SUSTAINABLE
PROJECT MANAGEMENT
THE GPM® PRACTICE GUIDE

Third Edition

Sustainable Project Management:
The GPM® Practice Guide

GPM Global

Third Edition

Copyright Information

Published in the United States of America

Third Edition 2024

E-Book ISBN 978-0-578-19688-6
Print ISBN 979-8-339-19894-9

GPM Global
41592 Orianna Lane
Novi, MI 48375
USA

www.greenprojectmanagement.org

Contents

List of Tables

List of Figures

Preface

Our planet is grappling with unprecedented challenges, including biodiversity loss, rapid population growth, diminishing natural resources, human-induced climate change, and deepening social and economic inequality. While a growing number of organizations are implementing strategies to address these pressing concerns, shifting the course of action on such a global scale is no simple task. Most of today's organizations were founded at a time when sustainability was primarily defined by financial health, with little focus on social and environmental responsibility.

Over the past decade, however, the definition of sustainability has evolved dramatically. In addition to adopting socially responsible and environmentally conscious practices, organizations are now facing increased pressure for transparency, driven by Environmental, Social, and Governance (ESG) disclosures and sustainability reporting. This heightened demand for accountability requires projects to align not only with organizational goals but also with broader global frameworks for sustainability. The role of the project management profession has never been more vital in meeting these new demands.

To achieve true sustainability on a global scale, we must go beyond the mindset of "do no harm" and actively work to reverse the damage caused by human activity. With the mounting challenges of geopolitical instability, climate change, extreme poverty, resource scarcity, slavery, and inequality in all its forms, project management must rise to play a more significant role.

This third edition of our practice guide includes numerous small improvements and one major shift: a renewed focus on regeneration. The concepts presented here continue to evolve as the world around us changes. We are excited to provide this guide to help the project management profession lead the way toward a more sustainable, transparent, and just future for everyone.

Dr. Joel B. Carboni
GPM Founder and Lead Author

How to Use This Book

The aim of this book is to provide awareness of and practical information on how to manage projects sustainably. If you are involved in projects in any capacity, regardless of your level of knowledge about projects or sustainability, this book is for you. Our goal is to provide practical information and step-by-step guidance that can be kept at your desk as a useful guide to practice as you do project work.

We have divided this book into four parts and fourteen chapters:

- **Part One** — provides the context and underlying motivation for sustainability and sustainable project management.
- **Part Two** — outlines the PRiSM™ Methodology which is our approach to sustainable project management.
- **Part Three** — covers five complementary concepts that enhance both PRiSM and sustainability in projects.
- **Part Four** — provides an overview of the many international standards that support sustainable project management.

This book is best used as a reference, rather than reading it from cover to cover. It is also used as a resource to support GPM's certification program and training offerings.

Notes

PART ONE: Sustainability

Notes

1. Beyond "Do No Harm"

Not everything that is faced can be changed, but nothing can be changed until it is faced. — James Baldwin

We stand at the brink of a transformative era where the old paradigm of profit-at-any-cost is rapidly disintegrating under the weight of environmental degradation, social inequity, and resource scarcity. The economic models that have driven humanity to this point—models that have systematically devalued our natural resources, endangered our survival as a species, and considered profit as the sole measure of success—are no longer tenable. They are relics of a bygone age, and their continued use threatens not just our future, but all life on Earth.

Figure 1.1 Environmental Disasters

Photo collage by US National Centers for Environmental Information

In response, the concept of **regenerative sustainability**, or simply *regeneration*, is emerging as a new paradigm. Unlike traditional sustainability which seeks only to "do no harm," regeneration involves actively restoring ecosystems, enhancing social equity, and rebuilding the natural and social systems we've degraded. **Regeneration means not just working *with nature* but *as nature* by creating systems that will thrive over time**. It shifts our focus to leaving the world in a better state than we found it to create a future where humanity and nature coexist in harmony.

1.1. The Sustainability Imperative

A new mandate is emerging that demands organizations do more than simply extract value from the planet. Investors, employees, and consumers alike are raising their voices, calling for a fundamental shift toward economic models that reward sustainability, resilience, and equity. These calls are not merely echoes of environmental concern; they are a clarion call for the survival of our civilization. The reality is stark: our planet is in crisis, and the time for half-measures is over.

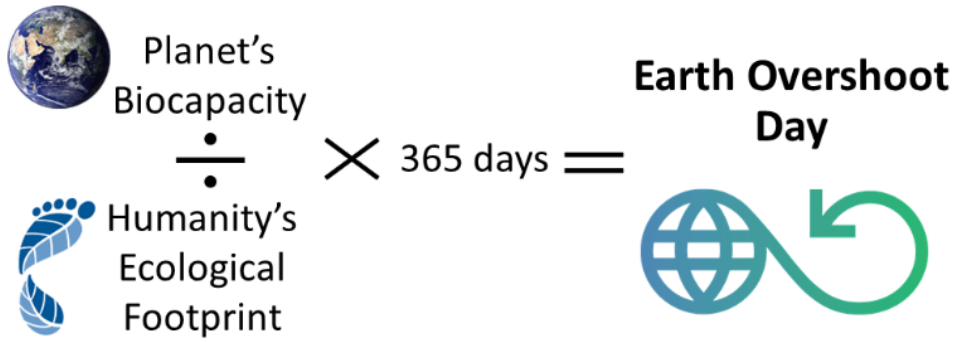
The driving force behind regeneration is the growing recognition of the existential threats we face. We are in the midst of the sixth mass extinction, a catastrophic event unparalleled since the first mass extinction more than 400 million years ago. The evidence is overwhelming: ecosystems are collapsing, species are disappearing, and the intricate web of life that sustains us is unraveling. The consequences of these losses are not just ecological—they are social and economic and will affect the well-being of every individual and every community.

But the crisis extends beyond biodiversity. We are confronted with global challenges that are as complex as they are interconnected—extreme poverty, rampant inequality, and the erosion of essential resources like clean water and air. These challenges are the direct result of a system that has prioritized short-term gains over long-term viability, a system that has failed to account for the true cost of its actions.

As we hit Earth Overshoot Day—the day on which our resource consumption for the year exceeds Earth's capacity to regenerate those resources—earlier and earlier every year, it becomes painfully clear that our current trajectory is unsustainable. We are consuming resources at a rate that would require 1.7 Earths to sustain, and this overconsumption is pushing our planet to the brink. The acidification of our oceans, the bleaching of coral reefs, the deforestation of critical habitats—these are not just environmental issues; they are existential threats.

The global population continues to swell, with over 8.2 billion people today and projections of over 9 billion by mid-century. This growth compounds the strain on our planet, but it also offers a unique opportunity for more people to get involved to reverse the strain. It is within our power to turn the tide, to reshape our world in a way that ensures the long-term survival and prosperity of all life on Earth.

Figure 1.2 August 1, Earth Overshoot Day 2024



Downloaded from https://overshoot.footprintnetwork.org/

The moment demands more than just awareness—it demands action. Sustainable project management is not a buzzword. It is a revolutionary approach to how we manage one-third of the global economy. It is about embedding sustainability into the very DNA of our projects, ensuring that every decision we make today builds a better tomorrow. It is about harnessing the power of innovation, embracing new opportunities, and leading with a vision that extends far beyond the next quarter's profits.

This is our call to action. The stakes could not be higher, and the window of opportunity is rapidly closing. We must act with urgency, with purpose, and with an unwavering commitment to leaving behind a legacy we can be proud of. The time for change is now. Together, we can—and we must—regenerate our world to secure a sustainable future.

1.2. The Evolution of Sustainability Models

Sustainability models have evolved significantly since the introduction of the Triple **Bottom Line (3BL)** in 1994 by John Elkington. The 3BL model urged organizations to broaden their focus beyond financial outcomes to include social and environmental impacts—considering **People**, **Planet**, and **Profit**. This approach provided a more holistic view of organizational performance, yet over time, it became evident that merely balancing these three dimensions was insufficient, especially in complex situations like the 2010 Deepwater Horizon oil spill.

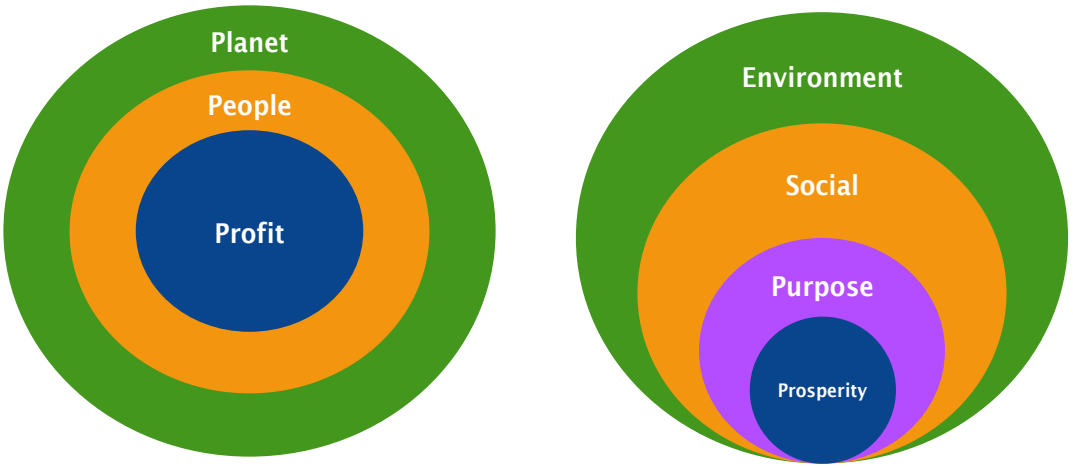
To address these challenges, the model evolved into the **Quadruple Bottom Line (QBL)** by adding **Purpose** as a fourth guiding principle. Purpose goes beyond the act of balancing impacts; it drives organizations to embed meaningful environmental, social, and economic considerations into the fabric of how they operate. Purpose isn't just about setting goals; it is about cultivating a purpose-driven approach that redefines success and impact.

There are generally six key areas where an organization's purpose is measured:

- **Customers and Communities**. Measuring success based on the positive value created, not just for the end-user but for the broader community. This includes enhancing customer well-being, providing ethical products, and fostering inclusive communities that benefit from the organization's initiatives.
- **Employee and Workforce Well-being**. Creating measures of success based on supporting comprehensive worker well-being, which includes livable wages, quality healthcare, diversity and inclusion, mental health support, work-life balance, and opportunities for professional development.
- **Suppliers and Ethical Partnerships**. Measuring success by ensuring transparency, fair trade practices, and sustainability in sourcing. A purpose-driven organization should act as an ethical influence throughout its entire supply chain.
- **Biodiversity and Ecological Stewardship**. Measuring success by the organization's contribution to preserving and restoring biodiversity, protecting natural habitats, and reducing its ecological footprint. This includes efforts in reforestation, responsible land use, pollution reduction, and promoting regenerative practices.
- **Innovation and Market Leadership**. Evaluating success based on the organization's ability to drive market changes through purpose-led innovation. This includes developing sustainable products, embracing circular economy principles, and influencing industry-wide shifts toward responsible practices.
- **Governance and Accountability**. Success is also determined by the organization's governance structures, including its transparency, ethical leadership, and commitment to reporting its sustainability. Strong governance ensures that purpose-driven goals are ingrained in decision-making processes.

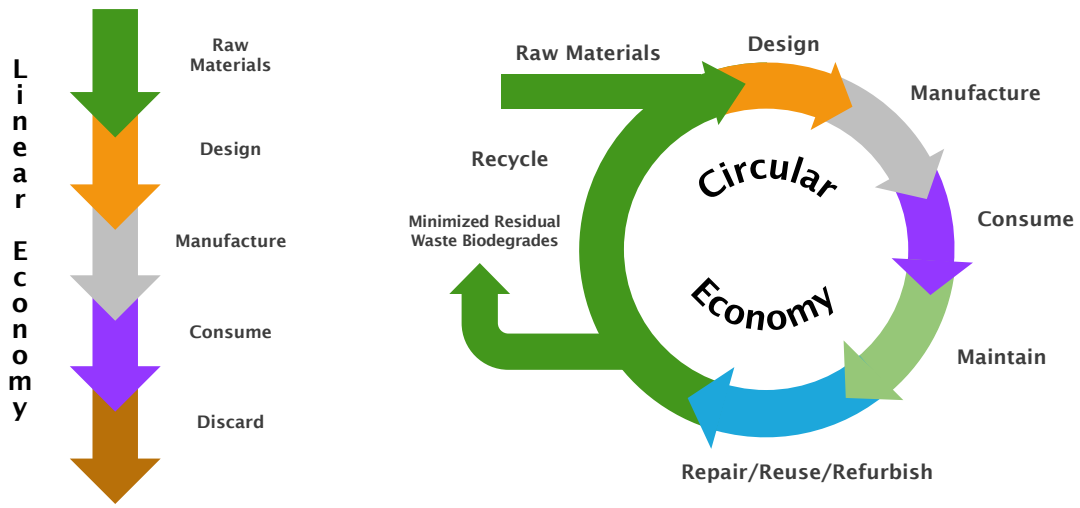
Note that *purpose-driven* shouldn't be confused with *goal-oriented*. Rather, it means weaving purpose-driven environmental and social considerations into the fabric the organization's operations, products, and services.

Figure 1.3 Triple and Quadruple Bottom Lines



The next to appear on the scene was the **circular economy (CE)** model which rethinks the traditional "take-make-waste" approach of the linear economy (see Figure 1.4). A circular economy aims to redefine growth by focusing on positive societal and environmental benefits. At its core, it is designed to minimize waste and make the most of resources.

