Abstract

This point of view is to share insights to help companies better govern their supply chain to move beyond cost and efficiencies and to manage the environmental and social impact of its activities.

"Not everything that is faced can be changed; but nothing can be changed until it is faced."

– James Baldwin
Why a Sustainable Supply Chain and Why Now?

Ahead of Humanity are a multitude of crises; the climate crisis, anticipated collapse of earth’s natural ecosystems and resulting multi-faceted tensions that threaten to challenge our social norms are very real existential risks.

For example, the Intergovernmental Panel on Climate Change (IPCC) sent a code red to humanity in its 6th Report describing how humanity is progressing toward an increase in the global warming level by 1.5°C by 2040 in even the best projected emissions scenarios. It warns of an increase in occurrence and intensity of unprecedented extreme events in all regions, even at 1.5°C of global warming, that will threaten our food security, our lives and displace many from their homes.

Additionally, 2020 brought us the unprecedented global crisis of the COVID-19 pandemic which has taken many lives, caused setback to our global economy, and exacerbated complex social inequality issues. Only with the same commitment, efforts and ingenuity that were displayed to respond to the COVID-19 pandemic, can society endure the climate and nature crisis we face today.

There is a growing recognition that Supply Chain is a critical point of leverage to drive sustainability impact at scale. Supply chain is a key area for action for some of the most pressing environmental and social issues like climate change, biodiversity loss, pollution, and social inequalities.

In 2020, suppliers reported an exposure of some US$1.21 trillion in potential financial impact related to climate change. More than 50% of the suppliers who disclosed to CDP, i.e., Carbon Disclosure Project in 2020, reported sourcing commodities from forest risk countries. Only 26% of these suppliers can trace their forest-risk commodities back to the originating forest, plantation, or farm. From a social perspective, forced and child labor, unsafe working conditions, and unfair wages, are prevalent across global supply chains. The International Labor Organization estimates that 160 million children are victims of child labor, an increase of 8.4 million children in the last 4 years.

Sustainable Supply Chain also presents significant business opportunities. According to many sources in the public domain, more than half of consumers are willing to pay more for products delivered sustainably and purposefully; and additionally, 76% would wait at least one extra day for climate friendly delivery of their purchase. A study by the World Economic Forum identified revenue increases of up to 20%, cost reduction up to 16% and as much as a 30% boost in brand value among companies engaging in sustainable supply chain initiatives.

Today’s Supply Chain focus on efficiency, cost reduction, speed, and agility must evolve. The sustainability issues we face today like climate change, biodiversity loss and inequality are complex and interconnected in nature. Managing these sustainability issues effectively requires improving practices, taking an extended perspective beyond a
Supply chain management must go beyond economics and cost efficiency, to manage both environmental and social impacts throughout the life cycle of the product. It should address not only Shareholder’s needs, but also seeks to create values for the planet and global community.

Sustainable Supply Chain: Climate-smart, Nature-positive, Inclusive, & Circular

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**Climate-smart:**
- **SDG 7: Affordable and Clean Energy:** Decarbonize value chain through the shift to renewable energy sources to power all Supply Chain activities such as manufacturing, transportation, and warehousing.
- **SDG 13: Climate Action:** Eliminate upstream Supply Chain emissions, optimize building energy, manufacturing process and transportation efficiency.

**Nature-Positive:**
- **SDG 14: Life below Water:** Reduce marine pollution such as plastic packaging and nutrient leaks through practicing extended producer responsibility and regenerative agricultural practices.
- **SDG 15: Life on Land:** Prevent and avoid any land use conversion in all commodity-driven supply chains. Restore and regenerate degraded natural ecosystems through nature conservation and regenerative agricultural practices.
- **SDG 11: Sustainable Cities and Communities:** Make cities inclusive, safe, resilient, and sustainable.

**Circular:**
- **SDG 12: Responsible Consumption and Production:** Enable close-loop Supply Chain Ecosystem to minimize new resource extraction and maximize circularity.
Inclusive:
Engage Suppliers and Suppliers’ Suppliers to ensure all labor in the Supply Chain have a fair wage and eliminate any forms of modern slavery.

