifying themselves or for selecting suppliers would be on this trajectory since the primary objective of Fairtrade is to improve the lives of farmers and farm workers. Socially focused organizations take environmental action when the environmental impact of their business on people becomes a concern. In socially focused organizations, environmental initiatives are adopted as a reaction to protect the organization, while in environmentally focused organizations social initiatives will be adoptee reactively.

The major risk from these trajectories is then the lack of balance, but this can also be a source of strategic strength. The environmental features of the products and services offerings from environmentally focused supply chains communicate certain environmental messages; energy efficiency, reduced carbon footprint via local food, and reductions in pollution associated with chemical fertilizers. Meanwhile, their innovative solutions to environmental challenges benefit the customers directly via reduced energy consumption, a healthy living environment, and high-quality products. Similarly, socially focused firms communicate messages such as those associated with fair trade (Fairtrade 2014) or conflict free (CFSI 2014) and are innovating in ways that benefit society in multiple ways such as better working or living conditions. Thus, the companies with a focused trajectory can charge a price premium.

Since the price premiums can offset the higher costs associated with social/environmental practices, managers are emboldened to take on more difficult tasks. From the triple bottom-line perspective of performance, while all show a concern for all elements of the triple bottom line, environmentally focused firms are primarily motivated by a concern for the environment while socially focused firms are primarily motivated by a concern for society.

A leading company with an environmentally focused trajectory is Kettle Foods; a multinational producer and distributor of organic and all-natural snack foods. Kettle began in 1978 as the N.S. Khalsa Company, a small wholesaler of natural snacks in Salem, Oregon. The company started producing its Kettle brand potato chips in 1982. By the time the product line was a year old, the company had grown to $3 million in annual sales. Founder Cameron Healy started the business in an effort to earn a living that fit with his spiritual values; those values dictated the "all-natural" approach that still distinguishes the brand and underlies the company's strong environmental policies. By 1987, the Khalsa Company was growing at a 15 % annual rate, with sales doubling every year. The following year, it changed its name to Kettle Foods and established a UK branch in a converted factory in Norwich.

Kettle adopted an overarching operating principle that guides every decision the company makes: the product has to be all natural and must contain what the label says it contains. The company equates this principle with maintaining a strong environmental policy, so it influences how the company designs products, selects suppliers, and tracks ingredients in its supply chain. Strategically, they address sustainability from an innovation perspective because their environmental focus allows them to sell innovative/differentiated products at a price premium.

Kettle's environmental focus also involves trade-offs. Some of their organic ingredients are seasonal, but most grocery retailers do not stock products on a seasonal basis. Therefore, perishable ingredients have to be stored in refrigerated warehouses to maintain a steady supply. The company's environmental decisions have to be pragmatic, keeping sight of the fact that they must be both economically and environmentally sustainable. This often means putting profits first, at least in the short term. Nonetheless, Kettle addressed environmental issues in their initial business plan, so their business and environmental agendas reinforce each other.

The environmental focus plays out operationally via efforts at creating eco-efficiency and at reducing risk. Kettle has a supplier certification program that demands extensive information from suppliers to ensure ingredients meet their standards. This is explicitly a risk reduction activity since ingredients that do not meet these standards would put their competitive advantage at risk. They do not trace money through the supply chain or determine other practices (labour conditions, for example) that are not directly related to a product's all-natural status. They choose to focus on environmental issues and concerns.

The environmental ethos extends to their downstream and upstream supply chains. As part of the commitment, Kettle uses sunflower and safflower oils. When the oil is spent, it is converted into biodiesel. By using the fuel in its delivery fleet, the company reduces its CO_2 emissions by 8 t every year and does not have to purchase fuel, which is a classic example of eco-efficiency. Kettle has taken other steps to reduce emissions. In September 2003, they partnered with the Energy Trust of Oregon and Portland General Electric to install one of the largest grid-tied solar photovoltaic arrays in the Pacific Northwest. Six hundred rooftop solar panels generate more than 120,000 kilowatt hours (kWh) of electricity per year, enough to reduce annual CO_2 emissions by 65 t. The company offsets the rest of its electricity use in the US by purchasing wind energy credits, preventing more than 13,000 t of emissions. Citing these achievements, the EPA presented its Green Power Partnership award to Kettle in 2012. The Salem plant has also restored surrounding wetlands, clearing invasive plants and reintroducing native species. As birds and other wildlife returned, the company installed pathways and benches to encourage the public's use and enjoyment of the land.

In 2007, Kettle opened the first LEED® Gold certified food manufacturing plant in the US in Beloit, Wisconsin. The "green building" reduces energy use by 20 % compared to conventional construction, saving $110,000 on natural gas and $51,000 on electricity. By reclaiming and reusing water, the plant saves over 3.4 million gallons of water a year. The facility also converts 3200 gal of waste oil to biodiesel each month. Finally, elimination of shipping lines between Oregon and the Midwest further cut the company's CO_2 emissions by more than 3 million pounds per year.