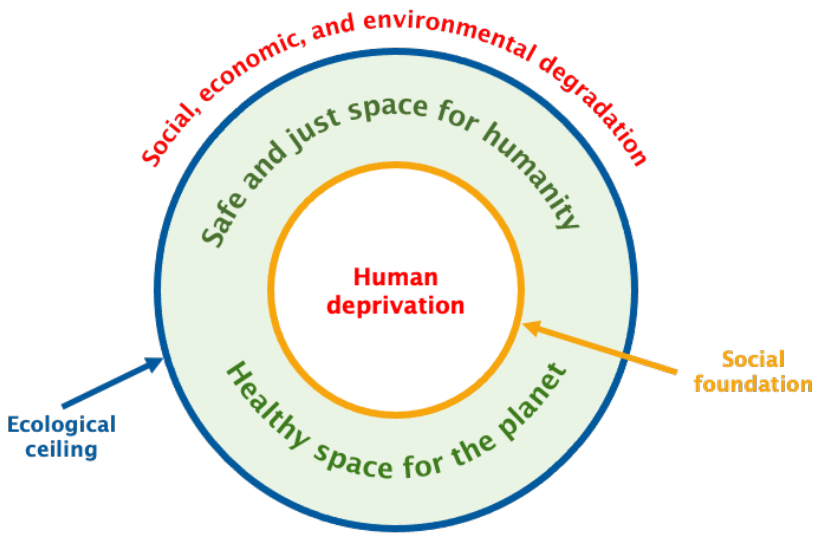
Figure 1.4 Comparison of Linear and Circular Economies



In a circular economy, the goal is to reduce waste while regenerating natural systems. Biological materials—those that can safely be returned to the environment—are restored to the Earth. Technical materials are processed through repair, reuse, and recycling to reduce the demand for new raw materials. This goes beyond traditional sustainability to ensure that economic activities actively contribute to restoring ecosystems.

Kate Raworth's *Doughnut Economics* provides a compelling visual for the circular economy model: a doughnut-shaped diagram that represents the limits of a safe and just space for humanity (see Figure 1.5). The inner ring of the doughnut represents the **social foundation** or the minimum standards needed for a dignified life. These include access to essentials like food, water, education, health care, and housing—things that no human should be without. Falling below this inner ring means human deprivation.

Figure 1.5 The Doughnut of *Doughnut Economics*



The outer ring represents the **ecological ceiling** that life depends on. Going beyond this ceiling will degrade more than just the environment—it will also degrade society and the world's economies.

The space between these two rings—the doughnut itself—is where humanity should aim to live. This means meeting everyone's needs without overshooting the planet's ecological capacity. *Doughnut Economics* beautifully complements the circular economy model by adding social factors to the mix and reminding us that economic development must not come at the cost of our planet's health or the well-being of its inhabitants.

Raworth's model encourages us to rethink the purpose of economic activity by shifting from an exclusive focus on growth and profits toward an economy that thrives within ecological limits while ensuring that everyone can live with dignity. In essence, **Doughnut Economics** and the **circular economy** are both integral to creating a future where human prosperity and ecological balance coexist. Together, they offer a roadmap for regenerating both social systems and natural ecosystems, allowing us to live within the planet's safe operating space.

1.3. Societal Pressure Waves

In parallel to the evolving models, the sustainability movement itself has been driven by a series of societal pressure waves as described by Elkington in his 2023 book *Tickling Sharks*. These waves illustrate how societal focus has shifted over time from addressing basic environmental limits to seeking a regenerative future where human activities actively contribute to the planet's health.

Figure 1.6 Societal Pressure Waves Driving Toward Regeneration

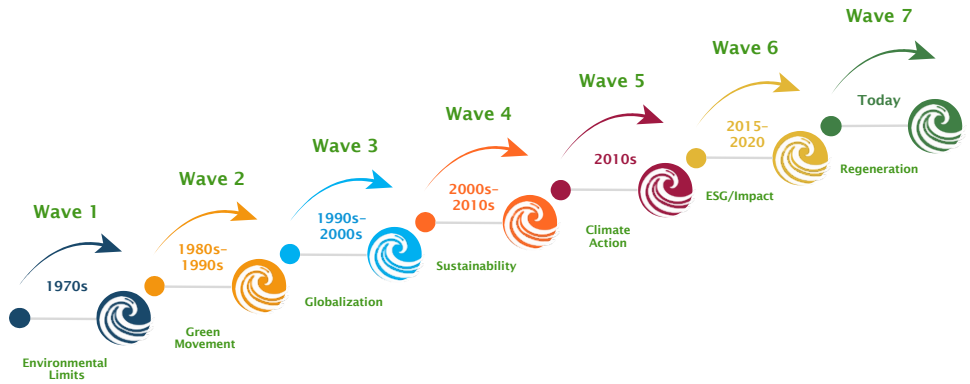


Table 1.1 outlines these societal pressure waves that have driven the evolution of sustainability. It also identifies significant treaties and accords that have shaped global responses during each wave. Regeneration, which focuses on restoring and renewing ecosystems, enhancing social equity, and building economic resilience, has already begun to gain traction as Wave 7. GPM's view is that regeneration is the next major wave of sustainability—it goes beyond sustaining to actively contributing to the health and vitality of the planet and its people.

Table 1.1 Societal Pressure Waves Driving Toward Regeneration

Wave	Description	Treaties and Accords
1. Environmental Limits (1970s)	Focused on recognizing environmental limits to growth, this wave initiated global awareness of the finite nature of Earth's resources and led to early environmental regulations and the establishment of foundational environmental treaties.	**Stockholm Declaration (1972):** The first major international conference on global environmental issues, setting the stage for international environmental governance.
2. Green Movement (1980s–1990s)	Characterized by the rise of environmental activism, this wave integrated environmental concerns into political agendas and saw the growth of the global environmental movement, pushing for more comprehensive regulations and treaties.	**Brundtland Report (1987)**: Officially "Our Common Future," this report by the World Commission on Environment and Development introduced the idea of sustainable development. **Montreal Protocol (1987)**: Treaty to protect the ozone layer by phasing out substances responsible for ozone depletion. **Rio Declaration (1992)**: UN Conference on Environment and Development produced a comprehensive plan for sustainable development.
3. Globalization (1990s–2000s)	As globalization expanded, this wave highlighted the spread of unsustainable practices and the need for global governance solutions. It also marked the rise of international cooperation to address environmental issues on a global scale.	**Kyoto Protocol (1997):** A global agreement to reduce greenhouse gas emissions; binding targets for industrialized countries. **Johannesburg Declaration (2002):** The outcome of the World Summit on Sustainable Development, focusing on global partnerships and sustainable development.
4. Sustainability (2000s–2010s)	Sustainability became a mainstream concern, with widespread adoption of sustainable development goals. However, this wave also saw the struggle to translate commitments into meaningful action, prompting calls for deeper integration of sustainability into business and government practices. Corporate Social Responsibility (CSR) also became a prevalent practice.	**Millennium Development Goals (2000):** Eight international development goals established to reduce poverty and improve health, education, and the environment by 2015. **Paris Agreement (2015):** A global accord to limit global warming to well below 2°C above pre-industrial levels.

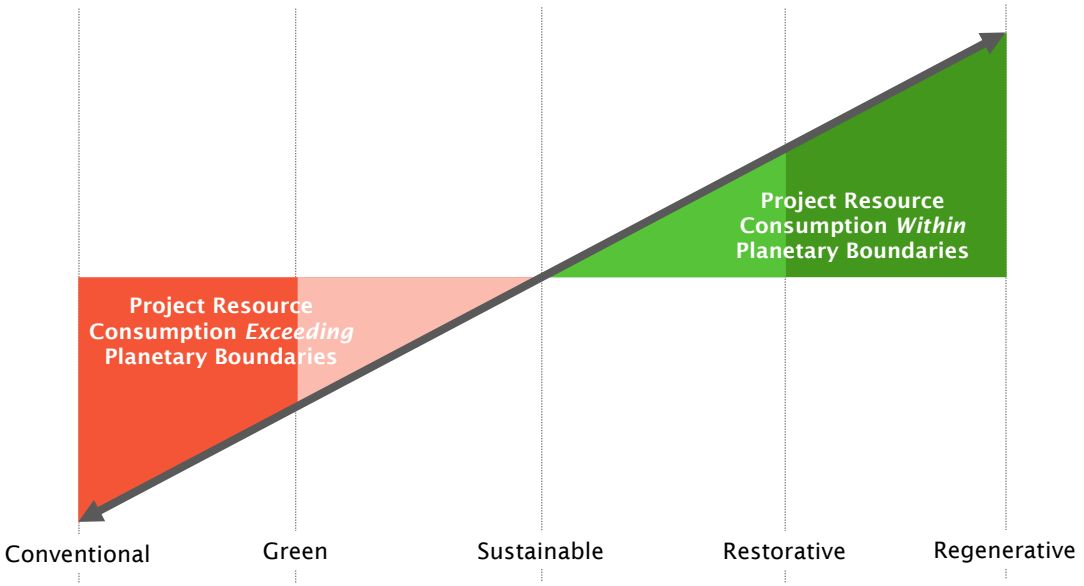
continued

Wave	Description	Treaties and Accords
5. Climate Action (2010s)	Driven by younger generations and social movements, this wave demanded urgent climate action and social justice. It emphasized systemic change and pushed for more radical approaches to sustainability, with figures like Greta Thunberg symbolizing the urgency of these issues.	**The 2019 Climate Action Summit:** Highlighted the need for accelerated action on climate change; driven by youth activists. **The European Green Deal (2019):** A set of policy initiatives aimed at making the EU climate-neutral by 2050.
6. ESG/Impact (2015-2020s)	This wave focused on the integration of Environmental, Social, and Governance (ESG) factors into investing and business strategies. It saw the rise of impact investing, where the focus shifted to measurable positive outcomes, and also highlighted the growing confusion and complexity within the sustainability space.	**Sustainable Development Goals (2015):** A set of seventeen global goals established by the United Nations, building on the Millennium Development Goals and aiming for broader sustainability. **Task Force on Climate-related Financial Disclosures (2017):** Recommendations for consistent climate-related financial risk disclosures.
7. Regeneration (2020s)	This wave will focus on regeneration—going beyond "do no harm" to actively restore and renew ecosystems, enhance social equity, and build economic resilience. This wave represents a shift from merely sustaining to improving the health of our planet and societies.	**Focus:** Future treaties should center on regenerative practices such as agreements that not only limit environmental damage but also actively restore ecosystems, promote circular economies, and enhance social equity on a global scale.

1.4. Embracing Regenerative Sustainability

The evolution of sustainability models and the waves of societal pressure highlight the growing complexity and urgency of global challenges. However, as these models evolved, it became evident that merely balancing economic, social, and environmental outcomes was not enough. To truly address the root causes of ecological degradation and social deprivation, we must move beyond "do no harm" sustainability to a regenerative approach that seeks to restore and revitalize our planet and our societies. This shift is not just necessary but imperative as we face escalating global crises. Thus, the progression from traditional to regenerative sustainability represents a profound transformation in how we approach the future as we move from a mindset of minimizing harm to one of actively contributing to the health and vitality of our ecosystems and communities.

Figure 1.7 Progression to Regeneration



For projects, the choices to be made are illustrated in Figure 1.7. Traditional sustainability occupies the midpoint. Movement to the left illustrates a shift *away* from sustainability while movement to right illustrates a shift *toward* repairing and revitalizing the damage we have done.

Green practices, akin to the Green Wave in Figure 1.6, involve projects making incremental changes focused on environmental impacts. While Green practices include useful efforts like reducing emissions and waste, they generally fall short of making real improvements to environmental and social conditions.

On the far left, *Conventional* practices involve the unchecked consumption of resources with little to no consideration of environmental or social impacts. Projects choosing this approach are driven by a focus on short-term economic goals that ignores the long-term consequences. As a result, Conventional practices contribute to exceeding the planetary boundaries identified in Figure 1.5. When these boundaries are crossed, the probability of destabilizing the planet's systems increases, leading to potentially catastrophic environmental damage.

To the right of the equilibrium of sustainability is a more profound and impactful approach with *Restorative* practices. Moving beyond "do no harm," projects opting for Restorative practices begin working *with nature* to restore ecosystems and enhance societal well-being within the context of the project. These practices involve not just mitigating negative impacts but also repairing and revitalizing damaged environments and communities.

Ultimately, the goal is for all projects to implement *Regenerative* practices; to go beyond working with nature and begin to work *as nature*. This means creating systems and practices that not only restore but also enhance the health and resilience of natural and social systems. With Regenerative practices, projects contribute positively to the biosphere, foster biodiversity, enhance ecosystems, and support social and cultural richness. This symbiotic relationship means a dynamic and thriving planet.

Regenerative practices reflect a transformative shift in how projects function in the world. They move from a mindset of exploitation and negative impact to one of collaboration and positive contribution to ensure that they leave a healthy, abundant legacy for future generations.

Regenerative practices are rooted in the understanding that human systems are part of a larger ecological community. This perspective acknowledges that humans can play a constructive role in regenerating the health and vitality of the ecosystems they inhabit. Rather than striving merely for zero harm, Regenerative practices are designed to leave places better than they were found, actively enhancing the resilience and health of natural systems.

