

Circular Economy: What does it mean for Project Professionals? ¹

By Raju Rao

Abstract

On the road towards a sustainable future, one of the topics which finds frequent mention is the circular economy. This requires that we all look at projects and operational initiatives with a total life cycle perspective. Key questions that we can ask include.

- How do we as project managers reconcile between project as a temporary endeavor with a circular economy which is essentially long-term and operational in nature?
- What contributions can we as professionals make towards the community and society and how we can benefit from the activity?

This paper will deliberate on understanding the opportunities and challenges of a circular economy and what it presents for project professionals. It will help in further exploring our roles in our projects, organizations and society. Examples and case studies will be included to give a picture of current happenings.

Some of the topics that we will deliberate on include:

- What is a circular economy? Why do we need it?
- Circular Economy and Sustainability - understanding the global perspective.
- Project as temporary endeavour vs Circular Economy as ongoing and how to manage the tradeoff.
- What do the PM standards have to say on this subject?
- Examples of projects and initiatives in the space
- What can you do as project professionals?

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Understanding 'Circular Economy'

An example

To understand the concept of a circular economy, let us consider a very simple example, one with which we are all familiar. Most of us have a cell phone and often more than one and when we need to upgrade or replace it with another, we either “recycle” them or if dumped it goes to the landfill.

The least preferred option is the landfill as it generates electronic waste which creates environmental hazards due to global warming and the release of toxic gases when the waste is burnt or processed.

