

Sustainable Supply Chain Management: A project management perspective ¹

By Raju Rao

Abstract

Supply Chain Management (SCM) is the practice of coordinating sourcing production, inventory management and transportation among all the actors and focuses on speed, cost and reliability of operations. Sustainable SCM adds the goals of environmental and social values to it and this means addressing global issues such as climate change, water security, deforestation, human rights, fair labour practices corruption etc. In short, we have to consider all the Sustainable Development Goals (SDGs) of the UN.

SCM is inherently operational though various projects could be identified within the chain. The Sustainability paradigm has added another dimension for projects within SCM because many of the initiatives being discussed now and in the near future are in fact projects. These are guided by the recent interest in principles and practices of circular economy, sustainable sourcing waste recovery & management, resource efficiency, reverse logistics etc among others. At some point in time, possibly in the coming decade, sustainability as a mindset will be fully set and one would view it as a an operational parameter, till then all efforts to become sustainable will be achieved largely through projects.

Supply Chain Management & Sustainability

What is Supply Chain Management?

Defining SCM

A sustainable supply chain is one that fully integrates ethical and environmentally responsible practices into a competitive and successful model. End-to-end supply chain transparency is critical; sustainability initiatives must extend from raw materials sourcing to last-mile logistics, and even to product returns and recycling processes (www.sap.com)

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Supply chain management (SCM) is management of the flow of goods, data, and finances related to a product or service, from the procurement of raw materials to the delivery of the product at its final destination.

It includes material handling and software for all parties involved in product or service creation, order fulfillment, and information tracking—such as suppliers, manufacturers, wholesalers, transportation and logistics providers, and retailers. (www.oracle.com)



Exhibit 1: Stages in supply chain management

The focus of supply chain management is to create value for the customer, increase efficiency and productivity of operations through speed and reliability of performance. It does it by integrating the various functional areas from raw material sourcing to product delivery which would normally work in silos.

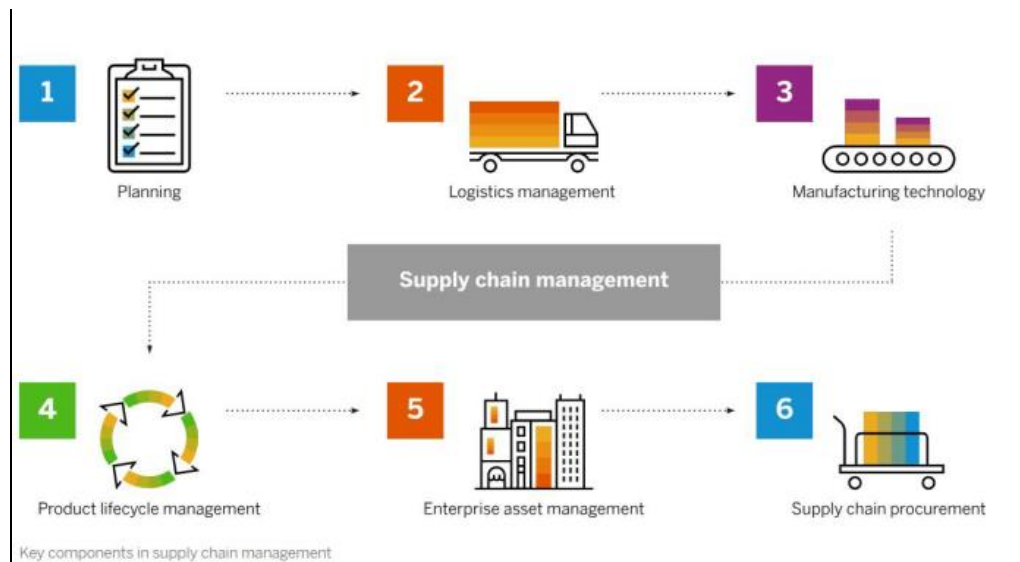


Exhibit 2: Components of supply chain management

Circular Economy

From Linear to Circular

Traditionally as manufacturers and consumers, we have been practising the method of *take - make - use- waste* with the final step of sending materials to the landfill. This is an example of a linear economy. Over the years, this has been modified to include recycling in which some portion returns to the manufacturing cycle. However, some of the materials still go to the waste bin. A further development is the concept of 'zero waste' where nothing goes to the landfill and all materials beyond consumption are returned back to the operational cycle. This is achieved through repair, reuse or by refurbishing/re-manufacturing. This is an example of a circular economy.