1.4.1. Practical Applications

To implement regenerative sustainability, it is essential to rethink how we design and interact with our environment. This involves shifting from a focus on technical fixes—solutions that address specific problems through engineering or technological interventions—to a more comprehensive approach. Technical fixes often provide short-term improvements like reducing emissions or enhancing energy efficiency, but they may not address the root causes of ecological or social challenges. Instead, we need a holistic approach that integrates ecological, social, and economic dimensions. Regenerative design principles advocate for the use of natural processes such as *biomimicry* to foster a deep connection with nature and harness natural systems to support human activities sustainably.

The Eastgate Centre, a mid-rise office complex in Harare, Zimbabwe, is an excellent example of biomimicry: it was designed based on insights from research into termite mounds! Researchers studied the termites' ability to maintain virtually constant temperature and humidity in their mounds despite outside temperatures that vary from 1.5°C to 40°C (35°F to 104°F). They scanned a mound and discovered a passive cooling architecture that uses only 10% of the energy of a conventional building of the same size. Designers of Eastgate used this discovery to deliver major cost savings over traditional alternatives.

Another example of this necessary shift can be seen in the adoption of *biophilic design*, which emphasizes reconnecting people with nature through the built environment. This approach not only enhances human well-being but also supports biodiversity and ecosystem health.

In his book *Nature by Design: The Practice of Biophilic Design*, Stephen Kellert documents some of the benefits of providing tangible contact with natural features:

- **Light**. Allows orientation to time of day and season; can also cause natural patterns of movements and shadows.
- **Air**. Ventilation, temperature, and humidity are felt through air. The variation in these elements can promote comfort and productivity.
- **Water**. Water can be used to provide movement, sounds, touch, and sight. It can decrease stress and increase health, performance, and overall satisfaction.
- **Plants**. Bringing vegetation to the exterior and interior spaces of a building provides a direct connection to nature.
- **Animals**. This can be done through aquariums, gardens, animal feeders, and green roofs. This interaction promotes interest, mental stimulation, and pleasure.
- **Natural landscapes.** People tend to enjoy savannah-like landscapes as they depict spaciousness and an abundance of natural life. Contact with these types of environments can be done through vistas or direct interactions such as gardens to increase occupant satisfaction.

Similarly, projects that employ regenerative agriculture practices work to rebuild soil health, enhance water cycles, and increase biodiversity, demonstrating how agriculture can transition from being a major driver of ecological degradation to a force for environmental restoration.

1.4.2. Emphasizing Regenerative Sustainability

The focus on **regenerative sustainability** represents the next crucial step in addressing the complex challenges of today—climate change, biodiversity loss, and social inequality. Rather than just mitigating harm, **regenerative** practices aim to restore ecosystems and uplift communities, tackling root causes head-on. While traditional sustainability practices often focus on minimizing negative impacts, they are no longer sufficient to address the scale of our current crises. **Regenerative sustainability**, in contrast, seeks to enhance natural systems, enabling both nature and society to flourish.

For project managers, embracing **regenerative sustainability** is not a choice—it's a responsibility. Projects are how organizations create change and innovate. By embedding **regenerative** principles into project management, professionals can ensure their work not only meets immediate goals but also fosters long-term positive impacts. This approach aligns short-term project outcomes with long-term sustainability objectives, ensuring that projects contribute meaningfully to ecological health and social well-being, long after completion.

The practical benefits of **regenerative** practices go beyond moral imperatives. Projects rooted in these principles should be more resilient, adaptable, and able to reduce long-term risks and costs. Additionally, they should foster greater stakeholder trust and engagement by demonstrating a commitment to impactful, sustainable practices. These projects are more likely to resonate with clients, investors, and communities by delivering tangible value that endures over time.

In this book, we emphasize **regenerative sustainability** because it's the only approach that truly addresses today's urgent and interconnected global challenges. In the context of project management, we must move beyond a mindset of "doing no harm." We must take responsibility for leading initiatives that actively **regenerate** and rejuvenate ecosystems, leaving behind a positive legacy. This requires a shift in thinking—projects should be designed to not only reduce harm but to restore and **regenerate** the environments and communities they touch.

The synergy between **regeneration** and project management is evident: both aim to create lasting value through structured, intentional processes. While traditional project management is focused on efficiency and outcomes, **regenerative** sustainability ensures those outcomes contribute to a thriving future. By embedding **regenerative** principles throughout every phase of project delivery, project managers become catalysts for meaningful change, ensuring their work builds a more resilient and equitable world.

Though this book is titled *Sustainable Project Management*, it's important to understand that our approach is inherently **regenerative.** When we use the term "sustainable," **we are referring to practices that go beyond mere harm reduction**. **In today's world, simply avoiding damage is not enough—we must actively contribute to the renewal of our planet and communities.**

1.5. Projects and the Planetary Boundaries

Projects have a major impact on the planet:

- Construction projects total over US$15 trillion annually.
- Gartner estimates that another US$5.1 trillion is spent annually on Information Technology—and much of that is spent on projects.
- Consulting projects add another US$1.5 trillion.

A useful context to understand the impact of this spending is the Stockholm Resilience Centre's *Planetary Boundaries* framework, which identifies nine processes essential for maintaining Earth's stability. These boundaries essentially define the ecological ceiling of *Donut Economics* beyond which we risk of large-scale, irreversible environmental damage.

There are nine planetary boundaries:

- **Climate Change** — keeping temperature rise and greenhouse gas emission levels within safe limits.
- **Biosphere Integrity** — protecting biodiversity and ecosystems.
- **Land-system Change** — managing land use to prevent deforestation and habitat loss.
- **Biogeochemical Flows** — controlling the cycles of nitrogen and phosphorus to avoid ecosystem disruption.
- **Freshwater Use** — ensuring sustainable water consumption.
- **Ocean Acidification** — preventing excessive CO2 absorption that harms marine life.
- **Atmospheric Aerosol Loading** — managing particulate pollution to protect air quality and climate.
- **Novel Entities** — regulating chemical pollutants, including plastics and synthetic chemicals.

- **Stratospheric Ozone Depletion** — safeguarding the ozone layer to protect life from harmful ultraviolet radiation.

To monitor humanity's impact on the boundaries, the framework uses twenty-nine indicators developed through extensive scientific research. The indicators, shown in Table 1.2, provide a perspective on our proximity to irreversible ecological tipping points—and emphasize the urgency of transitioning to regenerative practices.

Table 1.2 Planetary Boundary Indicators

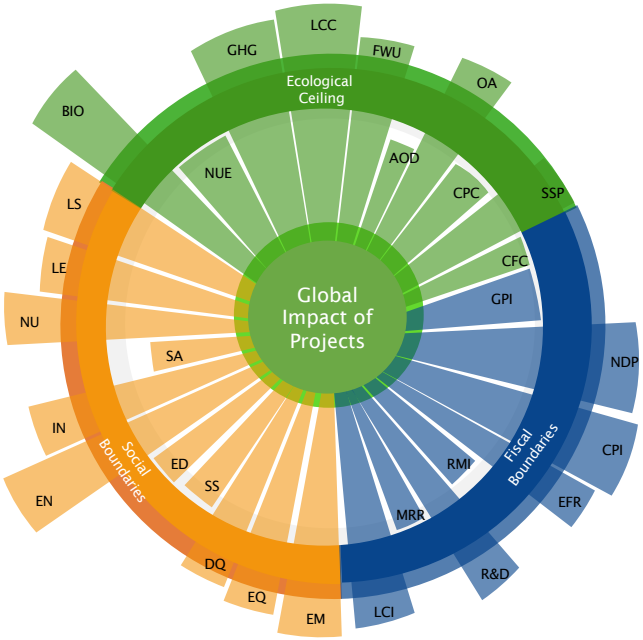
Ecological		Fiscal		Social	
Abbr.	**Name**	**Abbr.**	**Name**	**Abbr.**	**Name**
AOD	Atmospheric Aerosol Loading	CPI	Circularity Rate	DQ	Democratic Quality
BIO	Biodiversity Intactness Index	EFR	Eco-Efficiency Ratio	ED	Education
CFC	Chemical Pollution Control Index	GPI	Genuine Progress Indicator	EM	Employment
CPC	Chemical Pollution Control Index	NDP	Net Domestic Product	EN	Access to Energy
FWU	Freshwater Use Intensity	LCI	Low Carbon Investment	EQ	Equality
GHG	Greenhouse Gas Emissions	MRR	Material Recycling Rate	IN	Income Poverty
LCC	Land Cover Change Index	R&D	R&D Expenditure	LE	Life Expectancy
NUE	Nitrogen and Phosphorus Use Efficiency	RMI	Resource Management Index	LS	Life Satisfaction
OA	Ocean Acidification Rate			NU	Nutrition
SSP	Stratospheric Ozone Preservation			SA	Sanitation
				SS	Social Support

While the planetary boundaries provide a global framework, each country has its own national boundaries, which reflect its unique ecological, economic, and social conditions. National policies and strategies must align with global efforts while addressing local realities and constraints.

At the project level, the categories and elements of GPM's *P5 Standard* map directly to the indicators. By adopting the *P5 Standard*, organizations can ensure that they mitigate their project impacts and safeguard against crossing the planetary boundaries.

Figure 1.8, based on the planetary boundaries framework, is a conceptual representation of the collective impact that projects have on Earth's critical systems. The diagram visually depicts GPM's estimates of how project activities influence the planetary boundaries indicators.

Figure 1.8 Estimated Project Impacts on Planetary Boundaries



Projects sit in the center, with the indicators all around them. The Genuine Progress Indicator (GPI) paints a picture of overall societal progress by factoring in both economic and social dimensions. Net Domestic Product (NDP) keeps us honest by adjusting economic growth to account for environmental wear and tear.

Other fiscal indicators like the Resource Management Index (RMI) urge projects to cut waste and cherish resources. The Circularity Rate (CPI) nudges us to keep materials in circulation to reduce our dependency on new ones.

The Biodiversity Intactness Index (BIO) and Nitrogen and Phosphorus Use Efficiency (NUE) indicators remind us to balance human needs with ecological preservation, ensuring we don't harm the ecosystems we rely on.

The diagram isn't a static picture—it's a lively framework guiding us toward a sustainable future. It underscores the need to evaluate social, ecological, and economic progress. By understanding how projects affect these indicators, we position ourselves to make informed decisions on which projects to undertake and to understand their impact. We must create a world where current needs are met without hindering future generations' ability to thrive.

1.6. Projects and Circular Economies

As we saw in Section 1.2, moving from a linear economy to a circular one means going from one where resources are extracted, used, and discarded to one where they are reused, refurbished, and recycled (see Figure 1.4). In a circular economy, the focus is on minimizing resource use. It's about rethinking how we manage resources to maintain ecosystem resilience.

As noted in Section 1.5, projects are enormous consumers of resources, both directly through their activities and indirectly through the results and outcomes they produce. Projects that prioritize circularity are also prioritizing effective resource management and helping to close the gap between our resource consumption levels and the Earth's ecological limits.

The need is clear—organizations that perform projects must embed circularity into every aspect of their projects. They must empower their project sponsors, Project Management Offices, and project managers to adopt circularity. Doing so will pave the way for a more resilient and equitable world. Chapter 10, Organizational Change Management, provides advice on how to implement the needed organizational changes.

The following paragraphs highlight changes to current project management practices that are needed to support circularity.

Applying circular economy principles to product design. During the design phase, it is essential to align the project's decisions with circular economy principles. This means designing for durability, resource recovery, and minimal waste while ensuring that social equity and environmental sustainability are reflected in the design as well. Products should be designed to facilitate repair, maintenance, refurbishment, remanufacturing, and reuse.

Circular sourcing and procurement. Procurement practices should prioritize recovered and renewable resources to minimize the use of virgin materials. Circular procurement involves considering the long-term impacts of purchases and favoring solutions that contribute to closed-loop resource cycles.

Process optimization. Optimizing processes to enhance resource efficiency and reduce waste is critical. This includes implementing best practices in resource management and exploring innovative approaches to resource use.

Risk and opportunity management. Project managers should identify risks and opportunities related to resource usage during the project as well as to environmental and social impacts after the project is complete.

Resource monitoring. Regular monitoring, reviewing, and reporting on resource flows is essential to ensure that project performance aligns with circular economy goals. Project managers should establish metrics and indicators to track performance.

1.7. Summary

In this chapter, we have examined the sustainability imperative, sustainability models, and the societal waves that have driven the development of the latest models. We have described the key reasons why a regenerative approach and a circular economy are so critical to humanity's survival.

Our key point throughout: sustainability isn't just for environmentalists. It is now a necessary focus for every thinking individual and every modern organization.

2. Sustainability Basics

The greatest threat to our planet is the belief that someone else will save it. — Robert Swan

In this chapter, we'll back up a bit and review some key concepts about sustainability. We'll present GPM's *Principles of Sustainability* and review why organizations and individuals adopt sustainable practices. Then we'll take a look at two important United Nations initiatives: the Sustainable Development Goals and the UN Global Compact.

2.1. Principles of Sustainability

This book is designed to support GPM's three *Principles of Sustainability*. These principles inform all that we do and all that we recommend. We encourage you to adopt and share these principles as well.