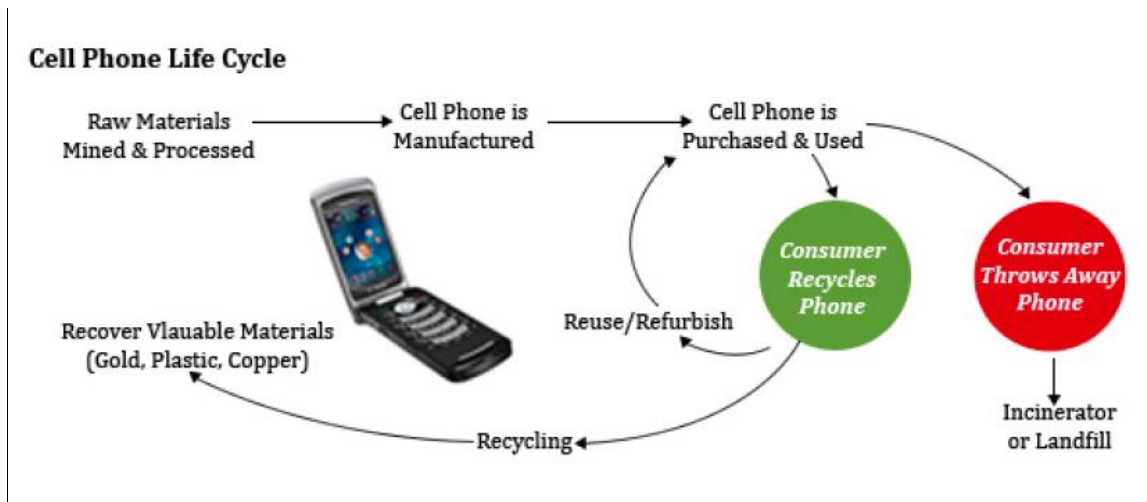


Exhibit 1a: Understanding Circular Economy with an example

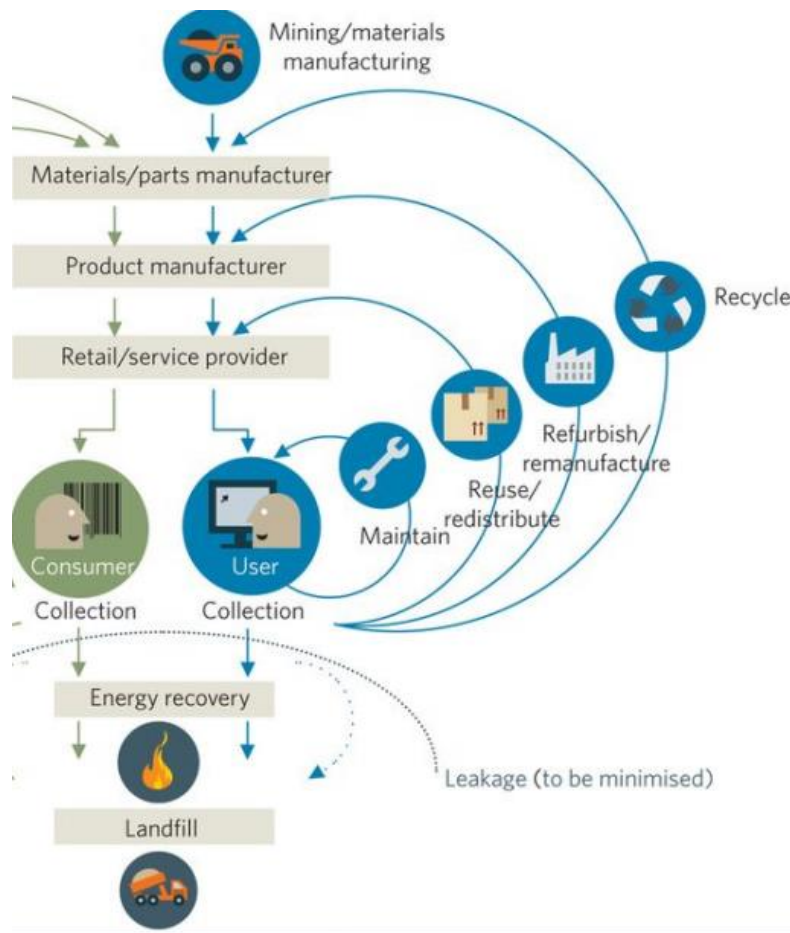


Exhibit 1b: Circular Economy Reverse cycles

Among the methods adopted to return materials back into the system, recycling is not the preferred option as it is the farthest stage from the point of use and therefore unproductive and inefficient. Instead, we could opt for maintain/repair, reuse/redistribute, refurbish/re-manufacture in that order.

The circular economy is not just about materials but other parameters as well for e.g., fair work practices in the work, ensuring suppliers adopt sustainability practices, etc. and most importantly designed to last longer. An example which follows many of these practices is [Fair Phone](#) which sources gold, recycled plastics from conflict free zones, takes appropriate care of factory workers, and produces phones which has a modular and repairable construction.

The Global Perspective

Globally, it is reported by the CGRI Report 2023 that only 7.2% of the materials are cycled back into the system after their useful life, also referred to as secondary materials. Therefore, more than 90% of the world resources are either wasted, lost or remain unavailable for reuse for many years as they are locked into long term stock such as buildings and machinery.

Today, six of the nine key 'planetary boundaries' that measure environmental health across land, water and air have been broken.

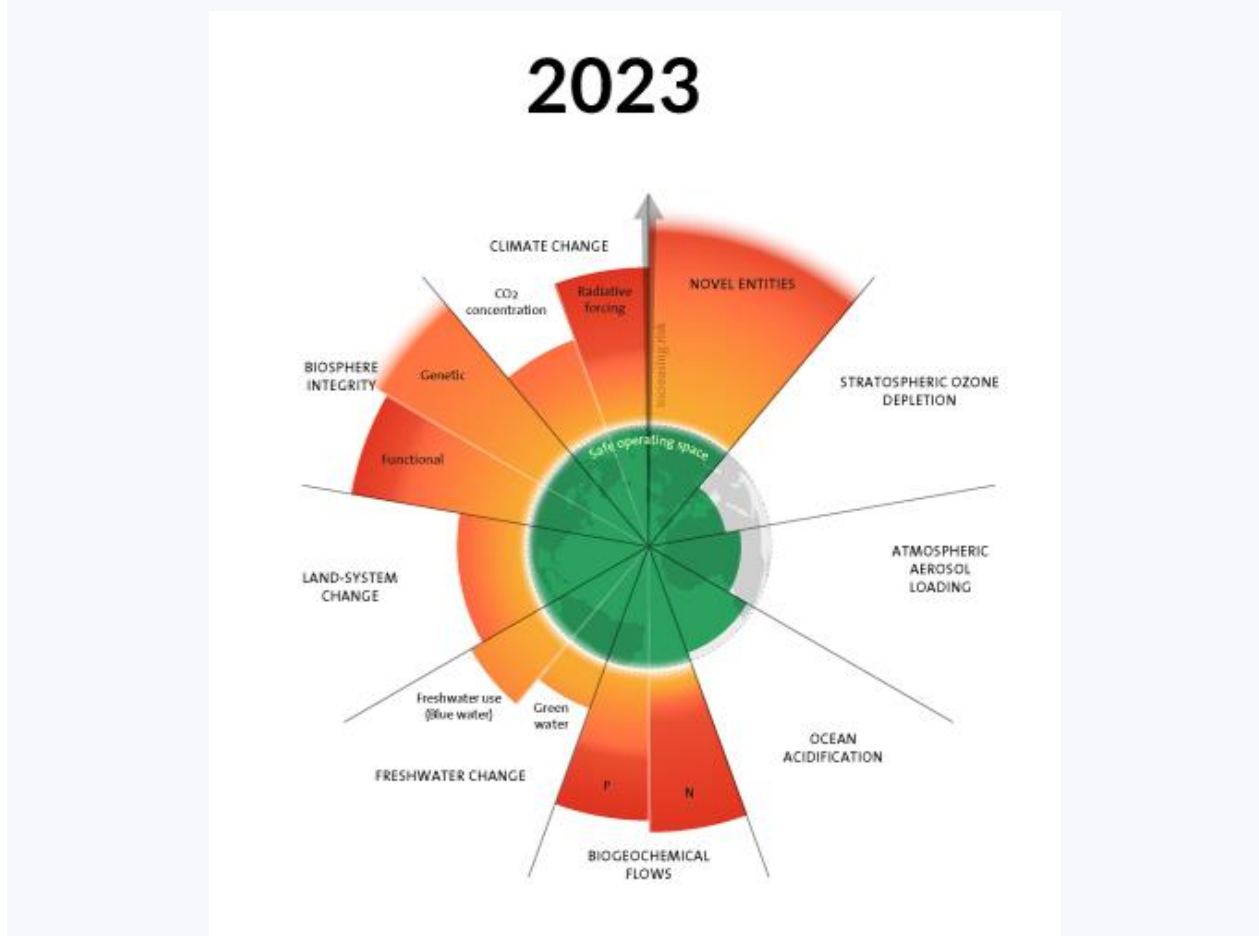


Exhibit 2 : Planetary Boundaries: Source: Stockholm Resilience Centre

To ensure that we do not exceed the safe limits of the planet this trend of overshooting can be reversed by following a circular economy and reducing global material extraction by one third. This is possible through circular solutions across four key global systems.