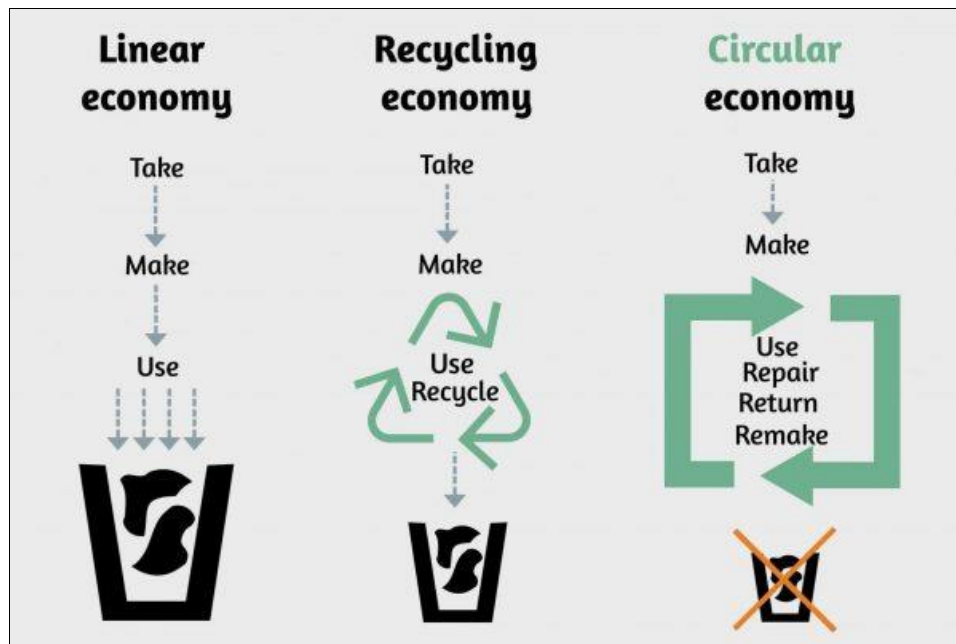


Exhibit 3: Linear to Circular

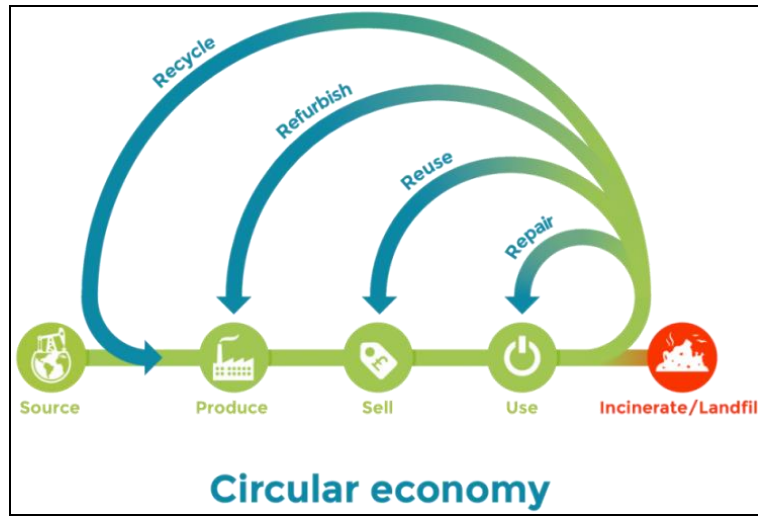


Exhibit 4: Circular Economy - reverse cycle

Our traditional supply chain operation has been from raw material sourcing to end of product delivery, which is an example of **Cradle to Gate**. **Cradle to Grave** will happen when the product reaches the end of its life cycle, and it is sent to waste after being processed. When the waste is recycled and materials and energy are retrieved from it, like in the case of a zero waste philosophy then we would term it as **Cradle to Cradle**.