2.1.1. Social Sustainability

Social sustainability emphasizes the importance of maintaining and improving the well-being of individuals and communities. It focuses on social equity, justice, and access to basic needs such as education, healthcare, and a healthy environment. It ensures that not only projects but everything we do promotes social cohesion. Key elements include:

- Promoting human rights and equality
- Ensuring fair labor practices and decent work conditions
- Providing access to education, healthcare, and essential services
- Encouraging community engagement and participation in decision making
- Championing equity in resource distribution

2.1.2. Environmental Sustainability

This principle focuses on protecting, preserving, and regenerating the natural environment. It encourages using natural resources responsibly, minimizing waste and pollution, protecting ecosystems, and addressing issues like climate change, biodiversity loss, and resource depletion. Key elements include:

- Reducing carbon footprints and greenhouse gas emissions
- Promoting renewable energy and energy efficiency
- Conserving water and other natural resources
- Reducing waste and promoting repair, reuse, and recycling
- Protecting biodiversity and ecosystems

2.1.3. Economic Sustainability

Economic sustainability means creating long-term value and ensuring that economic systems can continue to operate without causing environmental degradation or social inequality. It encourages the responsible management of resources to support stable and prosperous communities. Key elements include:

- Implementing sustainable business practices and ethical supply chains
- Supporting fair trade and equitable economic opportunities
- Promoting responsible consumption and production
- Focusing on long-term financial planning and investment
- Driving innovation that fosters sustainable growth

2.2. Sustainability as a Market Influence

An organization's commitment to sustainability has become a critical part of measuring its overall performance and its ability to thrive in both global and local markets. Sustainability focused organizations around the world are thriving and delivering attractive returns to shareholders as evidenced by the growth of Sustainability Index Funds.

An organization's commitment to sustainability has a direct influence on its:

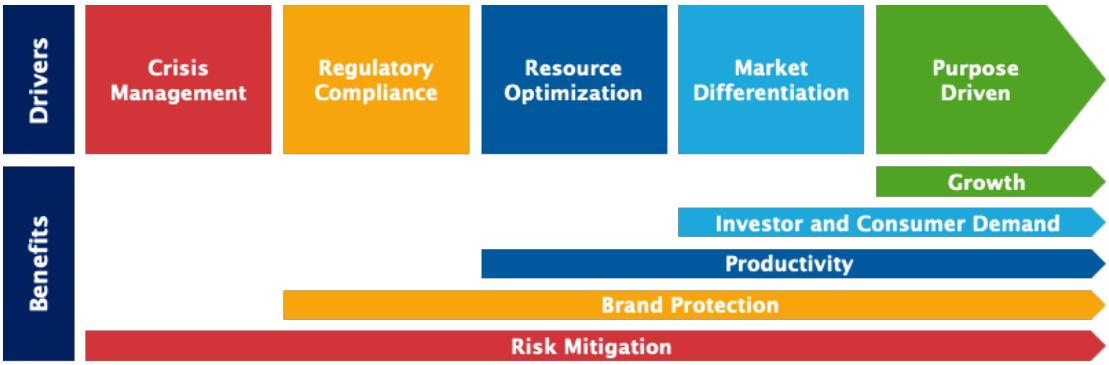
- Ability to secure and maintain a competitive advantage

- Brand reputation—the level of trust it has among consumers
- Evaluation by investors, donors, sponsors, and the financial community
- Ability to attract and retain workers, members, customers, clients, or users
- Worker morale, commitment, and productivity

2.3. Why Organizations Adopt Sustainable Practices

Organizations adopt sustainable practices for five main reasons. Awareness of these drivers can help identify where the organization stands on its sustainability journey and the potential benefits it can reap along the way.

Figure 2.1 Drivers for Sustainability in Organizations



Crisis Management. Initially, organizations adopt sustainability primarily as a reaction to a crisis. This could be an oil spill, a regulatory issue, or a scandal. The primary motivation here is risk mitigation. These organizations are driven by the need to respond to immediate threats rather than a genuine commitment to sustainability. Their focus is on minimizing negative impacts.

Regulatory Compliance. Slightly more advanced organizations are driven by regulatory compliance. They implement sustainable practices because they are required to by law or regulation. While compliance ensures they meet minimum standards and avoid penalties, their adoption is still largely reactive and focused on meeting external requirements rather than internal values. Here, the primary benefits are risk mitigation plus brand protection as the organization stays within legal boundaries.

Resource Optimization. At this point, organizations begin to see more direct benefits from sustainability. Motivated by resource optimization, they adopt sustainable practices to improve efficiency, reduce waste, and cut costs. This level reflects a shift from reactive to proactive strategies. These organizations still benefit from risk mitigation and brand protection, but they also benefit from increased productivity.

Market Differentiation. Organizations at this level are driven by the desire to differentiate themselves from competitors. Sustainability becomes a strategic advantage, helping them to appeal to environmentally conscious consumers and investors. These organizations not only comply with regulations but also actively seek ways to innovate and lead in sustainable practices, setting themselves apart in the marketplace. As they build a reputation for leadership in sustainability, they benefit from increased demand for their products and services.

Purpose Driven. At the highest level, organizations adopt sustainability as a core part of their ethos: sustainability is ingrained in their purpose and mission. They are not just responding to external pressures or seeking competitive advantage; they genuinely believe in creating a positive impact on the environment and society. This purpose-driven approach leads to real growth, attracting like-minded customers, employees, and partners. They foster a culture of sustainability that drives long-term success and resilience, positioning themselves as leaders in sustainable practice.

As organizations move from crisis management to becoming purpose driven, the benefits they experience from sustainability increase significantly. The journey from reactive adoption to a fully integrated, purpose-driven approach marks the evolution from merely mitigating risks to achieving growth and competitive advantage through sustainability.

2.4. Why Individuals Commit to Sustainability

For many individuals, the journey toward sustainability is shaped by a diverse array of personal values, professional experiences, and growing awareness of global challenges. Some are motivated by a sense of moral responsibility while others are influenced by firsthand exposure to the environmental and societal impacts of unsustainable practices. Despite these different starting points, individuals who commit to sustainability typically fall into one of three categories: visionary, pragmatist, or skeptic.

- **Visionaries** are driven by personal convictions or transformative life experiences that drive them to align with a higher purpose.

- **Pragmatists** develop their support over time, usually by recognizing the importance of sustainability as they witness the symbiosis between sustainable practices and long-term organizational success.
- **Skeptics** don't see the value of sustainability at first, only to be convinced later by the tangible benefits they see in practice.

Regardless of where they began their journey, the path toward sustainability often deepens as they encounter more evidence of its value and necessity. Whether driven by personal conviction, strategic insight, or practical outcomes, their commitment grows as they see the interconnectedness between sustainability, business success, and societal well-being.

As individuals recognize their role in shaping a more sustainable future, they become catalysts for change, influencing not only their organizations but also their broader communities. In this way, individual commitment to sustainability serves as the foundation for collective impact, driving meaningful progress toward a more resilient and sustainable world.

2.5. The Demand for Transparency

As the demand for accountability grows, *transparency* has never been more critical. By embracing Environmental, Social, and Governance (ESG) disclosures and sustainability reporting, organizations are not just responding to external pressure—they are setting the stage for long-term resilience and relevance in a rapidly changing world.

2.5.1. Understanding ESG

Investors, consumers, regulators, and communities are no longer satisfied with just knowing an organization's financial standing. They now demand visibility into how the organization affects the environment and society along with the principles by which it is governed. This demand led to widespread adoption of guidelines for ESG disclosures—a critical framework for organizations to openly report on their sustainability and ethical practices. ESG is a multidimensional approach to measuring an organization's impact:

- **Environmental**. This area assesses how an organization interacts with the planet. Whether through carbon emissions, energy consumption, or resource management, the environmental component examines how an organization mitigates its ecological footprint and addresses pressing issues such as climate change, biodiversity loss, and resource depletion.

- **Social**. The social dimension focuses on the relationships an organization fosters with its workers, customers, suppliers, and the communities it touches. This includes promoting human rights, fair labor practices, diversity, and community engagement. In an increasingly interconnected world, organizations have a responsibility to ensure their actions contribute positively to society.
- **Governance**. Governance delves into how an organization is structured and operates. Transparency in leadership, decision making, internal controls, and executive compensation is critical. Ethical governance, anti-corruption measures, and shareholder rights are now seen as the backbone of sustainable, responsible business practice.

2.5.2. Understanding Sustainability Reporting

While ESG disclosures are essential for tracking performance across specific environmental, social, and governance metrics, they are just one piece of the puzzle. Sustainability reporting extends beyond metrics to capture an organization's broader vision and long-term commitments. It ties the organization's mission to global frameworks such as the UN Sustainable Development Goals (SDGs) to reflect the organization's responsibility for and role in addressing planetary boundaries.

The difference between the two lies in scope and depth. ESG disclosures offer transparency in key areas for stakeholders, while sustainability reporting presents a more holistic narrative of how an organization is working to regenerate ecosystems, drive positive social change, and build ethical governance systems. Together, they create an indispensable toolset for organizations to show that they are not in business just to "do less harm" but to actively contribute to a sustainable future.

2.6. The Sustainable Development Goals

In 2011, Colombia proposed the adoption of seventeen *Sustainable Development Goals* (SDGs). The United Nations, together with business leaders, governments, the science community, and others came together in support of the SDGs as the best way to address the sustainability challenges we face.

Their support was affirmed in a resolution from the 2012 Rio+20 Conference called *The Future We Want* and a subsequent 2012 report titled *Realizing the Future We Want*.

Shown in Figure 2.2, the SDGs build on the success of the Millennium Development Goals (MDGs) which expired in January of 2015. The SDGs include new areas such as innovation and infrastructure while also adding detail regarding climate action, economic inequality, and responsible consumption. Notably, the goals are interconnected so that success in one area contributes to the success of another (see Section 9.3.3). The SDGs are the single greatest project that humanity has ever undertaken.

Figure 2.2 United Nations Sustainable Development Goals (SDGs)

GPM, as an active voice in the United Nations Global Compact (see Section 2.7), was an advocate for the advancement of the SDGs at numerous leadership summits and working sessions even before their ratification. GPM has committed—through its standards, tools, and programs that influence projects globally—to contribute to the achievement of these goals. There is a vast amount of information about the SDGs on the web and in the public domain. Organizations and individuals who influence trades and professions should support the goals and contextualize them for their industry as GPM has.

The goals are supported by 169 targets designed to stimulate government action in five areas of critical importance for humanity and the planet:

- **Planet**. To protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that the planet can support the needs of present and future generations.

- **People**. To end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfill their potential in dignity and equality and in a healthy environment.
- **Prosperity.** To ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social, and technological progress occurs in harmony with nature.
- **Peace**. To foster peaceful, just, and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.
- **Partnership**. To mobilize the means required to implement this agenda, focused on the needs of the poorest and most vulnerable, and with the participation of all countries, all stakeholders, and all people.

To avoid accusations of "SDG washing," organizations must avoid vague or false claims about their contributions to the SDGs. This practice can mislead consumers, who may believe they are making a positive impact through their purchasing decisions when they are not.

The linkages and integrated nature of the SDGs are of crucial importance in ensuring that they are achieved. And if they are achieved, the lives of all will be profoundly improved, and the world will be transformed for the better.

For more information, visit: https://sustainabledevelopment.un.org/sdgs

2.7. United Nations Global Compact

The *United Nations Global Compact* (UNGC) is a CEO-driven initiative where thousands of companies around the world work together to advance the UNGC Ten Principles within their sphere of influence and to make public their commitment to their stakeholders.

The principles provide guidance for sustainable business behavior and are the underlying principles for the SDGs.

Table 2.1 United Nations Global Compact Ten Principles

Category	Principle	Businesses should …
Human Rights	**1**	Support and respect the protection of internationally proclaimed human rights
	2	Make sure that they are not complicit in human rights abuses
Labor Standards	**3**	Uphold the freedom of association and the effective recognition of the right to collective bargaining
	4	Uphold the elimination of all forms of forced and compulsory labor
	5	Uphold the effective abolition of child labor
	6	Uphold the elimination of discrimination in respect of employment and occupation
Environment	**7**	Support a precautionary approach to environmental challenges
	8	Undertake initiatives to promote greater environmental responsibility
	9	Encourage the development and diffusion of environmentally friendly technologies
Anti-Corruption	**10**	Work against corruption in all its forms, including extortion and bribery

2.8. Summary

In this chapter, we reviewed sustainability basics, starting with GPM's three principles of sustainability. We also took a look at why organizations and individuals adopt sustainable practices. We then presented the United Nations' Sustainable Development Goals (SDGs) and their importance in creating a better society and a cleaner environment for future generations. We wrapped up with a review of the UN Global Compact and the UNGC Ten Principles. These principles are embedded in the PRiSM methodology described in Part Two as well as the complementary topics in Part Three.

Notes

3. Sustainability and Projects

The challenges we face today are unprecedented, and they demand more than just effective project delivery—they require a transformation in how we think about and manage our work. Sustainability is no longer an option; it's the foundation upon which all projects must be built. — Joel Carboni

This chapter examines how project management can and must be a driving force for sustainable change. By embedding sustainability into every phase of the project life cycle, we move beyond merely meeting objectives to creating projects that regenerate our environment, strengthen our communities, and build resilient economies. The time to act is now, and the responsibility lies with us, as project leaders, to ensure that every project we deliver leaves a positive, enduring legacy.

3.1. Sustainable Projects

GPM defines a project as "an investment that involves a coordinated series of activities performed over a finite period to achieve a unique result that supports a desired outcome." Section 5.1.1 contains a detailed discussion of the components of this definition.

For a project to be truly sustainable, the focus must extend beyond value creation to include the regeneration and restoration of natural, social, and economic systems. Sustainable projects are designed not only to mitigate negative impacts but to actively contribute to the renewal and enhancement of ecosystems, communities, and economies.

Projects should be structured to ensure that negative environmental, social, and economic impacts are minimized, and where possible, reversed. Additionally, projects must deliver the long-term benefits identified in the business case while simultaneously supporting the regeneration of natural resources, fostering social equity, and contributing to a resilient and thriving economy.