- SDG 1: No Poverty
- SDG 8: Decent Work and Economic Growth
- SDG 10: Reduced Inequalities

SDG 17: Partnerships for the goals will be essential in the development of Ecosystem Supply Chains. Collaboration with Suppliers, Customers, and other value chain partners will be essential in enabling a Climate-smart, nature-positive, circular, and inclusive supply chain.

2.1: Climate-Smart Supply Chain

Eliminating upstream and downstream value chain emissions:
Greenhouse Gas Scope 3 (upstream and downstream) emissions are estimated on average 11.4 times higher than the emissions in a company’s own operations (Scope 1+2) on average. This is because of the suppliers and other trading partners involved in the ecosystem of producing goods or delivering services also emit greenhouse gases. In aggregate, these emissions are far greater than from a single company.

For customer-facing sectors, the Supply Chain emissions range from 77% to 90% of the total emissions, whilst for industries that provide raw materials, Supply Chain emissions range from less than 10% for Cement industry to 61% for Chemicals industry. Scope 3 represents the biggest challenge of containing emissions but also the greatest opportunity to reduce them! The ability to collect and compile emission related data across appropriate categories of activities upstream and downstream of the value chain is the key to measuring Scope 3 impact and allowing companies to devise strategy and policies to reduce their carbon footprint! In addition, decarbonizing Supply Chains, and upstream and downstream value chain emissions can be combined to meet the climate goals of becoming Net Zero by 2050, along with product innovation and next-gen responsible development.

Adapting to adverse risks of Climate Change:
The impact of climate change triggered adverse events like heatwave, droughts and floods can be massive for Supply Chain. BASF reported a negative earnings impact of around €250 million due to missing transport capacities for raw materials- result of a period of extreme drought and heatwaves in 2018 that led to low river water levels thus, limiting transport by barge.

Incorporating climate scenario risk modeling to assess materiality and magnitude of climate-related physical risks is critical for Supply Chains of any organization that wants to strengthen their climate resiliency.
Companies are facing an increasing cost burden due to an increase in Carbon tax and changing Emission Trading System (EMS) regulation. To mitigate this, organizations including their Supply Chain should consider incorporating an internal carbon pricing that steers investment into more sustainable products/services and innovations required to reduce the carbon intensity of their operations. Such improve energy and manufacturing process efficiency.

2.2: Nature-Positive Supply Chain

Our global economy is inextricably linked to the health of our planet. More than 50% of the world’s total GDP worth $44 trillion is dependent on nature and the services it provides. Businesses depend on natural resources like forests, freshwater for their production and ecosystem services such as healthy soils, clean water, pollination, and a stable climate. The biggest driver of biodiversity and nature loss is in our food, land, and ocean use system.

The global food, land, and ocean use system, including its full supply Chains, represents around $10 trillion of GDP (12% of global GDP) and up to 40% of employment, providing for the livelihoods for millions of people in low-income countries. Despite its economic importance, this system places enormous strain on planetary boundaries, impacting around 72% of all threatened and near-threatened species.

To put us back on a nature-positive pathway, several actions are required to be taken in the Agri-Food and forest Supply Chains, where the production of food and forest-derived products are major contributors to Biodiversity loss

1. Reduce the footprint of agriculture and fishing on ecosystems by preventing land and ocean use expansion
2. Restore degraded ecosystems
3. Shift towards productive and regenerative agriculture
4. Sustainable management of oceans and forests

2.3: Inclusive Supply Chain

Sustainable sourcing and supply Chain transparency are increasingly being recognized not only as an important part of a company’s environmental strategy, but also as a fundamental part of a sound overall business strategy. Knowing your suppliers and their suppliers is complex not only because of its scale (a chemical company has nearly 75000 tier 1 suppliers) but also due to the outsourced nature in developing countries, that creates a shadow economy making it harder to trace process input

Having full supplier transparency is key to not only Net Zero emission, but also eliminating illegalities like land use conversion, illegal fishing, counterfeiting and illegal labor practices will require the integration of transparency, traceability, and increased collaboration into supply Chains.
Transparency: Engaging with your Suppliers is a key lever to build trust, raise awareness of environmental and social impacts, set expectations, share data across the value chain and support them in reaching common objectives.