■ Agrifood

- Mobility & Transport
- Manufactured Goods & Consumables
- Built Environment

The move to a circular economy has a potential opportunity to translate into \$ 4.5 trillion of value by 2030, a substantial portion of this would be projects and project management.

From linear to circular

Most of the industry today follows the linear economy, it follows the stages of Take, Make, Use and Waste before material is sent to the landfill. To move into a recycling economy many organizations are actively pursuing the stages of Take, Make, Use /Recycle and Waste. Again, here the last stage is the landfill. But this is inadequate, as recycling may not help solve the problem, as some waste is still being generated which invariably gets dumped at the landfill. By following a Circular economy, we have potential situation of Zero waste and the stages followed would be Take, Make, Use, and Return / Repair/Reuse / Recycle. The last stage of materials going to the landfill could be completely avoided.

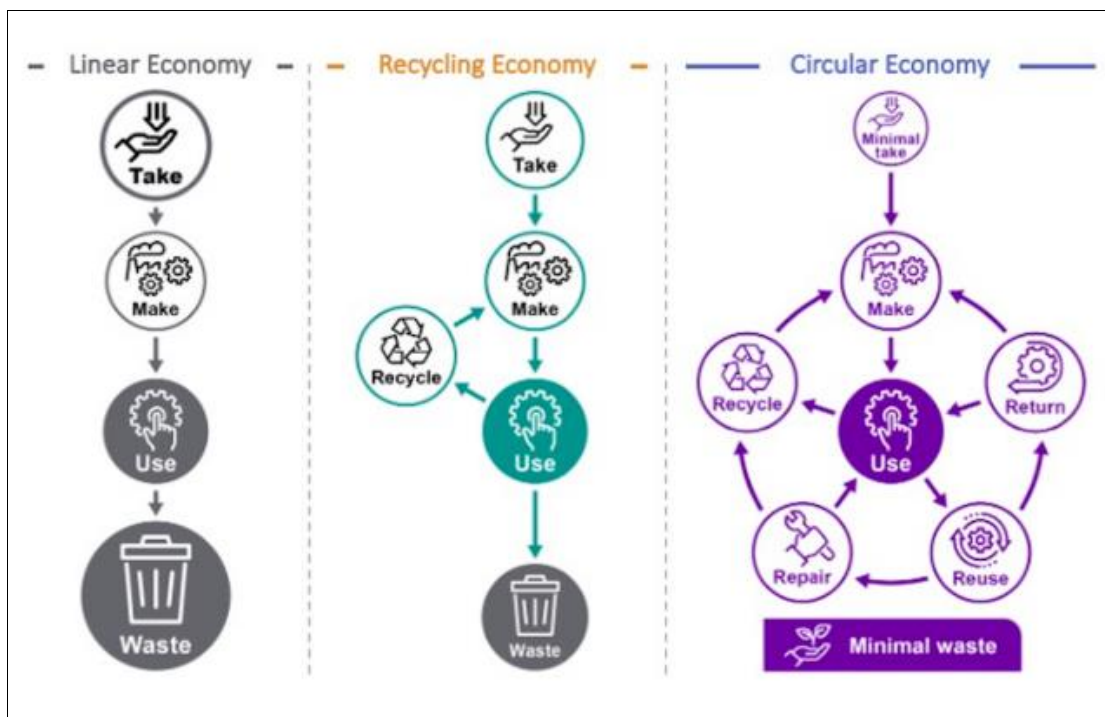


Exhibit 3: Linear to Circular

There are many examples of organizations following the principles of a circular economy. Some examples include:

Vigga - Children’s clothes, GoMore - Car Ride sharing, Gerrard Street -Headset, Combineering - Waste Management, Austin Materials Marketplace etc.

We can find examples in many sectors, and these are not limited to Fashion & Textiles, Automotive, Electronics and Cities / Special Zones.



Exhibit 4: Examples

The key levers to transition towards a circular economy are:

Narrow: Use Less - Efficiency in use of materials and energy

Slow: Use Longer - made to last, e.g. through durability and repairability

Regenerate: Make Clean - substitute hazardous, toxic materials & processes with biomass resources. Designing regenerative processes at system as well at product level.