Sustainable projects are those that not only achieve their immediate goals but also leave a positive legacy by enhancing the capacity of future generations to meet their own needs.

For a project to be sustainable, its requirements must include mitigation of negative environmental, social, and economic impacts and attainment of the benefits identified in the business case.

A sustainable project will also adhere to *GPM's Six Principles of Sustainable Project Management* which are discussed in detail in Section 4.3:

- Commitment and accountability
- Ethical and responsible decision making
- Integrated, transparent, and inclusive governance
- Principled and values-based development
- Social and ecological equity
- Economic prosperity

3.2. Sustainable Project Management

Project management has evolved beyond the traditional focus on compliance with the constraints of time, cost, and scope to include an emphasis on delivering the objectives in the business case in order to support the expected outcomes. Today, *sustainable project management* is about integrating a sustainability ethos into every aspect of the project. This means ensuring that projects contribute positively to the environment, to society, and to the economy without compromising the ability of future generations to meet their own needs. To ensure that they create value.

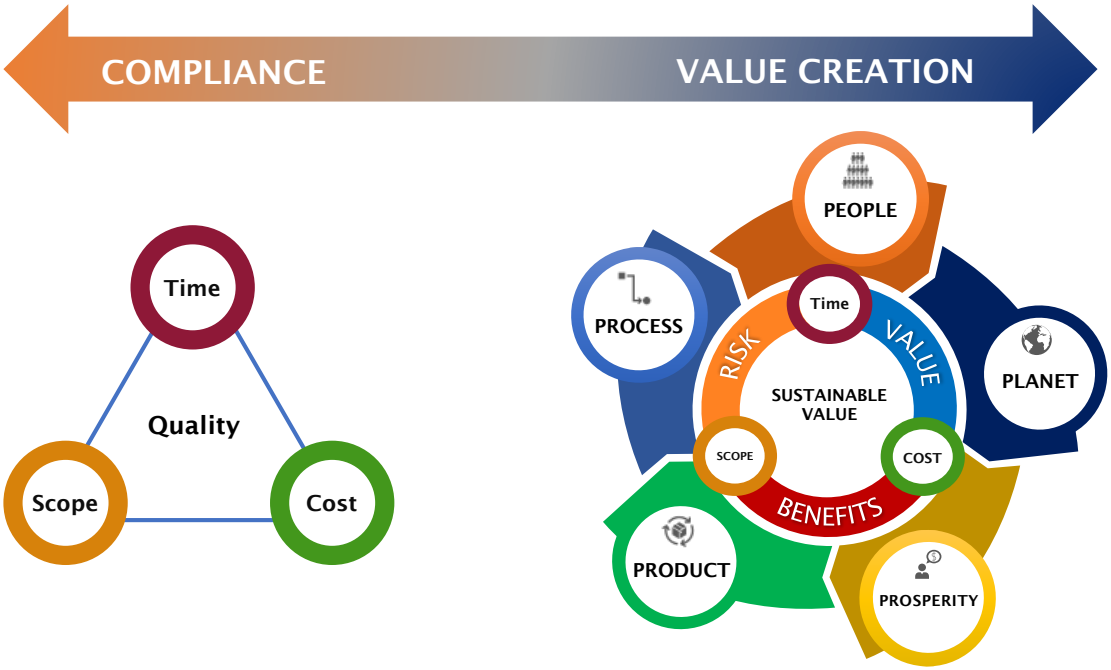
In this evolved approach, projects are assessed on both their immediate results and their long-term impacts. Sustainable project management requires a deliberate focus on minimizing negative social and environmental impacts while maximizing value creation and fostering regeneration. By doing so, sustainable project managers play a critical role in ensuring that the world we live in can sustain and regenerate itself to secure a thriving future for all.

This approach also demands that sustainability be an integral part of every aspect of every project. It involves considering the broader implications of project decisions, from resource use to stakeholder engagement, and ensuring that each project contributes to a sustainable and resilient world.

To appreciate this approach, it is useful to view project management as having four-layers:

- At the center lies the expected outcome of **sustainable performance** which drives every decision.
- Surrounding this are the traditional constraints of **time**, **cost**, and **scope** which must still be considered.
- The next layer includes the critical factors of **risk**, **value**, and **benefits**, ensuring that projects deliver on their objective while supporting long-term outcomes.
- The outer layer represents **People, Planet, Prosperity, Process,** and **Product**, reflecting the full scope of the project's impact and aligning with GPM's *P5 Standard* (see also Sections 3.3 and 5.3.2).

Figure 3.1 The Evolution of Project Management Focus



3.3. The GPM Sustainability Ecosystem

The GPM Sustainability Ecosystem has been designed to support the needs of sustainable projects and project managers globally. It is a comprehensive and mature ecosystem of resources and tools designed to advance sustainability in project management. In addition to this book, it includes:

- *The GPM P5 Standard for Sustainability in Project Management*
- A three level certification program
- Cutting-edge research on sustainability in project management
- Assessment tools to help organizations become more sustainable
- The GPM Ambassador program to support shared learning
- Regular blogs and white papers to broaden the reach of sustainability

Each of these is delineated below.

P5 Standard. *The GPM P5 Standard for Sustainability in Project Management* is a tool that supports the alignment of projects, programs, and portfolios with an organization's strategy for sustainability by focusing on the impact of projects on society, the environment, and financial results. The components of the *P5 Standard* (People, Planet, Prosperity, Process, and Product) help the project manager deliver a sustainable project in a sustainable way.

Section 5.3.2 includes additional information about the *P5 Standard*. We encourage readers to download the current version of the standard for **free** from the GPM website at https://www.greenprojectmanagement.org/p5.

Certification. In 2011, GPM created the first sustainability certifications for individuals—the **GPM-b** (Basic), **GPM-s** (Specialist), and **GPM-m** (Master). To date, we have certified thousands of individuals worldwide. These certifications recognize sustainability professionals who have the knowledge and skills to drive sustainable outcomes in their projects.

In 2024, we published *The GPM Competence Standard for Leadership in Sustainability*, the world's only performance-based competence standard for sustainability professionals. We will soon use it to enhance our individual certifications.

Research. Every two years, GPM publishes cutting-edge research on the state of sustainability in project management. The 2024 study had over 10,000 respondents from more than 100 countries. Topics included:

- The impact of climate change on projects and project management
- Climate change and sustainability impacts on organizational strategy
- The growth of regenerative practice
- Stakeholder sustainability expectations
- Sustainability practices of suppliers and vendors
- How organizations define the success of sustainability initiatives

Assessment. GPM provides innovative tools such as **PSM3 (Portfolio, Program, and Project Sustainability Model)** and **GPM360** that help organizations evaluate and improve their sustainability practices at both the organizational and project levels.

Shared learning. GPM fosters a thriving community of practice through the *GPM Ambassador Program* where individuals can connect, collaborate, and contribute to the global movement for sustainable project management.

Blogs and white papers. GPM publishes a weekly blog that explores the intersection of sustainability and project management. We also publish white papers from time-to-time on topics as diverse as Artificial Intelligence and Business Agility.

3.4. Sustainable Project Managers

A *sustainable project manager* is far more than a facilitator of project activities; they are the stewards of change, guiding projects to not only meet organizational objectives but to do so in a way that inherently respects and enhances our social, environmental, and economic systems. These managers are equipped with a robust set of competencies that are integrated and applied with the foresight needed to address both current and future challenges.

Sustainable project managers operate at the intersection of organizational strategy and planetary stewardship. They understand that every decision made within a project can have far-reaching implications—not just for the key stakeholders but for the broader community and future generations. This perspective requires them to tailor their methods, tools, and techniques to ensure that projects drive sustainability.

Their role transcends traditional project management. They must be advocates for a sustainable future, advisors on integrating sustainability into organizational strategy, and architects of projects that leave a positive legacy. Sustainable project managers are pivotal in driving the transformation needed to align organizational practices with GPM's and the UN's sustainability principles to ensure that every project contributes to a more equitable and resilient world.

As such, they are not only tasked with the successful delivery of projects but are entrusted with the responsibility to embed sustainability at the core of project practices, fostering a culture that prioritizes people, planet, and prosperity equally.

Table 3.1 Characteristics of a Sustainable Project Manager

Characteristic	Description
Impact-Oriented	Prioritizes creating lasting value by considering both immediate results and long-term implications of decisions. Focuses on supporting benefits that extend beyond the project's end, contributing positively to social, environmental, and economic objectives.
Inclusive and Empathetic Leader	Deeply understands and respects the diverse motivations and perspectives of team members and stakeholders. Fosters a collaborative environment that values inclusivity, encourages innovative thinking, and builds trust through transparent and empathetic communication.
Catalyst for Change	Actively challenges the status quo and drives innovation by embracing change and seeking opportunities for continuous improvement. Acts as a proactive leader who inspires others to think creatively and seize opportunities that align with sustainable practices.
Ethical and Principled	Embodies the highest standards of integrity and ethical behavior. Establishes trust-based relationships, upholds core principles and values, and empowers others to act ethically.
Systems Thinker	Approaches problems and opportunities with a holistic perspective, recognizing the interconnectedness of social, environmental, and economic systems. Analyzes relationships and patterns over time and focuses on long-term impacts and causality to inform decisions.
Purpose Driven	Intentionally integrates sustainability as a core component of project success. Ensures that every decision and action taken within the project is aligned with broader sustainability objectives.

continued

Characteristic	Description
Lifelong Learner	Demonstrates a commitment to continuous personal and professional growth. Embraces challenges as opportunities for development, confidently makes informed decisions, and projects a strong sense of self-assurance.
Collaborative Innovator	Actively seeks and fosters partnerships with diverse stakeholder groups. Encourages cross-functional collaboration to co-create innovative solutions that address complex challenges and contribute to shared sustainability objectives.
Transparent and Accountable	Maintains a high level of transparency in all project activities. Effectively manages risks, seeks out and values meaningful stakeholder engagement, and takes responsibility for addressing any adverse impacts that arise during the project.

3.5. Sustainable Project Sponsors

Project sponsor is a difficult role to characterize because there are so many variations. Here are the first four definitions from a web search:

- The project sponsor is an individual (often a manager or executive) with overall accountability for the project. (Schibi and Lee)
- A project sponsor is an individual who offers financial resources to fund a project. (ProjectManager.com)
- The project sponsor, or executive sponsor, is a person or a group of people at the senior management level. (Asana)
- Project sponsors typically are members of senior management who carry a respectable level of influence and authority and serve as proponents of projects. (Whitten)

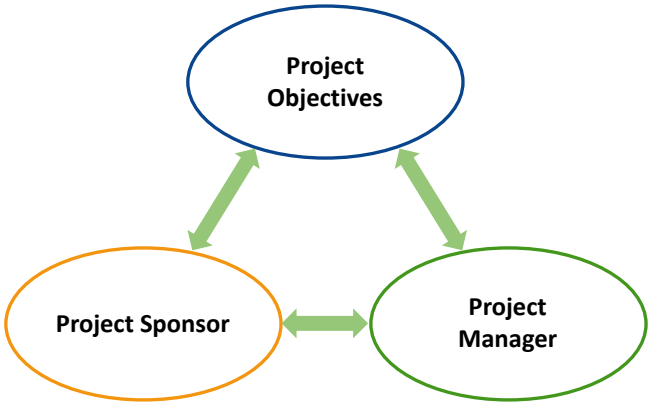
Each definition implies that the sponsor is structurally above the project manager. Most assume that the sponsor is an individual, not a group. None consider that in a contractual situation, the project may have a sponsor in the owner's organization as well as in the contractor's organization. These different definitions all lead to different descriptions of the sponsor's role.

In a sustainability context, GPM believes that the project sponsor and project manager should work as a partnership, collaborating in support of meeting the project's objectives. As suggested by Figure 3.2, in a sustainable project, the project sponsor and project manager are equally committed to achieving the project's objectives, and especially the project's sustainability objectives.

In this partnership, the sponsor still plays a vital governance role. They:

- Support the project manager.
- Own, develop, and continuously refine the business case to ensure alignment with organizational goals and sustainability objectives.
- Foster relationships across the organization and help navigate organizational politics.
- Serve as the escalation point for decisions, issues, and conflicts that exceed the project manager's authority or capabilities.
- Champion sustainability practices throughout the project.
- Regularly assess the project's viability against financial, social, and environmental success criteria.

Figure 3.2 Project Sponsor and Project Manager as a Partnership



The project sponsor typically has other responsibilities as well:

- **Resource provider**. Ensuring the project has access to necessary resources including people, budget, and tools.

- **Coach and mentor**. Offering guidance and support to the project manager, fostering development and project success.
- **Decision gatekeeper**. Filtering decisions that require higher-level approval. Facilitating agreements among stakeholders.
- **Evaluator**. Assessing the project's alignment with business objectives, sustainability objectives, and overall value to the organization.
- **Motivator**. Inspiring and supporting the project team to maintain momentum and focus on the project's success.
- **Protector**. Safeguarding the project's interests, defending it from external threats or conflicting organizational priorities.

When it comes to sponsoring sustainable projects, the sponsor has a number of sustainability-related responsibilities:

Defining project sustainability criteria. Project criteria should be aligned with the organization's sustainability objectives. The project criteria serve as a benchmark for assessing the project's progress and outcomes, ensuring that the project delivers value not only in terms of traditional success metrics but also in terms of its sustainability impact. By defining these criteria at the outset, the sponsor ensures that the project team has a clear understanding of what they need to achieve.