Traceability: Blockchain and smart sensor technology are used to trace provenance of supplies from raw materials to finished goods and track the chain of custody as goods switch hands in supply chain. This new technology-enabled capability allows businesses to not only adhere to the new ESG strategy in its supply chain operation, but also inform and protect the consumers of what they are buying with respect to their social and environmental choices.

Collaboration: data sharing/visibility is key here for effective planning e.g. combating inefficiencies due to the bullwhip effect. Collaborating with Industry peers to standardize supplier assessment process or metrics can be a catalyst. The Consumer Goods Forum’s (CGF) Forest Positive Coalition formed in 2020, consisting of major Food manufacturers and retailers have committed to stop commodity-driven deforestation. The members of the coalition have aligned on a key set of KPI to measure and track their performance.

2.4: Circular Supply Chain

Based on 2021 Circularity Gap report, 70% of greenhouse gas emissions come from the way we produce goods and the resources that fuel these processes. Our current economy is only 8.6% circular, circularity needs to be doubled to close the Emissions Gap by 2032. Supply Chain needs to evolve beyond take-make-use-waste model to a Circular model to enable returns, reuse, recovery, and recirculation.

The circular economy-based ecosystem will enable product, service, and business model innovations through:

a. Significant extension of product’s useful life including reuse
b. Implementation of innovative fuel/energy sourcing and production solutions
c. Optimized resource management through recycling and recovery
d. Openness to consistent innovation and knowledge sharing

To execute circularity involves ecosystem orchestration and partnerships, starting from designing for circularity to working with consumers, downstream waste collectors and recyclers to enable the recovery and creating a new business model for recirculation through reuse, remanufacturing, and redistribution.
Sustainable transformation not only helps organizations in mitigating climate-change physical and transitional risks, but companies also who are ahead in adopting innovations are able to create new business models hence revenue streams, which makes them more competitive and attractive to institutional investors.

To achieve sustainability requires a fundamental shift in how we view the Supply Chain. Supply Chain needs to shift from a traditional competition-based approach for growth to collaborating with peers and partners to achieve the same environmental and social goals.

Below are ten key actions required for a Supply Chain to transform to become climate-smart, nature-positive, inclusive, and circular. Technology and collaboration with value chain partners and industry peers will be key enablers to deliver on these 10 key actions.

1. Understand where your Supply Chain environmental and social “hotspots” are located
2. Reduce the carbon intensity of Supply Chain operations across the value chain, including own operations through suppliers emissions tracking, Chain & transportation optimization, improving manufacturing process efficiency and energy efficiency
3. Incorporate climate scenario risk modeling to assess materiality and magnitude of climate-related physical risks to Supply Chains
4. Incorporate internal carbon pricing for internal business case building that steers investment into more sustainable products/services and innovation
5. Work with Industry peers to create a Supply Chain Map to obtain full visibility of your tier-1 and lower-tiered suppliers
6. Create a Supplier engagement strategy, working with industry peers to obtain supplier and site-level data, measure, manage and improve Suppliers’ performance on environmental and social indicators.
7. Design and gear up reverse logistics infrastructure to facilitate an ecosystem-enabled circular supply chain, leveraging the power of technology, partnerships, and ecosystem orchestration.

8. Create performance dashboards to report and analyze performance on environmental and social indicators.

9. Especially for the Agri-food Supply Chain where the production of food is a major contributor to Biodiversity loss, work with farmers to shift towards productive and regenerative agriculture that reduces chemical inputs required, freshwater usage and restore soil health.

10. Sustainably manage forestry and prevent land use conversion in Supply Chains, leveraging technology like remote sensing.

**Foundation for a Sustainable Supply Chain Strategy**

Aligning the 3 building blocks of organization purpose, operating model and performance management will enable Supply Chain organizations to make the right strategic decisions in the pursuit of sustainability.