Cycle: Use again - maximise use of secondary (recycled) in comparison to virgin materials

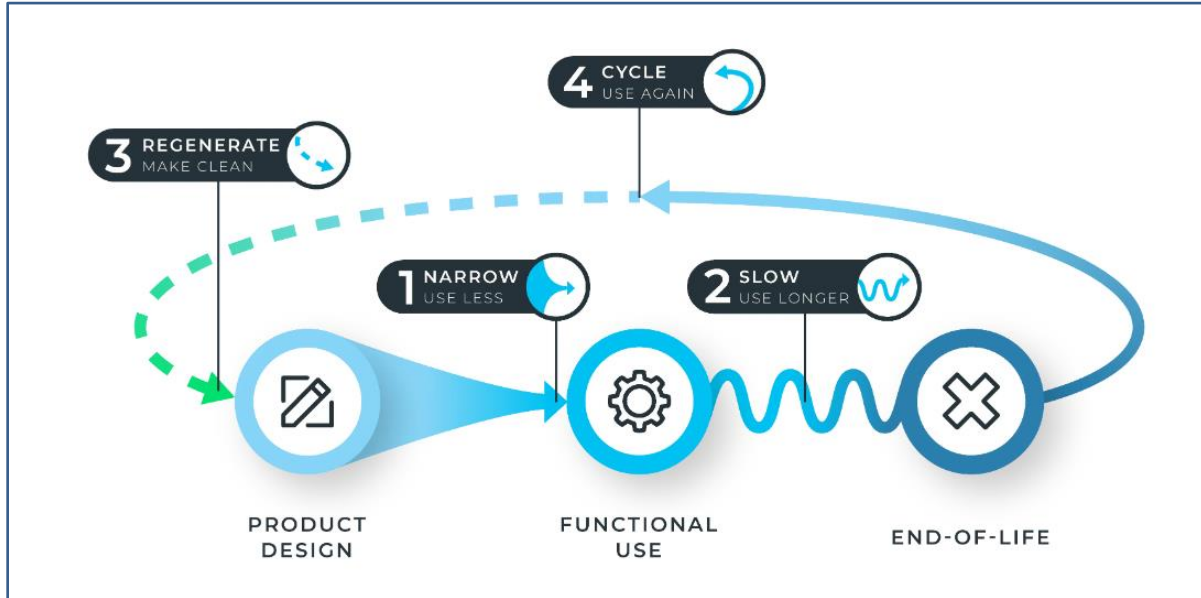


Exhibit 5: Source: The Circularity Gap Report 2023

Why do we need a Circular Economy?

We can view the benefits from a circular economy based on three principles:

- **Regenerate natural systems:** balances biodiversity and improves holistic living for human beings with nature, animals and aquatic life.
- **Design out waste & pollution:** reduces greenhouse gases & emissions, solves problems of climate change, improves living conditions and saves the environment,
- **Keep products and materials in use:** helps conservation of resources, improves supply chain and availability of goods and reduces cost of production of materials and efficiency of processes.



Exhibit 6: Principles of a Circular Economy

Further, it helps in separating the ability to achieve economic growth without hampering natural resources, creates jobs and resilience in the process and presents a business case to be sustainable in each sector while increasing competitiveness.

Business Models for Circular Economy

Five models can be identified for implementing circular economy for products. These are:

Circular Supplies: supply fully recyclable, biodegradable, renewable resource inputs to support circular production.

e.g., Royal DSM: Cellulosic bioethanol as a fuel

Resource Recovery: eliminate material leakage and maximize economic value of production return flows.

e.g. Nike Grind: Recycled shoes converted to products - tracks, turf fields, courts, furniture, tech accessories, rubber flooring among others.

Product Life Extension: extend the current life cycle of a product, repairability, upgrading, reselling.

e.g., Fairphone: extending product ownership through modular construction and improved repairability

Sharing Platform: enabling collaboration among product users.

e.g., Daimler Car2Go: car sharing service

Product as a service: products used by customers through lease or pay-per-use arrangements.

e.g., Michelin Fleet Solutions: Customer pays for tyres based on distance driven.

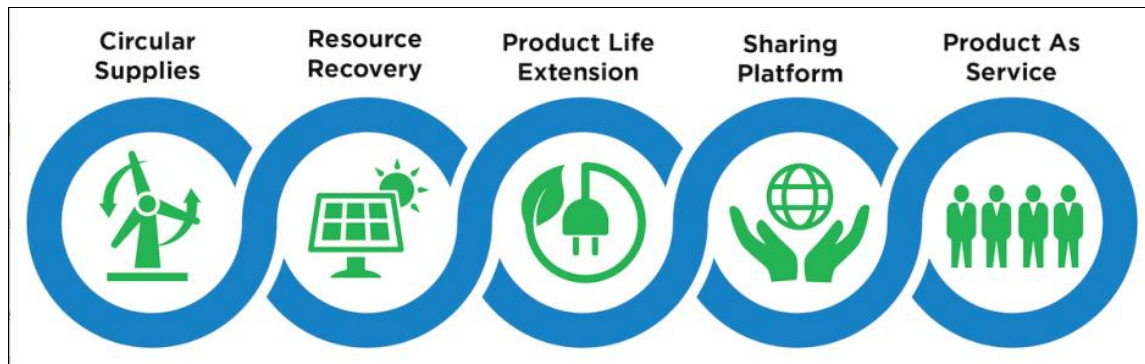


Exhibit 7: Models for implementing a Circular Economy

Circular Economy & Projects

Life Cycles | Output / Outcome

To understand the interface of project management in a circular economy it is useful to view it from a life cycle perspective. Project/Product or Program life cycle is part of the overall cycle and when we consider the reverse flows of outputs this can be seen as a circular life cycle. Further this can be interpreted as Cradle to Gate, Cradle to Grave or Cradle to Cradle.