Encouraging the use of sustainability tools. Providing access to sustainability tools such as the *P5 Impact Analysis* (see Section 5.3.2) enables project managers to integrate sustainability throughout the project. These tools support the identification of both positive and negative impacts and the development of strategies to respond. By advocating for the use of sustainability tools, the sponsor ensures that sustainability is systematically integrated into the project.

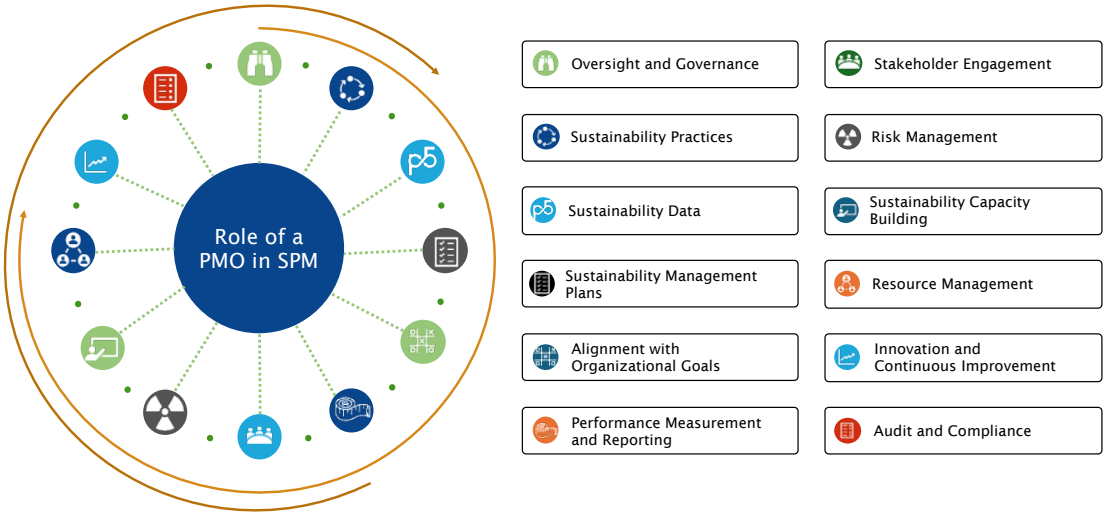
Guiding the creation of a Sustainability Management Plan. The sponsor's involvement in the development of a Sustainability Management Plan (SMP, see also Section 5.3.5) is critical. An SMP outlines the actions and resources needed to achieve the project's sustainability objectives. The sponsor is well-situated to ensure that the SMP is aligned with the organization's overall sustainability strategy. By guiding the creation of an SMP, the sponsor helps the project team operationalize sustainability to make it an integral part of the project.

Supporting training in sustainable project management. To ensure that the project team has the necessary skills, the sponsor should advocate for and support training in sustainable project management. Sponsor support not only enhances the project team's capabilities but also fosters a culture of continuous learning and improvement in sustainability. By investing in training, the sponsor helps build the organization's capabilities, leading to better project outcomes and long-term sustainability benefits.

3.6. Sustainable Project Management Offices

Project Management Offices (PMOs) are increasingly recognized as key players in embedding sustainability into project management practices. Their shift towards supporting sustainable project management involves ensuring that projects contribute positively to the environment and society in addition to meeting traditional project objectives. Figure 3.3 depicts the roles of a PMO in supporting sustainable project management. Each of these is described in more detail in the paragraphs below.

Figure 3.3 Roles of the PMO in Sustainable Project Management



Oversight and Governance. To effectively embed sustainability into projects, PMOs must structure processes, methodologies, and governance to ensure that sustainability practices are applied throughout the project. The PMO should also provide guidelines and templates to ensure that each project supports the organization's sustainability objectives.

Sustainability Practices. PMOs can promote the use of green technologies and help optimize resource usage. They can develop and implement tailored frameworks that assess projects against sustainability criteria. For example, a PMO might create a sustainability checklist to be used during project planning to ensure that sustainable materials are prioritized, waste is minimized, and energy-efficient processes are used.

Sustainability Data. PMOs should harness sustainability data from tools like GPM's *P5 Standard* to evaluate the sustainability impact of key project decisions. This involves establishing a process for regular data collection and analysis that adds sustainability data to project dashboards.

Alignment with Organizational Goals. PMOs should evaluate and prioritize projects based on their sustainability impacts. This can be achieved through a systematic review process where the PMO applies sustainability scoring models to assess project proposals.

Sustainability Management Plans. PMOs should ensure that the actions included in Sustainability Management Plans (SMPs) are implemented effectively. This means including them in project budgets and schedules and communicating their importance to the project teams. For example, if the organization's sustainability objectives include reducing carbon emissions, the PMO could require a carbon footprint analysis in all SMPs.

Performance Measurement and Reporting. PMOs are best suited for developing Key Performance Indicators (KPIs) that track project performance against sustainability targets. They can do this by creating KPIs that address CO2 emissions, waste reduction, and other sustainability topics.

Stakeholder Engagement. Effective stakeholder engagement is critical for the success of sustainable projects. PMOs facilitate this by establishing clear communication channels with sustainability stakeholders such as local communities and environmental groups. Where appropriate, they ensure that the project team holds regular feedback sessions with those affected.

Risk Management. Sustainable PMOs must be adept at identifying, assessing, and mitigating sustainability-related risks in its projects. This involves evaluating environmental and social risks that could impact project success. The PMO should develop contingency plans and risk mitigation strategies that specifically address sustainability concerns such as supply chain disruptions due to environmental factors or potential regulatory changes.

Sustainability Capacity Building. PMOs must also focus on building the sustainability capacities of the project teams. This involves providing targeted training programs to equip project teams with the skills needed to apply sustainable practices. PMOs can organize workshops or online courses on topics such as green project management, sustainable resource planning, and environmental impact assessment. Additionally, the PMO should foster a culture of continuous learning and improvement to keep up with the latest sustainability trends and best practices.

Resource Management. Effective resource management is crucial for achieving sustainability objectives. PMOs are responsible for optimizing the use of human, financial, and material resources across the projects they are responsible for. This can include implementing resource-sharing initiatives across projects, using sustainable materials, and managing budgets to ensure funds are allocated to sustainability-enhancing activities.

Innovation and Continuous Improvement. Sustainability in project management is not a static goal but a dynamic process that requires ongoing innovation and improvement. PMOs foster this by creating an environment that encourages innovative thinking and the adoption of new technologies or methodologies that support sustainability. The PMO can establish feedback loops where lessons learned are analyzed and applied to future projects. PMOs can also pilot new sustainable project management tools or techniques before scaling successful ones across the organization.

Audit and Compliance. Compliance with sustainability regulations and standards is essential for the long-term success of sustainable project management. The PMO should develop a compliance framework that includes regular reviews and audits, clear documentation, and corrective actions when non-compliance is identified. Additionally, the PMO can lead the effort in obtaining sustainability certifications, which can enhance the organization's reputation.

3.7. Summary

This chapter has highlighted the changing nature of project management and the shift away from the traditional, linear thinking of the past—from compliance to value. We covered some of the major effects this change has had—and is having—on projects, project management, and project managers. We also shared a brief overview of the *GPM Sustainability Ecosystem* which can help a project manager ensure that their project is sustainable. Finally, we detailed key characteristics of sustainable project managers, sustainable project sponsors, and sustainable PMOs.

4. Ethics, Principles, and Values

True wisdom comes to each of us when we realize how little we understand about life, ourselves, and the world around us. — Socrates

As discussed in our first three chapters, business has historically been focused on profit. Even the public and not-for-profit sectors have tended to focus on delivering an excess of revenues over expenses. But today, we have new, broader economic models that are driving leaders to respect human rights, to care for the climate, and to reduce poverty and hunger. This behavior is guided by a new understanding of ethics, principles, and values.

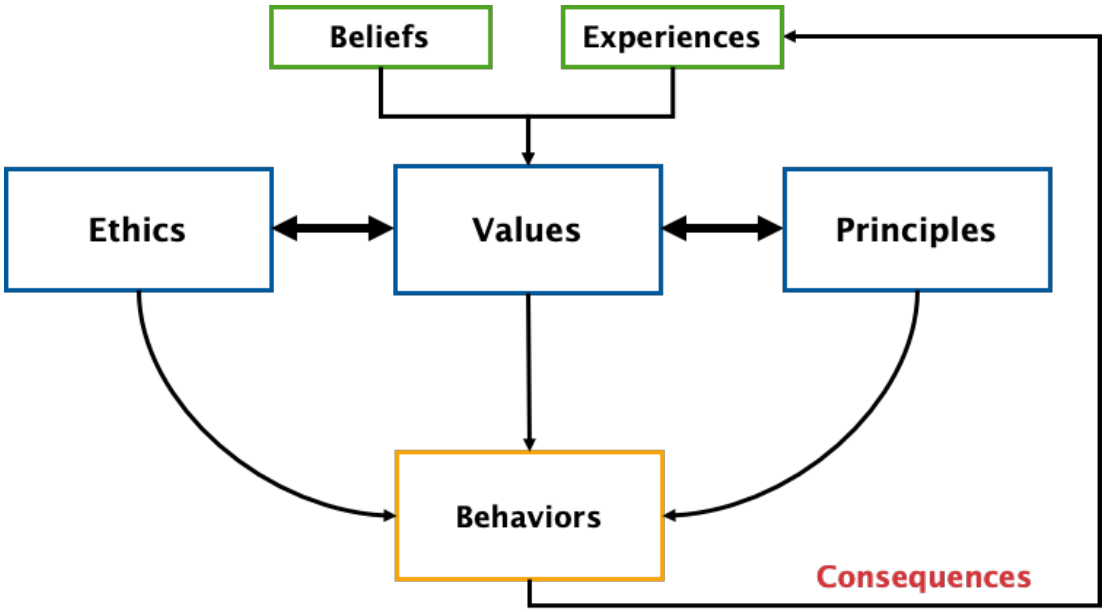
4.1. Core Concepts

Ethics, principles, and values are fundamental to sustainability because they provide guidance about what individual and organizational behaviors are acceptable:

- **Ethics** — provide guidance for what behaviors are acceptable. Ethics are typically defined by an external agency such as a professional association.
- **Principles** — represent fundamental truths or propositions that serve as the foundation for a system of belief or for a chain of reasoning. Principles are universal, proven in practice, and empowering. Principles are also usually defined externally.
- **Values** — are what individuals and organizations consider to be most important to them such as innovation, compromise, prudence, courage, hard work, competition, efficiency, freedom, material success, or patriotism. Values are derived from personal and organizational beliefs and are influenced by experience.

Figure 4.1 shows how ethics, principles, and values relate to behaviors.

Figure 4.1 How Ethics, Principles, and Values Affect Behavior



4.2. Ethics and Sustainability

As noted above, *ethics* provide guidance for acceptable individual and organizational behavior. There are good reasons for a strong commitment to ethics:

- In the private sector, ethical companies have been shown to be more profitable
- Ethical choices result in lower stress for those affected
- Ethical behavior strengthens leadership by building trust and confidence

In contrast, unethical behavior may result in negative publicity, declining sales, and even legal action. For this reason, it is necessary to be able to identify and understand the ethical issues that arise, and to develop the knowledge and skills needed to address them. Ethical issues are an inevitable element of organizational decision making and are deeply intertwined with managerial practice and organizational activities generally.

4.2.1. Policies and Standards

To help workers determine what conduct is acceptable, organizations should have *policies and standards* describing what the organization expects of all of its workers, from entry level to the highest levels of management. At a minimum, these policies and standards should address:

- **Environmental issues.** Environmental responsibility has become a leading issue today as businesses, government, and the public acknowledge the damage done to the environment in the past. Today's consumers increasingly demand that individuals and organizations take responsibility for their actions and their impact on the environment. For example, automakers are developing vehicles that run on alternative fuels such as electricity, solar power, natural gas, and methanol.
- **Worker relations.** Workers expect organizations to provide a safe workplace, pay them adequately for their work, and tell them what is happening in the organization. They want their employer to listen to their grievances and treat them fairly. A major social responsibility for organizations and the individuals who manage them is providing equal opportunities for all workers regardless of their sex, age, race, religion, nationality, or other consideration.
- **Consumer relations.** Customers expect organizations to provide them with satisfying, safe products and to respect their rights as consumers. Defective or dangerous products erode public confidence in the ability of the organization to serve society. They may also result in expensive litigation that ultimately increases the cost of products for all consumers. The right to be informed gives consumers the freedom to review complete information about a product before they buy.
- **Community relations.** A final, yet very significant, issue for individuals and organizations is their responsibility to the general welfare of the communities and societies in which they operate. They should make their communities better places for everyone to live and work.

4.2.2. Ethical Issues in Sustainable Project Management

An *ethical issue* is an identifiable problem, situation, or opportunity requiring an individual or organization to choose from among several actions that must be evaluated as right or wrong (Ferrell, 2018).

To support sustainable projects, the entire project team must be attuned to the ethical considerations that can arise during the project. This includes understanding the differences between the ethics, values, and principles of other stakeholders as well as making decisions that uphold high standards of integrity, responsibility, and respect for all. Ethical issues often arise as a result of:

Environmental responsibility. Projects must manage their environmental impact by minimizing their carbon footprint, reducing waste, and conserving resources. Greenwashing—exaggerating or falsifying environmental efforts—is a significant ethical issue that can mislead stakeholders and damage reputations. Ethical project managers must ensure that all environmental claims are accurate and that the project genuinely contributes to sustainability.