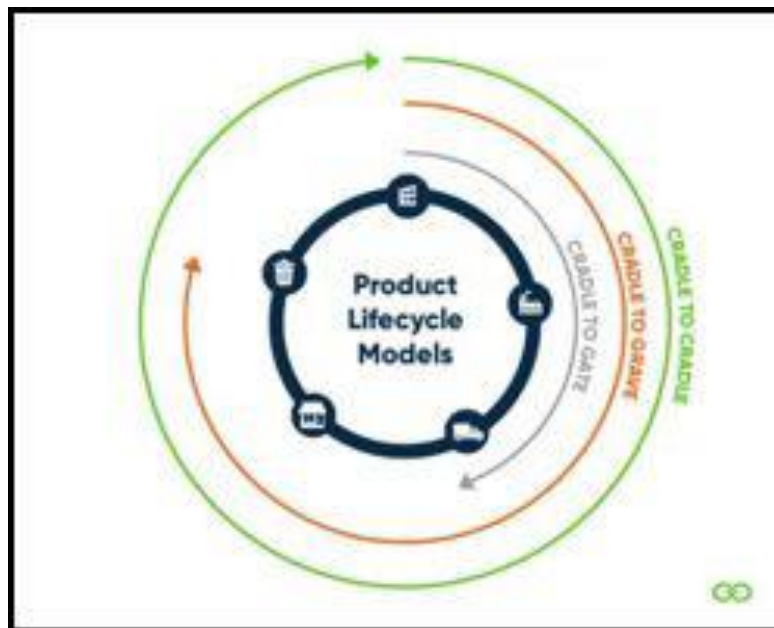


Exhibit 5: Cradle to Gate - Grave - Cradle

The concept of a circular economy is basic and fundamental to enable sustainability for supply chain management. Everything stems from it for e.g. moving from a linear to circular supply chain and laying emphasis and focusing on the return cycle i.e. from product end of life or retirement to the raw materials and sourcing.

Sustainability 101



Exhibit 6: 2030 UN SDGs

The UN SDGs forms the basis for much of the conversation, policies and standards across organizations and countries on sustainability for many areas. Supply chain management is no exception and also follows it like many other disciplines.

The fundamental philosophy for sustainability is built on three themes being: Economically feasible, Environmentally sound and Socially equitable.

Sustainability as a practice is spread across industries and businesses with five major classifications i.e. Transport, Industry, Buildings and Agriculture. To this we can add the enabling domains of ICT and Finance.

How does SCM become Sustainable?

As it is understood and practiced now Supply Chain Management main focus is on customer satisfaction though other factors like productivity in terms of efficiency / speed or reliability are also considered. The chain starts with raw materials and ends with the product when delivered to the customer and is linear.

With the advent of the emphasis on sustainability there is a shift in the mindset, Customer orientation and profitability has to balance with environmental and social considerations. The supply chain is circular with an emphasis on “repairs & returns” which was not of much consequence before. Refer Exhibit 7.

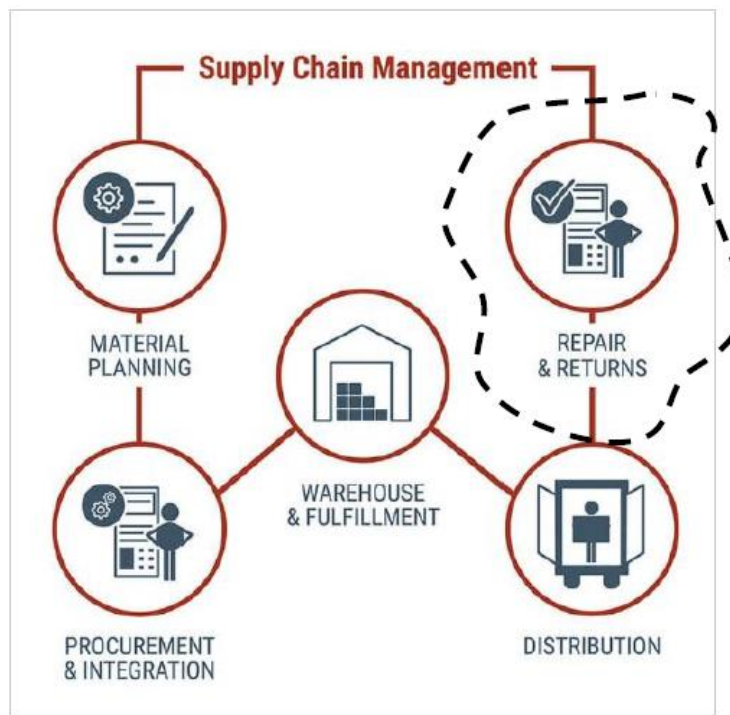


Exhibit 7: Change in supply chain mindset from linear to circular

The return cycle as indicated by “waste” to “materials” in Exhibit 8 explains the area of focus and action to move towards a sustainable supply chain.