Cradle to Gate: Activities from inception of project for a product or service up to the point when project is completed. Usually, it is measured in terms of its output, though at times the outcome can also be considered. It may be part of a program, or it can be a stand-alone project. e.g., setting up of a plant to produce cars.

Cradle to Grave: Activities from inception of project for a product or service up to the point where operations produce the product, and the production facility is retired after it has performed its functions and is unable to or decided not to proceed further. e.g., the plant producing cars successfully produces them and after its useful life it is retired and scrapped.

Cradle to Cradle Activities from inception of project for a product or service up to the point where operations produce the product and the production facility is retired, but instead of being scrapped the materials and equipment are reused or re-manufactured thereby getting them back into the system.

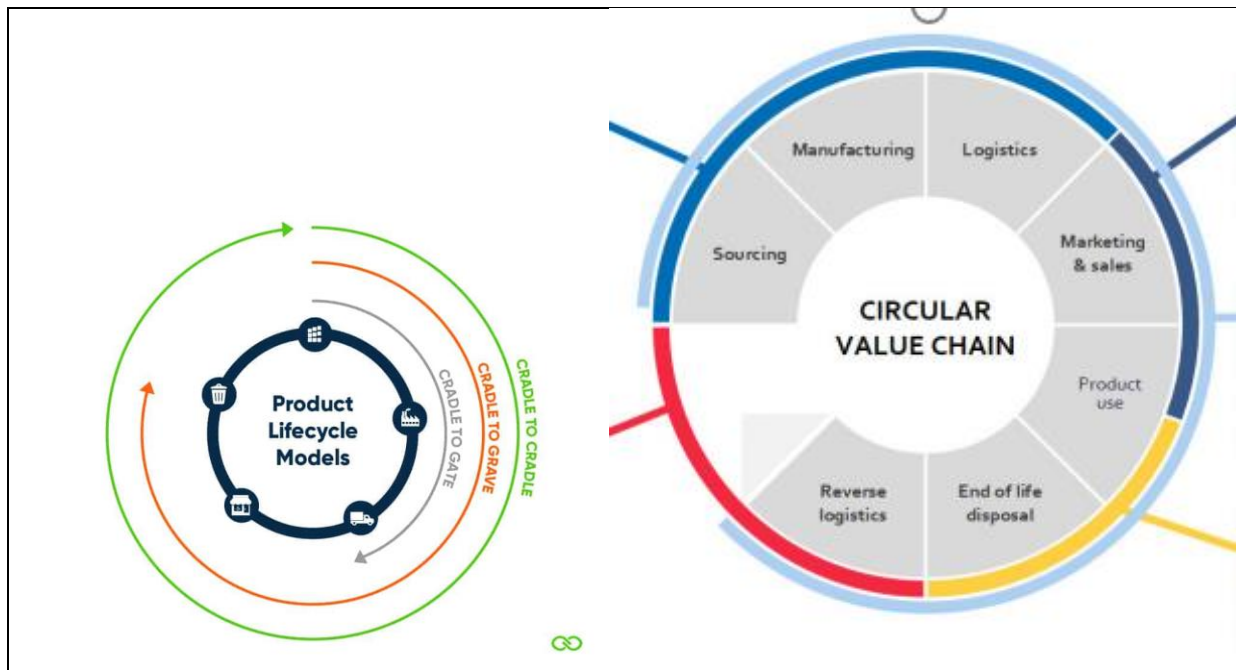


Exhibit 8: Total or Circular Life Cycle

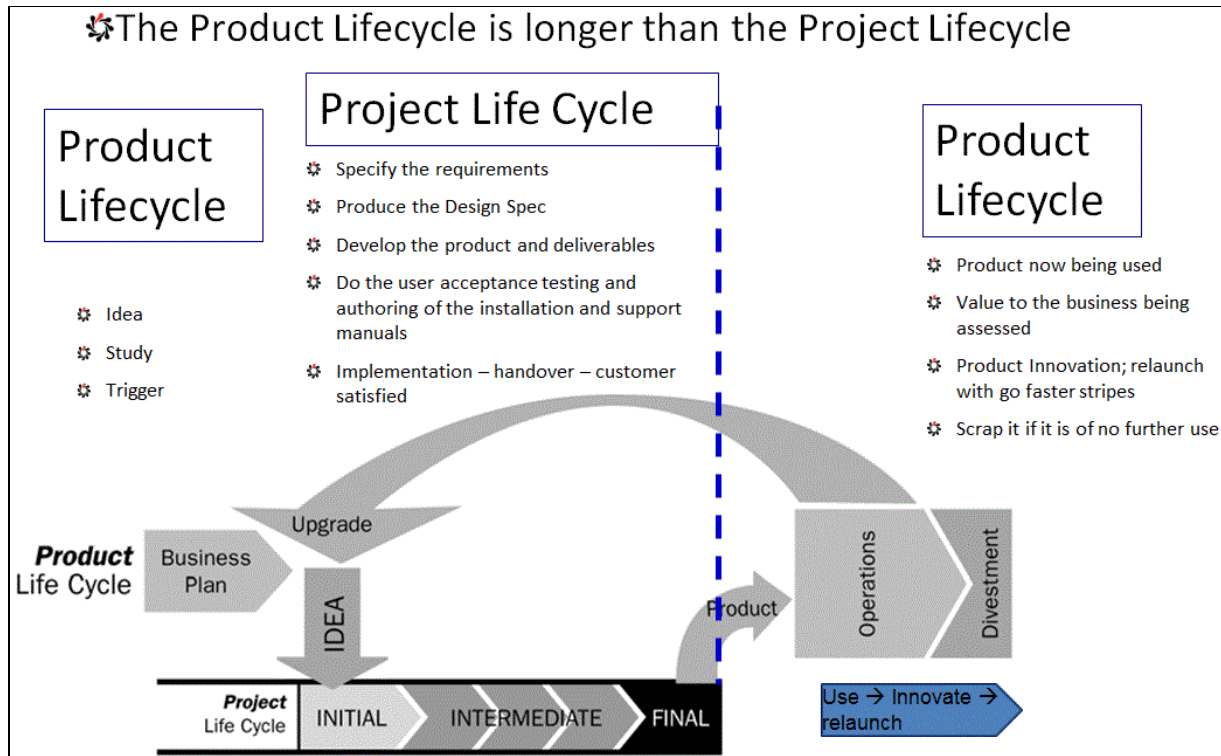


Exhibit 9: Life cycles in a Circular Economy

If we consider the total operational cycle where materials are returned back to the system (which we can term as a “circular life cycle”) then we can visualize a number of projects/programs within it. Rarely would we attempt to address