Conflicts of interest. A conflict of interest is any circumstance that could affect an individual's ability to make a fair and unbiased decision. A potential conflict of interest ***is*** a conflict of interest. The existence of a conflict of interest does not, in and of itself, prevent an individual from making a decision. To avoid a conflict of interest, individuals must be diligent in separating their personal interests (especially financial interests) from their professional responsibilities.

Fairness and honesty. Fairness and honesty are key pillars of ethical behavior and are essential for building trust in project management. Fairness means treating all stakeholders equitably and ensuring that decisions are made impartially and without favoritism. Honesty involves being transparent and truthful in all communications and actions. Ethical project managers uphold these values by providing accurate information, avoiding misleading claims, and ensuring that all parties are treated justly and with respect. By fostering an environment of fairness and honesty, project managers help build strong, trusting relationships and a culture of integrity.

Communications. Ethical issues often arise in communications, particularly when it comes to truthfulness and transparency. Misleading advertising, deceptive selling tactics, and withholding important information can undermine trust and lead to the failure of a project. Ethical communication involves:

- Being truthful about the project's safety, quality, and progress when communicating with stakeholders
- Providing accurate product labeling
- Ensuring clear disclosure of the project's environmental and social impacts

Business relationships. Ethical behavior in business relationships involves maintaining confidentiality, meeting obligations and responsibilities, and not pressuring others to act unethically. Project managers are responsible for creating a work environment that supports the organization's objectives without compromising the rights of consumers, suppliers, or workers. Ethical issues in business relationships may also arise from how an organization interacts with its supply chain, especially if suppliers fail to adhere to ethical standards.

Data privacy and security. In the digital age, ethical issues related to data privacy and security are increasingly prominent. Project managers must ensure that personal and sensitive data is handled responsibly and with robust security measures in place to protect against data breaches. Misuse of data, unauthorized access, and lack of transparency in data practices can lead to significant ethical violations. Ethical project management involves safeguarding stakeholder data and being transparent about how data is used and protected.

Labor rights and working conditions. Ethical issues concerning labor rights and working conditions are particularly relevant in global supply chains. Project managers must ensure that their operations, and those of their suppliers, respect labor laws and provide safe, fair, and humane working conditions. This includes preventing child labor, forced labor, and discrimination, as well as ensuring fair wages and reasonable working hours. Upholding these standards is essential for maintaining the ethical integrity of the project.

Diversity, Dignity, Equity, and Inclusion. Promoting diversity, dignity, equity, and inclusion within the project team and the broader organization is an ethical imperative. Ethical issues can arise when individuals or organizations fail to do so. Ethical project managers foster a culture where every individual is treated with dignity and respect and ensure equitable access to opportunities and resources.

Supply chain transparency. Ethical issues in supply chain management often arise when there is a lack of transparency leading to exploitation, human rights violations, or environmental degradation. Project managers must conduct thorough due diligence to ensure that their supply chains are ethical and that there is accountability throughout. This involves working closely with suppliers to ensure adherence to ethical standards and to promptly address any issues that arise.

Culture conflicts. Ethical issues can also arise from cultural differences. For example, what is considered a bribe in one culture might be seen as a normal gift in another. Understanding and respecting cultural differences is critical to project management as transgressing another person's beliefs or cultural norms can significantly impact stakeholder relationships and project outcomes.

Use of technology. As technology continues to evolve, project managers must consider the ethical implications of deploying new technologies such as Artificial Intelligence (AI). This includes assessing their potential impact on the planet, employees, privacy, and societal well-being. Ethical project management also involves thoughtful innovation where new technologies are developed and implemented in ways that support the organization's strategy for sustainability.

Corporate Social Responsibility. Corporate Social Responsibility (CSR) is a business model by which companies make a concerted effort to operate in ways that enhance rather than degrade society and the environment. Ethical issues in CSR arise when organizations engage in superficial or insincere efforts that do not genuinely contribute to societal well-being.

4.3. Principles and Sustainability

In Section 2.1, we shared GPM's *Three Principles of Sustainability,* and in Section 2.7 we shared the UNGC's *Ten Principles*. In addition to these, GPM recommends that all project managers (as well as all program and portfolio managers) should adhere to GPM's *Principles of Sustainable Project Management*.

Table 4.1 GPM's Principles of Sustainable Project Management

Principle	Description
Commitment and Accountability	Recognize and uphold the fundamental rights of all individuals to live in a healthy, clean, and safe environment. Ensure equal opportunities, fair compensation, ethical procurement, and strict adherence to the rule of law. Embrace a proactive approach to accountability and ensure transparent reporting on sustainability objectives.
continued	

Principle	Description
Ethical and Responsible Decision Making	Embed ethical considerations into all decision-making processes, ensuring that actions align with universal principles and contribute positively to society and the environment. Prioritize the identification, mitigation, and prevention of both short- and long-term adverse impacts while fostering a culture of responsibility and ethical leadership within organizations.
Integrated, Transparent, and Inclusive Governance	Promote the integration of economic, social, and environmental considerations into all aspects of project governance. Ensure transparency in decision making and foster stakeholder trust through open communication and comprehensive reporting. Encourage collaboration across disciplines to achieve sustainability outcomes that are inclusive of diverse perspectives and needs.
Principled and Values-Based Development	Conserve and enhance natural resources by adopting sustainable technologies. Focus on responsible resource management that respects ecological limits and fosters the regeneration of ecosystems. Ensure that development practices prioritize sustainability, resilience, and the well-being of future generations.
Social and Ecological Equity	Advance social and ecological equity by assessing and addressing vulnerabilities in densely populated regions and ecologically sensitive areas. Prioritize the needs of marginalized and vulnerable communities, ensuring that sustainability efforts contribute to reducing inequality and enhancing resilience against environmental and social challenges.
Economic Prosperity	Adopt fiscal strategies that balance the immediate needs of stakeholders with the long-term sustainability objectives of future generations. Promote economic prosperity that is inclusive, resilient, and aligned with sustainable development principles, ensuring that growth contributes positively to social and environmental well-being.

4.3.1. Commitment and Accountability

Project management should exemplify a commitment to upholding the fundamental rights of all individuals to live and work in a healthy, clean, and safe environment. It should ensure equal opportunities, fair compensation, ethical procurement, and strict adherence to the rule of law.

It should also demonstrate accountability through a proactive commitment to transparency to foster trust and reliability in all aspects of project work.

4.3.2. Ethical and Responsible Decision Making

Project management practices must embed ethical considerations into every aspect of their decision-making processes. Project teams should work diligently to identify, mitigate, and prevent any potential short- or long-term adverse impacts on society and the environment. They should champion ethical and responsible decision making that contributes positively to society and the environment. One of the best ways to do so is by ensuring that their project's business case addresses:

- Alignment with codes of ethics and other core values
- Adherence to organizational sustainability governance
- Compliance with relevant regulations
- Achievement of organizational and project-specific sustainability objectives
- Monitoring of social, environmental, and economic performance indicators

4.3.3. Integrated, Transparent, and Inclusive Governance

Project management should actively contribute to the integration of economic development, social integrity, and environmental protection in all aspects of project governance, practice, and reporting.

To ensure transparency, projects should operate under the assumption that information will be shared openly unless there is a clear reason for confidentiality (e.g., proprietary data). Transparency is vital for enabling decision makers to address broader challenges including:

- Safeguarding human rights
- Formulating and implementing climate change policies
- Reducing waste and preventing ecosystem contamination
- Managing social conflicts and migration
- Retraining workers with new skills and competences
- Reinforcing anti-corruption measures

Project management must also encourage collaboration across disciplines to achieve sustainability outcomes that are inclusive of diverse perspectives.

4.3.4. Principled and Values-Based Development

Project management should demonstrate its commitment to conserving and enhancing natural resources by adopting responsible technologies and practices. For example, it can support a circular economy by reducing resource consumption, minimizing waste, preventing ecosystem contamination, respecting human rights, and creating long-term value for society. A principled approach ensures that projects are aligned with core values that prioritize sustainability and the well-being of future generations.

4.3.5. Social and Ecological Equity

Project management must ensure social and ecological equity by understanding and mitigating human vulnerabilities in ecologically sensitive areas and densely populated regions. The pressures of population growth, production demands, and unsustainable consumption patterns pose significant challenges to the planet's life-supporting capacities. Project managers have a crucial role to play in:

- Enhancing understanding of the interconnections between demographic dynamics, technology, cultural behaviors, natural resources, and life support systems.
- Assessing human vulnerability to prioritize actions in sensitive ecological areas and population centers.
- Developing and implementing strategies to mitigate the adverse impacts of environmental changes on human populations.
- Raising awareness of the importance of sustainable resource management, particularly in developing countries.
- Advocating for the empowerment of women through access to education, health care, and economic independence.

4.3.6. Economic Prosperity

Project management should adopt strategies that balance the immediate needs of current stakeholders with those of future generations. This involves being mindful of how projects impact vulnerable populations such as rural landless workers, minorities, marginalized groups, refugees, migrants, displaced individuals. By doing so, project management can help create economic prosperity that is inclusive and resilient.

4.4. Values and Sustainability

Both individuals and organizations have *values* that drive how they operate—that define their *culture*. Culture is the unique way that an individual or organization defines itself. Culture is the sum of worldviews, traditions, customs, rituals, stories, and practices that differentiate one from another.

As illustrated in Figure 4.1, values—along with ethics and principles—drive behaviors. For behaviors to be sustainable, both individuals and organizations must meet their fundamental responsibilities in the areas of human rights and environmental protection.

For an organization, shared values are the glue that binds it together—creating an internal cohesion that supports achievement of its goals. An organization whose values are aligned with those of its employees and other stakeholders will be able to fully harness their energy and creativity. It will have a culture which is collaborative, resilient, productive, and fully motivated to achieve its goals—especially its sustainability objectives.

For an organization to be truly sustainable, its values must be aligned with the following:

- The Universal Declaration of Human Rights (1948)
- The International Labour Organization's Declaration on Fundamental Principles and Rights at Work (1998)
- The Rio Declaration on Environment and Development (1992)
- The United Nations Convention Against Corruption (2003)

4.5. Ensuring an Ethical Supply Chain

A *supply chain* is the system of organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer. A supply chain may include the transformation of natural resources, raw materials, used or recycled materials, and other components into a finished product that is delivered to an end customer. Supply chains are not limited to manufacturing: service providers such as consulting firms also have supply chains as do governmental entities.

Ensuring an ethical supply chain is challenging because the customer seldom has direct control over its suppliers. Nonetheless, an ethical supply chain is fundamental to sustainability since it is where much of the social and environmental impact occurs.

Anti-corruption compliance programs are an important part of ensuring an ethical supply chain. They should emphasize the importance of fostering an organizational culture that effectively prevents and resists corruption. The aim of these programs should go beyond risk mitigation to helping organizations internalize ethical values by promoting positive behavioral change and creating a values-driven approach to governance.

Organizations are increasingly expected to "know and show" compliance with ethical standards throughout their operations, products, and services.

4.5.1. Benefits of an Ethical Supply Chain

The benefits of ensuring that your organization's supply chain is ethical include:

- Improved product quality
- Reduced fraud and related costs
- Enhanced reputation for honesty in its activities
- Internal resilience to meet and manage crises
- A more sustainable platform for future growth
- Long-term customer loyalty
- Competitive advantage

4.5.2. Cost of Corruption in the Supply Chain

Corruption, broadly defined, may be the single greatest obstacle to economic and social development around the world. Corruption distorts markets, stifles economic growth, debases democracy, and contributes to conflict and instability by undermining the rule of law. The UN estimates that the annual cost of corruption is at least US$2.6 trillion with nearly US$1 trillion paid in bribes.

Corrupt practices also have the potential to cause devastating harm to individuals, society, and the environment because of defective products.

Corruption risks in the supply chain include procurement fraud perpetrated by suppliers, often in league with the customer's own employees, and suppliers who engage in corrupt practices with government agencies. The direct costs of this corruption are often dwarfed by the indirect costs related to management time and resources dealing with issues such as legal liability and damage to a company's reputation. Organizational misconduct is often publicized within hours or even minutes of discovery.

4.5.3. Human Rights Violations and the Supply Chain

Human rights violations are a special case of corruption—both pose similar risks including reputational damage and financial loss.

Organizations should avoid causing or contributing to adverse human rights impacts and should commit to addressing any adverse impacts that do occur. Organizations should seek to prevent or mitigate adverse impacts linked to their operations, products, or services even if they have not contributed to those impacts.

Corruption often causes human rights violations. For example, in India, forced child labor has been linked to failed law enforcement due to corruption. Also in India, in April 2013, Rana Plaza, a commercial building in Dhaka, collapsed killing more than a thousand people and severely injuring more than twice as many. The tragedy is widely attributed to bribes paid to avoid manufacturing approvals and building inspections.

4.5.4. Fighting Corruption in the Supply Chain

According to the *Corruption Perceptions Index Report* (Transparency International, 2023), over two-thirds of the 180 countries and territories in that year's index fall below the midpoint of the scale of 0 (highly corrupt) to 100 (very clean). The global average score was a paltry 43 which indicates endemic corruption in a country's public sector. And some researchers have found that private sector corruption is as bad or worse.

Corruption in the supply chain also represents a major obstacle to reaching the SDGs as it hampers economic growth and increases poverty thus depriving the most marginalized groups of access to vital services such as healthcare, education, water, and sanitation. Nor is corruption only an issue for low-income states—rich countries are affected by cross-border corruption, foreign bribery, tax evasion, and related illicit financial flows.

Table 4.2 presents useful questions to consider when evaluating the risk of corruption in your organization's supply chain.