The decision to protect the firm's environmental values via the all-natural principle has allowed Kettle to grow while selling products at a price premium. But this same path-dependent decision also creates serious constraints. At its simplest, Kettle cannot use some ingredients even if they are less expensive or have a smaller carbon footprint. It also means that to sell into markets where customers expect a product to be available year round, Kettle ends up storing ingredients, often in temperature-controlled settings

with large costs and environmental footprints. These actions are antithetical to the firm's environmental ethos, so it is no surprise that they work hard to mitigate all of their environmental impacts. However, their resources like most firms are not unlimited. The efforts they have put into their operations have created a unique environmental management capability. But every investment in this environmental capability is also a decision not to make a similar-sized investment in social sustainability capabilities. The decision to embrace an all-natural principal to protect the environmental values leads to the creation of a proactive environmental management capability, which they use to create and maintain their competitive advantage. However, every investment in the all-natural path also makes it harder to embrace/invest in other areas due to resource constraints and knowledge gaps.

Kettle exemplifies the focused trajectory. The organization was founded to meet an environmental objective which translates into their all-natural strategy; a strategy which allows them to charge a price premium which helps to pay for their range of eco-innovations. And over time, they have become very adept at recognizing opportunities to make environmental innovations, be it converting a waste stream into fuel or harnessing renewable energy. Similarly, their risk reduction efforts are aimed mainly at protecting their trajectory. This focus has been profitable and allowed them to grow, but it is not balanced. They do address social issues, but this is not their strategic advantage. Over time, their focus on the environmental impacts of the supply chain has made the chain an exemplar in reducing its environmental impact, but this focus requires resources, resources that are not applied to social issues in the same manner.

The Opportunity First Trajectory – Walmart (http://www.walmart.com) (*Source*: http://news.walmart.com/news-archive/2010/11/16/walmart-canada-opens-its-first-sustainable-distribution-centre)

The *opportunity-first* trajectory is largely driven by an economic opportunity. Unlike the previous two trajectories, where environmental or social values play a leading role in shaping the supply chain's operations, here the causality is reversed. Opportunity-first trajectories occur when a business motive pushes an existing chain to adopt additional initiatives that will inculcate environmental or social values into the organization.

For existing supply chains, this is the most common trajectory. Organizations such as Coca-Cola, Unilever, and GE, which existed for generations with a profit maximizing ethos mainly, have made business decisions to become more sustainable that have put them onto the opportunity-first trajectory. The opportunity-first trajectory enjoys many of the marketing and branding benefits of the focused trajectory, but these supply chains are not able to charge the same price premiums.

The opportunity-first trajectory is different on three main accounts, all of which exemplify the path-dependent nature of decisions surrounding sustainability. First, the sustainability values in this trajectory are recent, which suggests that when faced with decisions where being more sustainable is expensive or risky, these supply chains are less likely to make the investment. This is buttressed by a second key difference: the opportunity-first supply chain was already in the market place as a traditional (not sustainable) competitor. Customers already associate the organization's products and services with specific attributes including prices, and these customer expectations will be slow to change, which can limit the ability to charge a price premium, especially in the short term. Prior decisions create dependencies that influence both how current investments are viewed and interestingly how customers view the supply chain.

Finally, over time, customers, employees, and other stakeholders of the opportunity-first trajectory will come to expect more responsible behaviour. What starts as a business opportunity will have to evolve to something more because stakeholders expect that a supply chain that claims to be more responsible is truly responsible in all of its actions. By announcing their intentions to take advantage of a sustainable business opportunity, supply chains are opening themselves up to much greater scrutiny and higher expectations. Taking the first step towards becoming more sustainable creates a path dependency where the supply chain will have to take many more such steps to maintain support from their stakeholders.

Workers in a company or chain tend to be motivated when the chain becomes more responsible, but they also begin to question why social or environmental issues that make the firm money are addressed while other negative impacts are not. Similarly, customers who respond to a more sustainable message will begin to ask deeper questions about other practices, demanding ever more change. Protecting and growing the brand effectively means that chains on an opportunity-first trajectory will likely have to migrate toward the *balanced trajectory*, otherwise they may fail. This is a critical point since the opportunity-first trajectory is the one on which most existing firms will address sustainability.

Walmart exemplifies the opportunity-first trajectory. With over 11,000 stores in 71 countries and a global workforce of 2.2 million, Walmart is the largest retailer in the world. When Walmart undertakes a change that affects its supply chain(s), that

change influences industry sectors globally. So it is with the company's sustainability policies. In 2005, CEO Lee Scott announced the company's new business sustainability strategy, designed to meet three sweeping environmental goals: to be powered by 100 % renewable energy, to create zero waste, and to sell products that "sustain people and the environment." While these were "aspirational" rather than concrete goals with definite timelines, their achievement would require major changes in how Walmart managed its global supply chains.