the entire life cycle though it will be useful in terms of a life cycle assessment. Instead, we will implement parts of the cycle which could be construed as projects for e.g., enabling sustainable suppliers or those involving reverse logistics like re manufacture, design for repairability etc. If in combination they could be a program e.g., an initiative for a product as a service which will include an operational component.

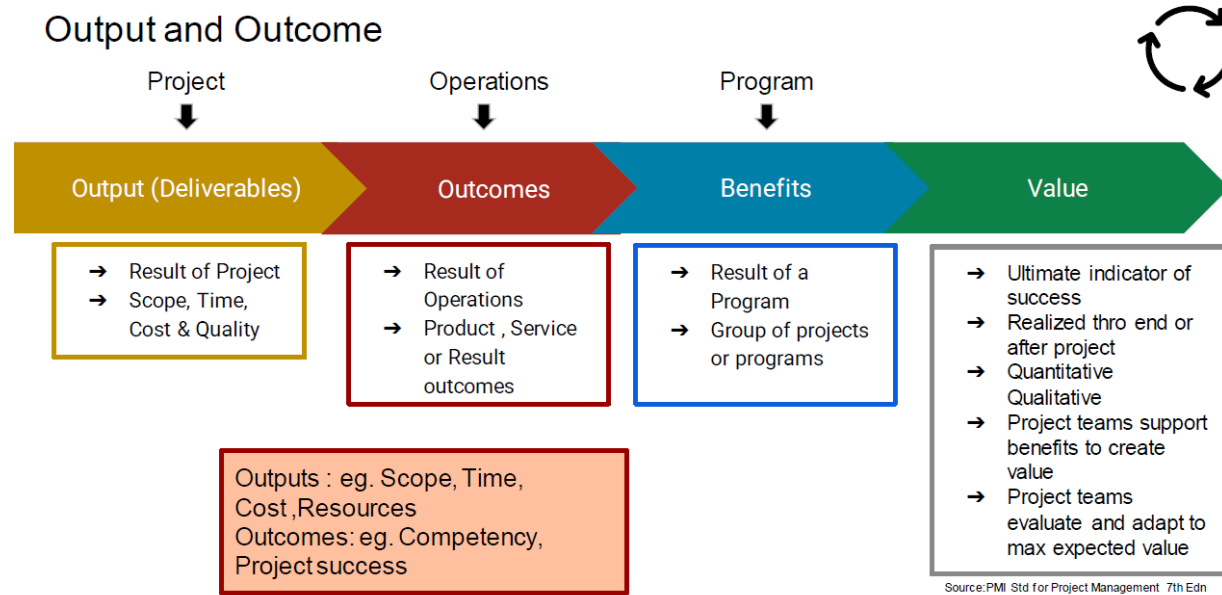


Exhibit 10: Output, Outcome and Value

Traditionally in project management circles we have been used to measuring outputs of a project in terms of scope, time, cost and quality. But many standards have moved to considering the product outcome and value obtained. As an example, the 7th edition of the Project Management Standard of PMI has pointed out the need to consider an outcome and value-based approach and has indicated that it should be the basis for decision making rather than output. This viewpoint ties in well the approach of a circular economy which considers the final outcome with the total cycle in picture and a holistic approach to use of materials, resources and energy. However, when we consider program management or operations, the measurement of benefits instead of just outputs takes care of the measurement of value. Nevertheless, an outcome-based approach would be useful particularly for stand-alone projects.