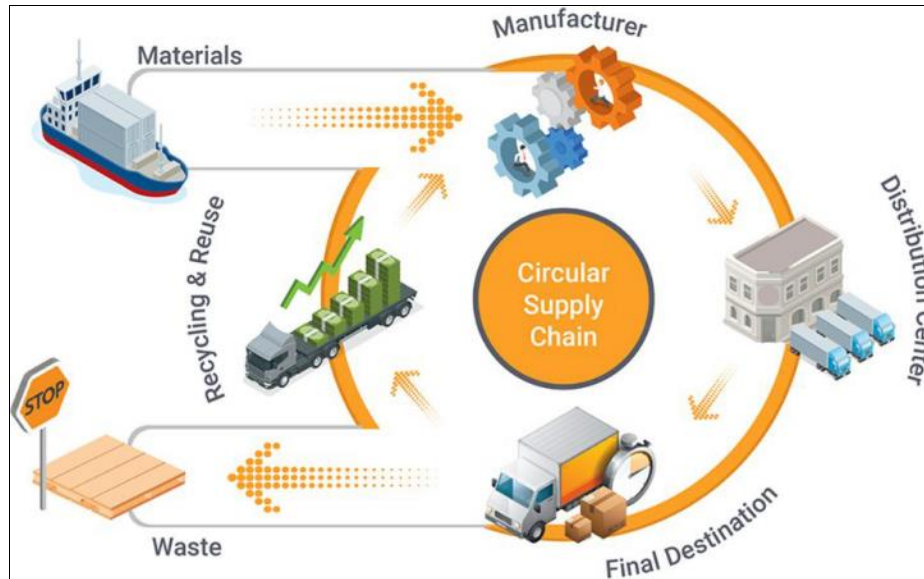


Exhibit 8: Circular supply chain

Focus Areas: Sustainable SCM

Considering the circular supply chain, there are many areas where project management principles and practices can be gainfully employed. In particular, those in the return cycle i.e. from end of life to raw materials / sourcing will find more projects. e.g. those related to reuse/repurpose, recycling/refurbish/re-manufacture and waste management. Three areas have been identified for a focused discussion.

Reverse Logistics

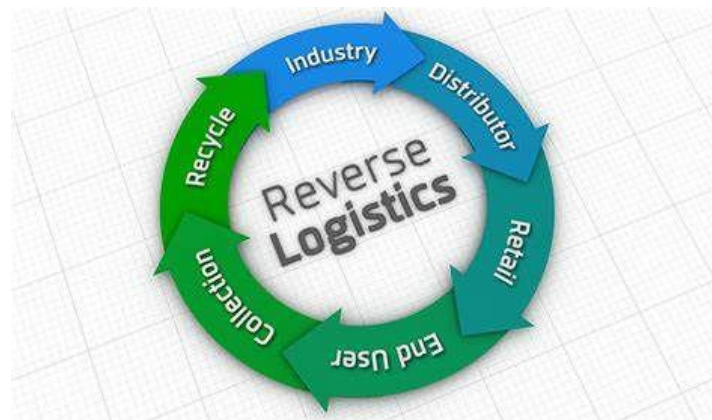


Exhibit 9: Reverse Logistics part of Circular Supply Chain

While logistics refers to transportation goods to the marketplace and the final consumer, reverse logistics applies to a situation where goods are managed to be transported in the return cycle from customer back to the source i.e. raw materials or sourcing stage. It assumes importance because consumerism has made it possible for goods to be returned if not suitable, defective or damaged. It is also of value because of the interest in moving to a circular economy from linear to address issues related to the environment or optimum resource utilization.