The first two goals (renewable energy and zero waste) are very much about eco-efficiency and innovations in supply chain operations, which align well with Walmart's existing low price strategy that is based on supply chain efficiencies. Walmart closely tracks numbers across its supply and distribution channels as well as in its retail centres, so it has statistics on its progress toward its measurable goals. At the beginning of 2014, it had over 300 renewable energy projects underway worldwide, providing 2.2 billion kWh a year. Additional purchases of renewable power bring the company to 24.2 % of its energy goal. In the US, more than 81 % of their waste is now diverted from landfills. In Japan and the UK, the number is over 90 %. The company offers electronics recycling at its US stores, along with smartphone and tablet trade-in programs. While all these projects benefit the environment, they also cut operating costs in terms of energy expenditures and landfill fees. In addition, recycled materials provide new revenue streams—including 56 million pounds of recovered cooking oil used in biodiesel or animal feed.

Energy and waste issues are business opportunities where innovative processes allow them to become more eco-efficient and these initiatives extend to the entire supply chain. In 2008, Scott announced a drive to bring suppliers into compliance with fair labour practices and cut energy consumption by 20 % throughout the supply chain. He also stated that the company would drop suppliers who did not meet these goals.

Walmart offers a range of educational and training programs to suppliers to help them to meet these targets. Violation Correction Training requires a factory representative to attend classes where approaches to social and environmental issues and compliance methodologies are explained. The suppliers are expected to choose and implement the procedures that fit them. Orange School provides hands-on training to select factories and suppliers. By focusing on the fundamentals of root cause analysis and procedures, Walmart teaches suppliers to identify noncompliance issues proactively and develop systematic approaches to continuous improvement. Walmart has invested heavily in these training programs, but the onus remains on the suppliers to comply.

Walmart provides a good example of both positives and limits of the opportunity-first trajectory. As Walmart becomes more eco-efficient, other issues become more not less pertinent to external stakeholders. The company would of course like to focus on positives like their reduced footprint, decreased reliance on non-renewable energy, and everyday low prices. But external stakeholders have raised a litany of serious complaints about the firm; some of which have resulted in legal action.

For instance, Walmart is Mexico's largest private employer, with over 220,000 workers and 2200 locations. Walmart has more than once resorted to bribery to

obtain building permits in Mexico—in one case, to open a store just a mile from a culturally significant site: Teotihuacán, an ancient Aztec that contains a temple complex and two pyramids (Bloomberg 2014; NYT 2012, 2014). And in the United States, the company is harshly criticized for its anti-union policies, poor working conditions, inadequate healthcare, and low wages (Berfield 2012). In addition, some of Walmart's recent expansion plans have been greeted by protesters who were concerned that Walmart would ruin, not enhance their community (e.g. LA Times 2012). Some of these issues arose long before Walmart started on their path to becoming more sustainable, but these issues become more pertinent as the organization tries to capitalize on its sustainability progress.

Walmart has made significant progress and somewhat paradoxically now faces even more pressure to change. They can't have it both ways—if they are truly trying to reduce the impact of their supply chain, they will have to evolve into one of the other trajectories; or lose trust from multiple stakeholders (suppliers, customers, regulators, etc.) as well as sales. In a sense, Walmart will soon face a crossroad; they have been very successful at making their existing unsustainable business model more resource efficient, but in doing so they have actually increased their exposure. To be truly sustainable, they will have to continue to learn and respond to pressures to make changes that may not create shared value.

The path-dependent nature of sustainability decision is most apparent in the opportunity-first supply chains. By capitalizing on an opportunity, Walmart, like all supply chains on an opportunity-first trajectory, has also created new constraints and expectations. By signalling their progress, they have in essence increased the external pressure on the chain. This is the fundamental paradox of the opportunity-first supply chain, the more they do and the more transparent they become, the more that will be expected.

Supply chains on an opportunity-first trajectory will be indispensable in sustainability for two reasons. First, sustainability has to make sense for companies with such scale to have a significant impact. Second, this is the way the vast majority of existing, presently unsustainable, supply chains will first address sustainability. But, opportunity-first organizations also need to recognize that, over time, they will have to do more than embrace the business opportunity; they will have to fundamentally change.

15.4 Conclusions

This chapter explored the various ways in which supply chains are or could approach sustainability. It starts with two critical pieces of knowledge. First, that no firm has yet created a truly sustainable supply chain, and second, that the choices made to reduce a chain's impacts will create path dependencies.

This starting point leads to a pair of questions all managers will need to ask. The first is "*what has to change in our supply chain to reach true sustainability*". Supply chain managers answering this question focus on three interrelated means to

reducing impacts; eco-efficiency, risk reduction, and innovation. As the chapter has shown, many firms are making significant progress in these areas and these examples offer starting points for managers looking for inspiration.

However, managers looking to begin the journey toward sustainability or those looking to make further progress in their supply chains need to remain aware of the way past decisions limit future options. The chapter explores the three main paths or trajectories in which sustainability is embedded into a supply chain, and the trade-offs inherent in each. Balanced chains are just that, but by focusing equally on all aspects of the triple bottom line, they risk not having the market advantages of focused chains, which are truly leaders at something, even if focused chains are also laggards in other areas. Similarly, chains that use a market opportunity as the initial spur to become more sustainable will, somewhat paradoxically, need to be aware that as they make progress more, not less will be demanded of them.

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