Changing the Mindset

Project Management has traditionally measured the outputs of a project typically in terms of scope, time, cost and quality. In transitioning from a linear to a circular economy, this has to change to an outcome-based approach. Fortunately, many of the standards in project management for e.g. the 7th edition PMI standard have recommended this approach in addition to the normal output based view. Further, circular cycles either for biological products or non-biological (termed technical) necessarily consider a total life cycle including circularity, making it easier to follow an outcome-based approach. Project

professionals have to transition their mindset right at the time of initiating or planning a project or program to include a circularity view. This means going beyond a cradle to gate to a cradle to grave or cradle to cradle life cycle.

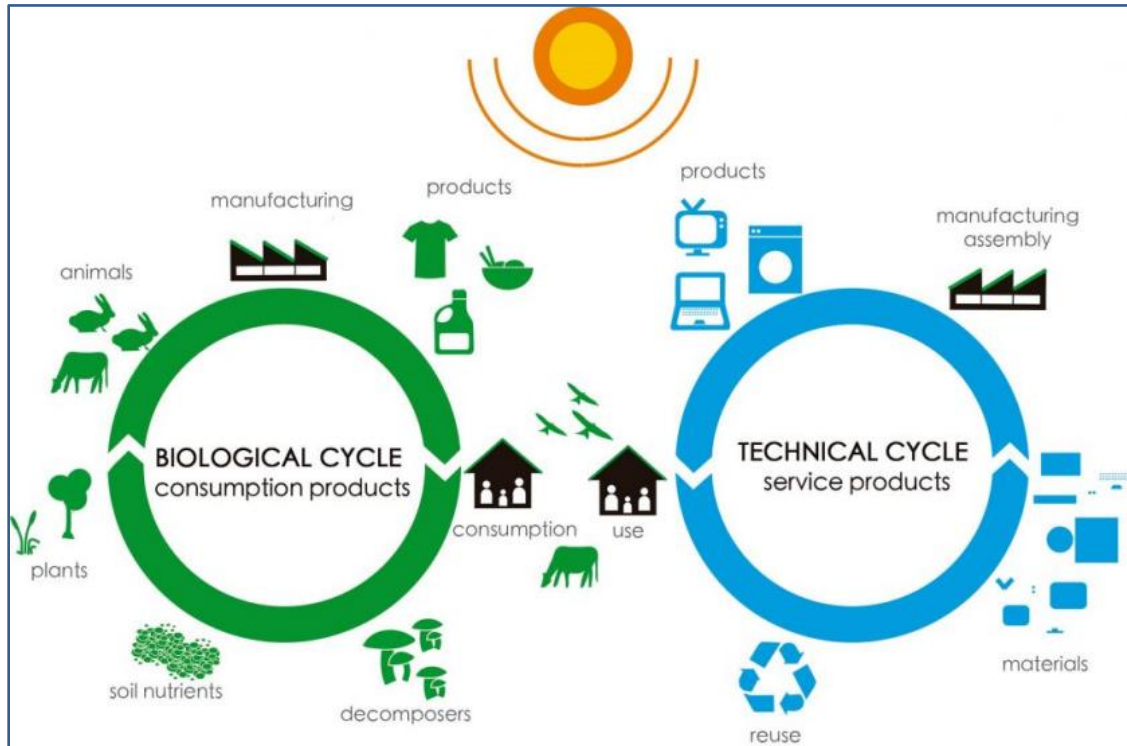


Exhibit 11: Life Cycles - Biological & Non Biological

Knowledge Areas

Mapping content from PMI PMBOK Guide 6th Edition

The following knowledge areas from the PMBOK Guide 6th Edition could be useful or connected with the concept of circularity.

- Scope Management
- Risk Management
- Integration Management
- Stakeholder Management

In addition, Life Cycles and Initiating & Planning would be more relevant to ensure that circularity concepts are taken into account.