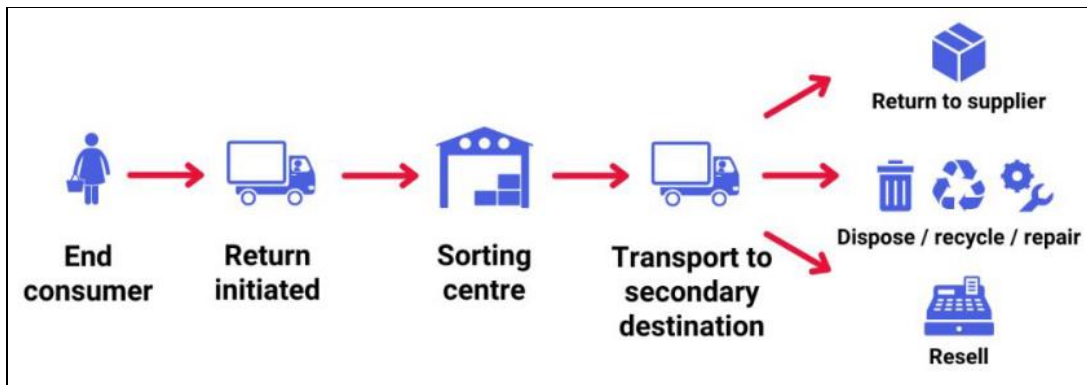


Exhibit 10: Reverse logistics options

There are many scenarios which will demand products to be returned back in the system. e.g.

Return: Product not needed or flawed or damaged, sometimes resold.

Dispose /Recycle /Repair: Product in use, not working so needs repair.

Resell: Product at end-of-life cycle so refurbished or resold.

The return cycle can be classified in terms of 5Rs which are



Exhibit 11: Reverse Logistics components

Returns & Exchanges: Returns Management, Returns policy & procedure Delivery failure.

Reselling Returned Products: Unsold goods

Repairs: Maintenance and Re-manufacturing / Refurbishment

Recycling & Disposal: End of service life and Packaging equipment

Replacements: Rental / Lease of equipment

Example: H&M

H&M has a large garment collecting program rolled out globally in 2013. It sorts used clothes into categories of

Re-wear: Wearable clothes are marketed as second-hand clothing.

Re-use: If the clothes or textiles are not suitable for re-wear they're turned into other products, such as remade collections or cleaning cloths.

Recycle: All other clothes and textiles are shredded into textile fibres and used to make for example insulation materials. Or

Rent: Only for one day or night. Available in limited stores.

Sustainable Sourcing



Exhibit 12: Components of Sustainable Sourcing

Sustainable Procurement or Sourcing implies that we do the normal procurement or sourcing activity with many of the UN Sustainable Development Goals (SDGs) incorporated. For e.g. in particular SDG 12 responsible consumption and production: which directly relates to production process. Or

SDGs 1 to 5: No poverty, Zero hunger, Good Health & well-being, quality education and gender equality. (Society)

SDGs 8,10: Decent Work and Economic Growth, Reduced Inequalities (Economy)

SDGs 11,13,14 & 15: Sustainable cities & communities, Climate Action, Life below water and Life on Land (Environment)

Refer Exhibit 6 :2030 UN SDGs

The benefits of following a policy of sustainable procurement or sourcing is not only operational efficiency in production but also improved value in brand value and people satisfaction as perceived by customers and stakeholders. Apart from benefits for an improved environment there is also greater opportunities to venture into new areas though it has to be balanced with the attended risks.

Moving into sustainable procurement or sourcing has its challenges: Inadequate knowledge & tools, cooperation from suppliers, maintaining transparency and insufficient internal resources / funds.

Example: Nestle

Nestle has a focus on responsibly sourced raw materials which means considering farming practices, their impacts on forests and natural ecosystems, and the extent to which human rights and animal welfare practices are respected by growers and suppliers. It works on contributing to 12 Sustainable Development Goals.



Exhibit 13: SDG Contributions

Materials include: cereals and grains; cocoa; coconut; coffee; dairy; fish and seafood; hazelnuts; meat, poultry and eggs; palm oil; pulp and paper; soy; spices; sugar; and vegetables. Together they account for 95% of the sourcing by volume.

Waste Recovery

The last step in the life of a commodity is when it is used up and when nothing else can be done with it, and then it goes as waste to the landfill. Theoretically and ideally, nothing should go waste and every material should be conserved but in reality, waste has perennially been a big problem and issue. The latest addition to it is e - waste. The effect of waste is primarily seen as a threat to the environment, though economics and resource efficiency is also a significant factor.