**Humanity, Innovation & Governance**

- **Outcome**: A thriving Supply Chain within a thriving ecosystem
- **Governance**: Steer strategic decisions with science-based targets & the right org design
- **Structure**: Redesign business strategy, products/services & business models to achieve sustainability goals
- **Innovation**: Belief and conviction to regenerate our natural ecosystems & contribute to an equitable society
- **Reward**: Performance Management, Governance, Innovation

**Figure 4: Sustainable Supply Chain Foundation**

- **Organization Purpose**: The current model where financial gains stand above all should be replaced by a mission that delivers positive impact for the Planet, People, and Profitability. Bold leadership that strongly believes the organizational responsibility to take the lead to regenerate our natural ecosystems and contribute to an equitable society is required.

- **Operating model**: Incremental changes are not sufficient to deal with complex and systemic issues like Biodiversity loss, Climate Change, and pollution. To solve the problem requires rethinking the makeup of the organization, reinventing new business strategies, and innovating new products and business models that contribute to the topline and bottom-line, while contributing positively to the environmental and society. Companies should be purposefully human centric and focus on achieving an inclusive and diverse workforce.
Metrics Matter

Sustainability improves the quality of our lives, protects our ecosystem, and preserves natural resources for future generations. For companies focused on being purpose driven, sustainability metrics will help them measure progress and track relevant goals while demonstrating effectiveness and impact. The key will be in making sure the metrics are measurable and trackable, more importantly actionable! Moving forward sustainability metrics will be some of the most important for companies.

There are four key areas of sustainability: human, social, economic, and environmental. Companies across the various industry will have metrics that are relevant for their business, but some commonly tracked by leading companies are:

- **Financial metrics** such as cost/benefit analysis, internal rate of return (IRR), and return on investment (ROI) are examples of financial metrics that are essential to most organizations.

- **Environmental metrics** typically include reduction of electricity usage, change in fuel consumption from company vehicles, carbon emission reductions, gallons of water saved, and increased waste diversion. The Greenhouse Gas Protocol Scope 1, 2, and 3 set the framework for these metrics.

- **Social metrics** focus on employees and occupants, health & wellbeing, diversity & inclusion, supply chain management, and more.

- **Governance metrics** are often determined by the existence of policies on wide range of issues such as company values and business resilience plans.

The benefits of measuring and tracking sustainability efforts can include:

- **Increased Investor Demand**: Sustainable investing continues to attract large amount of capital as investors want to contribute to positive change, such as reversing climate change, promoting social justice and advocating for better governance. According to Bloomberg, assets under management (AUM) that are invested globally in sustainability funds and portfolios could reach $53 trillion by 2025, accounting for more than one-third of projected total AUM of $140.5 trillion.

- **Increased Brand Value**: A good product is no longer enough to win a consumer’s favor. Shoppers want more than just quality, often looking for products and brands that align with their personal values. The U.S. sustainability market is projected to reach $150 Million in sales in 2021, according to Neilson. Almost half of U.S. shoppers say they change their consumption habits to benefit the environment.

- **Increased Employee Engagement**: A 2019 Fast Company article reported nearly 40% of millennials have chose a job because of company sustainability and more than 10% of workers said they’d be willing to go as far as take a $5000-$10,000 pay cut.

**Point of View**

- **Performance management**: When the mission is clear, and the strategy is set, connecting Strategy to goals, and defining performance metrics to measure ESG performance is important to ensure that the organization stays on track.
Conclusion

Supply Chain initiatives should go beyond efficiency, cost, and risk reduction to literally rethink supply chains, closing loops and innovating new business models that deliver positive results for Planet, People and Profits.

While technology holds distinct promise in driving sustainable transformation, humanity requires bold and purposeful leadership to make the right decisions in mitigating climate action, nature conservation, and creating a more equitable society for the future generations to come.

TCS has been a purpose-driven organization since its founding. The organization has been a leader in contributing to the community as the community is its purpose. For example, we publish our ESG performance along with our financial performance and have set a target for us to achieve net zero by 2030.

Our own carbon mitigation efforts have led to in-house innovations such as TCS Clever Energy and other solutions leveraging advanced digital technologies that help our customers tackle their most pertinent sustainability issues.

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Awards and accolades

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