CE & Project Management Standards...1

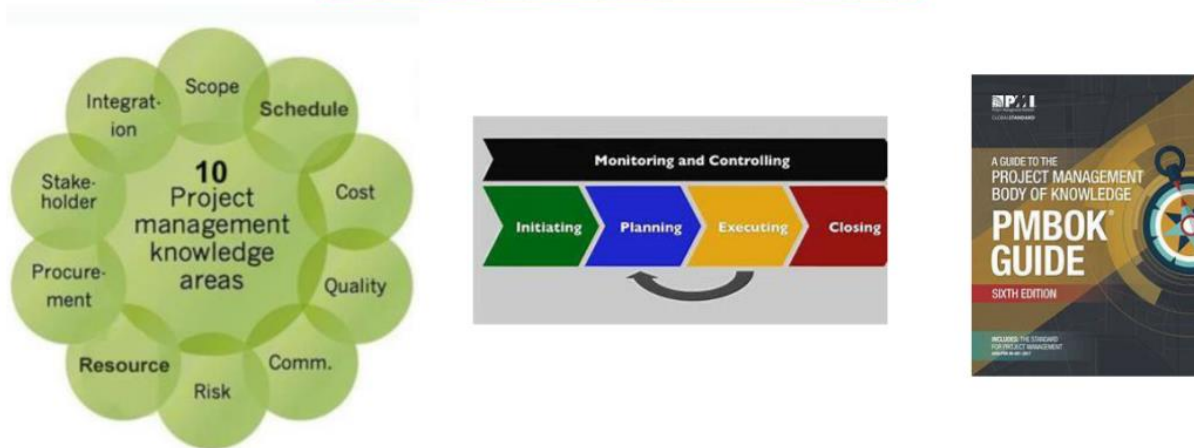


Exhibit 12: Mapping content from PMI PMBOK Guide 6th Edn

The following knowledge areas from the Standard for Project Management & PMBOK Guide 7th Edition could be useful or connected with the concept of circularity.

Principles: Value, Tailoring and Change

Performance Domains: Stakeholders, Planning, Development Approach and Life Cycle

CE & Project Management Standards ...2

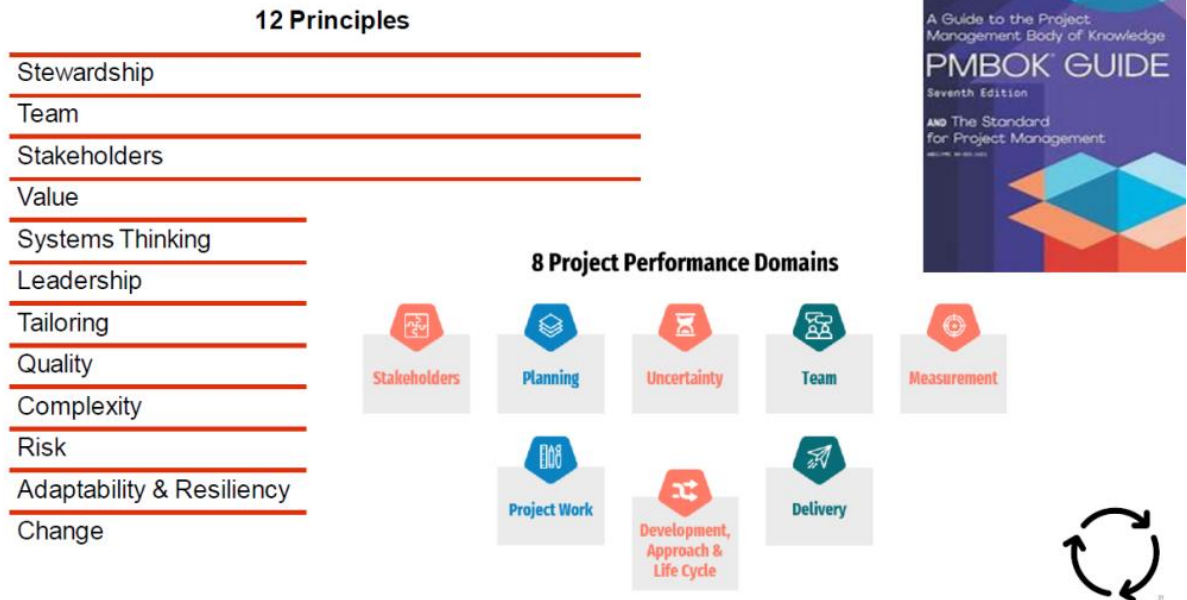


Exhibit 13: Mapping content from PMI Standard for Project Management and PMBOK Guide 7th Edn

What can Project Professionals Do?

As Project, Program and PMO Managers

In the organization implementing a project, professionals can propose, get approval and implement projects which can be based on a circular value chain and life cycle. This can help in not only the improving the profitability but also add value on the sustainability front for the organization.

With Domain Knowledge

Understanding the various facets of a circular economy can provide added value to a role of consultant or educator to develop projects or programs within the total circular life cycle.

As Entrepreneurs

There are many opportunities to develop new products and solutions from the outputs which one will find from normal cradle to gate cycle. This is a greenfield opportunity for innovators as new products have to be developed from output streams. There is also an opportunity to develop alternative sources for raw materials which can be sustainable.

Final Thoughts

- A change of approach & mindset will be useful to understand and deal with a circular economy, particularly in terms of
 - ✓ Output to outcome orientation
 - ✓ long term durability, zero waste & regenerative resources
- New business models will be used for the circular economy, and this means there could be substantial changes in the way we execute projects and our operations.
- There are plenty of examples today of organizations and entrepreneurs moving into the practice of a circular economy in their operations.
- For project professionals this is an area of opportunity
 - ✓ For developing projects within organizations
 - ✓ Using the domain knowledge as a consultant or educator
 - ✓ Developing IT applications for use on phones, tablets and PCs
 - ✓ As an entrepreneur for new products and solutions

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About the Author



Raju N Rao

Chennai, India



Raju Rao is an author, speaker and social entrepreneur.

He is 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. He has been a speaker in many global conferences and seminars.

Raju has been involved in the development of many standards in project management. He has worked as a volunteer with PMI and similar organizations for many of their initiatives and projects. He is 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 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. Raju Rao can be contacted at pmorg.xtraplus@gmail.com