In a linear supply chain waste would be last step which is now becoming the starting point in a circular supply chain. When a used product or commodity cannot be reuse/re-purposed or repaired /refurbished then it is recycled. In this step materials are recovered, or energy produced and balance goes to the landfill as waste disposal. This final point is minimized or completely eliminated as in the case of a zero-waste policy.

Waste Recovery v/s Waste Disposal

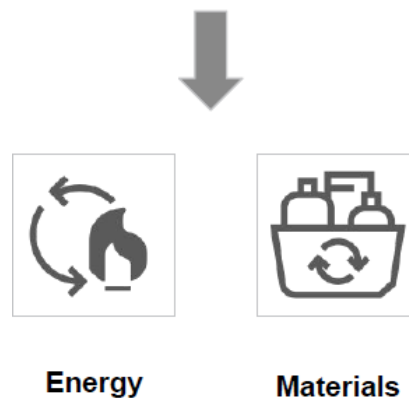


Exhibit 13: Waste Recovery and Disposal

Waste Recovery is different and not the same as Waste Disposal. Waste recovery is an operation the result of which serves a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function. Effectively, waste recovery preserves resources through the use of waste in place of other raw materials. Waste disposal on the other hand is any operation which is not recovery, even where the operation re-claims substances or energy.

The distinction between the two operations is crucial to determine the environmental regulations that will be applied to parties involved in the operations, lenient or stringent.

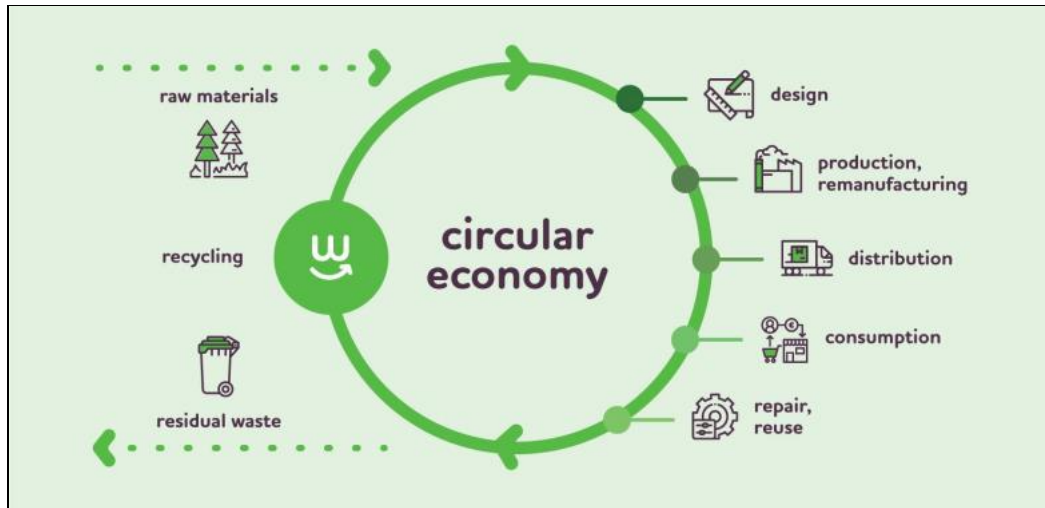


Exhibit 14: Waste recovery as part of a Circular Economy

The world generates about 2 billion tonnes of municipal solid waste annually, with at least 33 percent not managed in an environmentally safe manner. Though they only account for 16 percent of the world's population, high-income countries generate about 34 percent, or 683 million tonnes, of the world's waste.

When looking forward, global waste is expected to grow to 3.40 billion tonnes by the year 2050.

Various methods have been applied to recover or handle wastes worldwide. About 19% covers recycling and composting which we may consider as preferred whereas nearly 70% goes to sanitary /controlled and unspecified landfills, open dumps which is not best way to process waste. A large portion of this can be recycled or used as compost. Even incineration (about 11%), though a solution, is less preferred as they generate gases which can affect the environment.

Waste recovery provides many opportunities for projects either for reuse/repurpose or recycling into other materials or for repair/refurbish/re-manufacture. Composting is an opportunity for organic waste.

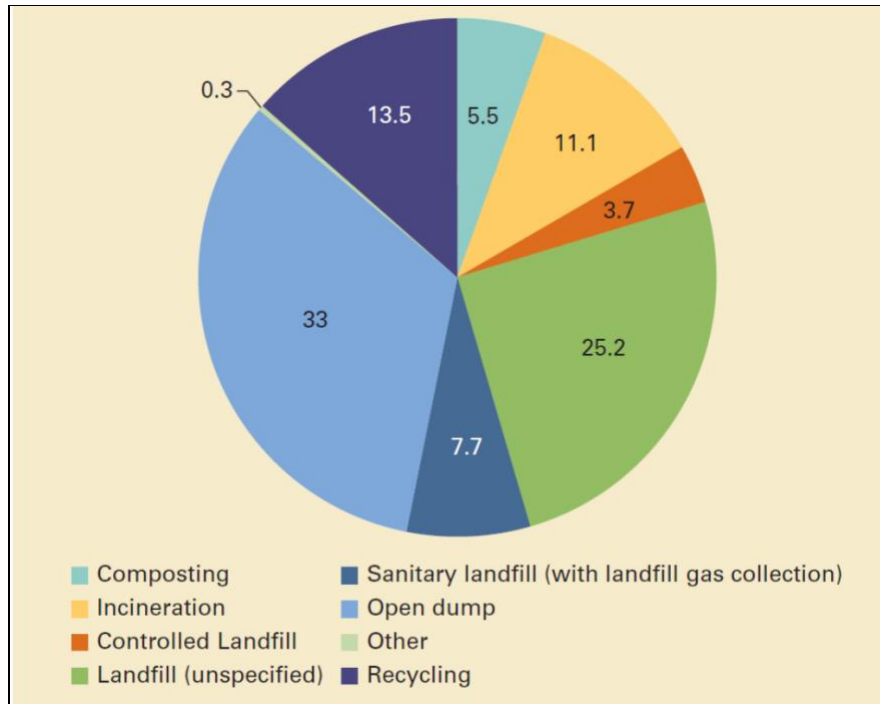


Exhibit 15: Global Waste Recovery

Example: HP

Closed Loop Recycling: In moving from a linear to a circular economy HP converts used cartridges after adding plastic bottles and plastic hangers to make original cartridges. 100% of toner cartridges and 82% of ink cartridges are made from recycled materials.e.g.it uses recycled plastic bottles collected in Haiti and from other sources in the manufacturing of Original HP Ink Cartridges. This effort helps to create sustainable jobs, brings opportunity to the people in Haiti, and helps prevent plastics from reaching the Caribbean Sea.

Projects & Sustainable SCM

Applying Project Management for Sustainable SCM

The sustainability mindset

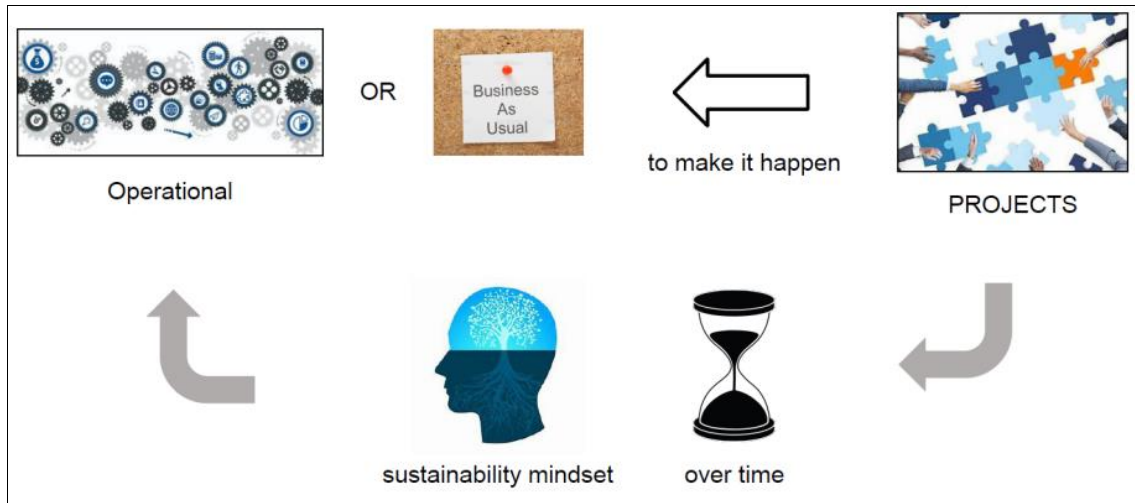


Exhibit 16: The Sustainability mindset

Traditionally, supply chain management has been an operational discipline and is seen as ‘business as usual’. In view of current developments i.e. moving from a linear to a circular there would be a need to develop and implement initiatives which would be in the ‘project’ mode. This would occur till such time when a sustainability mindset becomes routine and is ‘business as usual’ as in the case of course of normal operations. It is quite likely that this situation will take some time to fructify, and we will be seeing many activities being performed using projects in the next decade.

Types of projects in the supply chain

The sequence of activities and processes in the supply chain from raw materials /sourcing to end of life of a product have been in vogue for quite a few decades and are well developed with substantial support from vendors and organizations e.g. ERP packages and logistics ventures. These are largely operational in nature. The place for projects will be in the circular supply chain in the return cycle i.e. from end of life back to raw materials or sourcing. Here are some examples of areas where projects are likely to be implemented.

- ✧ Reverse Logistics
- ✧ Sustainable Sourcing
- ✧ Waste Recovery /Recycling
- ✧ Reuse / Repurpose

✧ Repair / Re-manufacture / Refurbish

✧ Sharing / Collaboration

SCM in the future



Exhibit 17: Future of SCM and Sustainability

Supply chain management, as has been practiced over the last the few decades, has kept customer orientation as its core focus. This approach is likely to change in the future and we can see supply chain management with different features. These would occur in moving from a linear to a circular supply chain, incorporating various technology inputs and customer choices in adapting to uncertainty and change.

To all this we have to the add the dimension of sustainability which will include environmental, economic and social parameters. This will increase the complexity of the situation and will require adapting to change and uncertainty through agility and flexibility. Trade-offs will be required at various levels.

What can we do as Project Professionals

There are multiple ways by which we can contribute and engage ourselves as project professionals towards sustainable supply chain management.

Organization

Projects within the supply chain

In our own organizations where we are employed or engaged as consultants there are many 'projects' within the 'circular' supply chain. These are more so in the return cycle i.e. from end of use back to raw materials or sourcing.

Towards SDG and or Business benefits

Many of existing projects in the circular supply chain i.e. from raw materials to the return back to its origin will call for review in terms of its outcomes. These would be either towards some of the 17 SDG goals or tradeoff between sustainability parameters and business benefits.

Domain Knowledge

Consulting: Sustainable Supply Chain Management

As consultants we would require domain knowledge to be able to function effectively. Imbibing the current knowledge and practices on sustainability with supply chain management become relevant.

IT Solutions & App Development

To develop IT applications for e.g. in AI, IoT, Block Chain, Big Data, etc. current domain knowledge in sustainable supply chain management will be essential.

Community

There are plenty of opportunities where we can take up assignments or projects within our community either by actively spearheading or participating in them or funding them. Some examples are

Waste Recovery: Community Composting

Repair / Refurbish: Repair Cafe

Sharing: Cars / Equipment & Tools

Final Thoughts

Traditionally, Supply Chain Management has its main focus on the customer

- ◆ To make SCM sustainable we have to add parameters related to environment & social issues while maintaining the economic viability
- ◆ The new areas which will be of interest to project professionals for S-SCM are
 - ✓ Reverse Logistics
 - ✓ Sustainable Sourcing
 - ✓ Waste Recovery
 - ✓ Repair, Refurbish / Re-manufacture
 - ✓ Sharing & Collaboration

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About the Author



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Raju Rao is an author, speaker and social entrepreneur.

As the Founder of Xtraplus Learning & Consulting and has been a trainer, consultant and coach for nearly two decades. He often writes for professional journals and is the co-author of two books on project management. At many global conferences and seminars, he has been a speaker.

Raju has been involved in the development of various standards in project management. He has worked as a volunteer with PMI and similar organizations for many of their initiatives and projects. As the Founder of the not-for-profit Forum for Food Recovery, an organization involved in advocacy and education in food waste and recovery management, he is also an Ambassador for GPM Global, which is dedicated to advancing regenerative solutions and practices for sustainable project management. He is a member of the International Society of Sustainability Professionals.

Raju is a Distinguished Toastmaster and has been an active member of Toastmasters International. He also dabbles in writing fiction and is interested in cooking, running and listening to music.

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