Table 4.2 Questions to Ask to Help Prevent Supply Chain Corruption

Questions to Ask About the Impact of Supplier Corruption	
▪ What would happen to your organization if a supplier engaged in corruption? ▪ What are the risks to your reputation if such a disruption occurred? ▪ What are the risks to your operations if such a disruption occurred? ▪ What are your potential remedies if you discover a corrupt supplier? ▪ How would you control the damage from a corrupt supplier? ▪ Are there alternative sources of supply? What are they? ▪ Could you be liable because of a supplier's corrupt activities?	
Questions to ask …	
About Your Organization	**About Your Suppliers**
▪ What internal controls are in place to prevent, detect, and respond to internal fraud? ▪ What internal controls are in place to prevent, detect, and respond to supplier fraud? ▪ What internal controls are in place to prevent, detect, and respond to procurement fraud?	▪ What is the supplier's reputation for integrity and ethical conduct? ▪ Where is the supplier located? What are the corruption risks in those locations? ▪ What is the importance of the contract to the supplier's business? What is the likelihood of kickbacks? What is the likelihood of other kinds of procurement fraud?
Questions to ask …	
About Your Organization	**About Your Suppliers**
▪ What internal controls are in place to monitor spending limits and ensure documentation review? ▪ What processes are in place for vetting suppliers for potential conflicts of interest? ▪ What processes are in place to monitor suppliers? ▪ What processes are in place for supplier audits and inspections? ▪ Does the overall anti-corruption program meet applicable standards?	▪ What are the possible points of contact with government corruption? ▪ How was the supplier identified? Are there any personal connections? ▪ What controls does the supplier have in place to prevent corruption? ▪ Is the supplier being engaged as an agent to deal with the local government (e.g., to obtain permits or to deal with customs)? ▪ What is the supplier's relationship to their government? Are there personal or business connections?

To learn more about what prudent customers and suppliers should do, consult *Practical Guidance on Preventing and Responding to Corruption in the Supply Chain* (UNGC, 2016).

4.6. Summary

This chapter has focused on individual and organizational ethics, principles, and values with special emphasis on ensuring ethics throughout an organization's supply chain. We started with a model showing how ethics, principles, and values affect behavior. We also presented GPM's *Six Principles of Project Management Sustainability*.

PART TWO: The PRiSM Methodology

Notes

5. PRiSM Basics

There is no man living who isn't capable of doing more than he thinks he can do. – Henry Ford

PRiSM (PRojects integrating Sustainable Methods) is a project delivery approach developed by GPM and designed to embed sustainability throughout the project life cycle. This methodology enables organizations to balance the use of limited resources with social responsibility, ensuring that projects achieve more sustainable outcomes. PRiSM also aligns project efforts with circular design as outlined in Section 1.5, thus supporting broader organizational objectives.

One of the key features of PRiSM is its capability to establish, monitor, and quantify sustainability metrics at the project level. This feature is particularly valuable for organizations involved in non-financial reporting and those required to comply with ESG disclosures and sustainability reporting standards.

By integrating sustainability principles into traditional project management practices, PRiSM significantly reduces negative environmental, social, and economic impacts across various types of projects.

PRiSM is fully compatible with globally recognized standards, including the current versions of ISO 21502, ISO 14001, ISO 26000, ISO 50001, and ISO 9001.

Additionally, PRiSM is highly adaptable and can be seamlessly integrated with most other project management methodologies and approaches such as PRINCE2 and Agile. This flexibility ensures that PRiSM can be tailored to meet the unique needs of individual projects to allow organizations to embed sustainability effectively while leveraging their existing frameworks.

5.1. Project Management Concepts

In this section, we'll cover core concepts, from our unique definition of *project* to how projects fit into the larger organization.

5.1.1. What is a Project?

As noted in Section 3.1, GPM defines a project as "an investment that requires a set of coordinated activities performed over a finite period of time in order to accomplish a unique result in support of a desired outcome." To expand on the components of this definition:

- A *project* may be simple (making breakfast), complicated (design and construction of a commercial airport), or complex (development and implementation of an enterprise resource planning system).
- As an *investment*, each project requires a commitment of financial resources, non-financial resources, or both.
- *Coordinated* means that the work of the project is done in an organized way to ensure effective and efficient use of the committed resources.
- The *finite period of time* may be defined in advance as a constraint, determined by planning, or predicted through analysis of actual performance.
- *Unique* means that the characteristics of the result are different in some identifiable way.
- The *desired outcome* is expected to benefit one or more of the stakeholders.

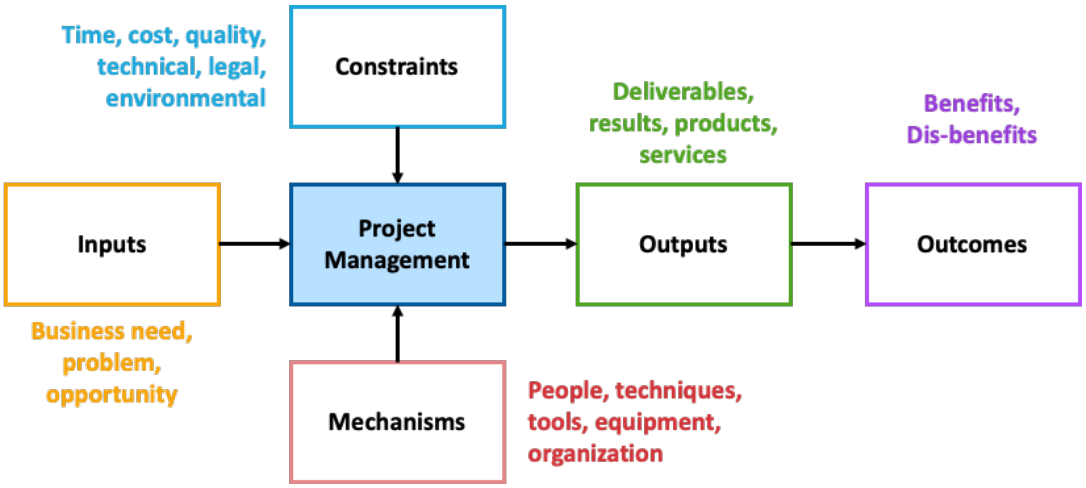
The *activities*, the *period of time*, the *result*, and the *outcome* are typically described in general terms at the start of the project, then in more detail as the project progresses through the phases of the project life cycle in-use. The PRiSM project life cycle is described in Section 5.2.

5.1.2. What is Project Management?

Project management is the application of knowledge, skills, tools, and techniques to coordinate projects effectively and efficiently. Not all projects require project management. In particular, very simple projects (like breakfast) will not benefit from a documented business case, a risk register, or critical path analysis. At the opposite end of the spectrum, very large and very complex projects may require application of a program management approach.

Project management is a strategic competency for most organizations, enabling them to tie the project objectives to their strategic goals—and thus help improve their results.

Figure 5.1 Project Management as a Process



Project management can be viewed as a process as illustrated in Figure 5.1. The overall process of project management can also be viewed as a group of interconnected processes. These processes will fall into one of the following categories (adapted from ISO 21500:2012):

- **Product-oriented processes** — are those used to specify and create the result of the project. They include processes for discovering customer requirements, designing a product or service, building physical artifacts, and other results as described in Section 5.3.
- **Project-management-oriented processes** — are those used to identify, describe, and organize project activities. They include processes for estimating, scheduling, risk identification, and others as described in Chapter 0.
- **Support-oriented processes** — are those used to support the other processes and are generally provided by organizational units outside the project. They normally include general management processes in fields such as procurement, logistics, finance, accounting, and safety. Common support processes are described in Chapter 7.

These processes are not always linear and may be connected in different ways and in different sequences on different projects.

5.1.3. What is a Project Manager?

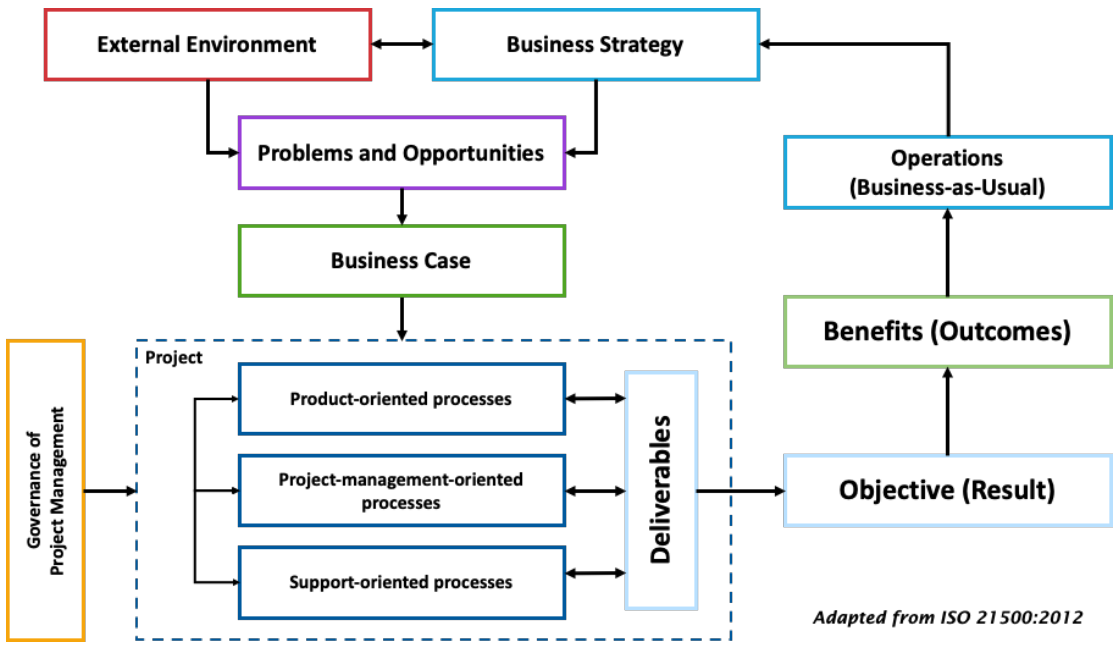
The *project manager* is the individual responsible for getting the project done. The project manager will normally be responsible for all of the resources, all of the activities, and all of the processes on a given project. Unless there are subprojects, there should only be one project manager for a project.

Section 3.4 contains additional information about the characteristics of a sustainable project manager.

5.1.4. Projects in the Organization

A project always exists within a larger organization that includes other activities. The larger organization is variously called the *performing organization*, the *permanent organization*, or the *stationary organization*. The other activities are typically called either *operations* or *business-as-usual* (BAU). In some cases, as with consulting or contracting firms, the other activities are other projects. Figure 5.2 illustrates how projects fit within the larger organization.

Figure 5.2 Project Environment



Problems and opportunities are identified by evaluating the impact of the organization's external environment on the organization's strategy. When a valid business case can be developed to solve a problem or take advantage of an opportunity, a project is approved.

The project is overseen according to the provisions of the organization's governance practices. Governance is covered in Chapter 8.

The project's processes produce the deliverables that are needed to satisfy the business case and to comply with the governance requirements. Those deliverables produce a result (or output) that satisfies the objective defined in the business case.

In use, the result of the project is used to realize benefits that support the organization's ongoing operations.

5.2. PRiSM Project Life Cycle

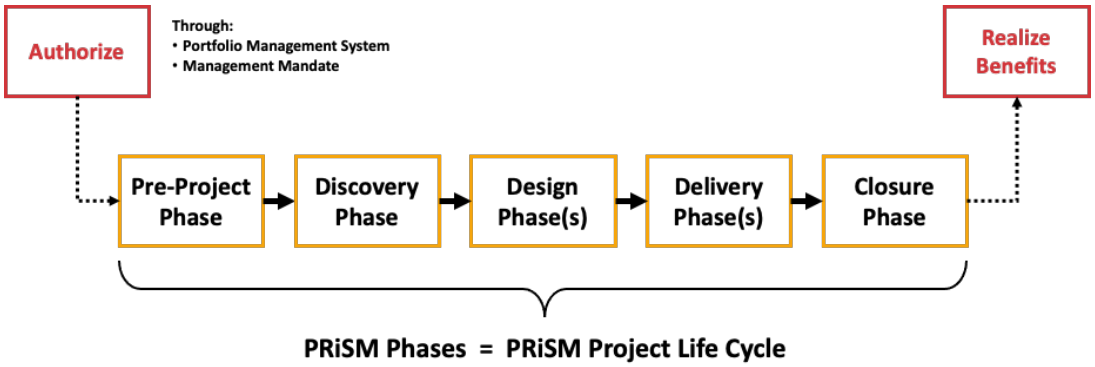
Projects are usually divided into *phases* (also called *stages* or in some domains *iterations*) in order to provide better management control. Phases follow a logical sequence designed to allow the project team to develop a deeper and more detailed understanding of the characteristics of the project objectives. Project phases are collectively known as the *project life cycle*.

The most fundamental characteristic of a project phase is that it ends with a decision about whether or not to continue:

- For most phases, the decision will be about whether or not to continue into the next phase. The key factor driving this decision should always be: is the business case still valid?
- For the project's final phase, the decision will be about whether or not to put the project's deliverables into use.

PRiSM is built around a standard project life cycle designed to enhance sustainability in both the work and the results of the project. The project life cycle is part of the cradle-to-cradle life cycle described in Section 12.3.

Figure 5.3 Overview of the PRiSM Project Life Cycle



5.2.1. Pre-Project Phase

The PRiSM *Pre-Project Phase* is where the project objectives are identified, the project sponsor and project manager partnership is established, business case development begins, and prior lessons learned are reviewed.

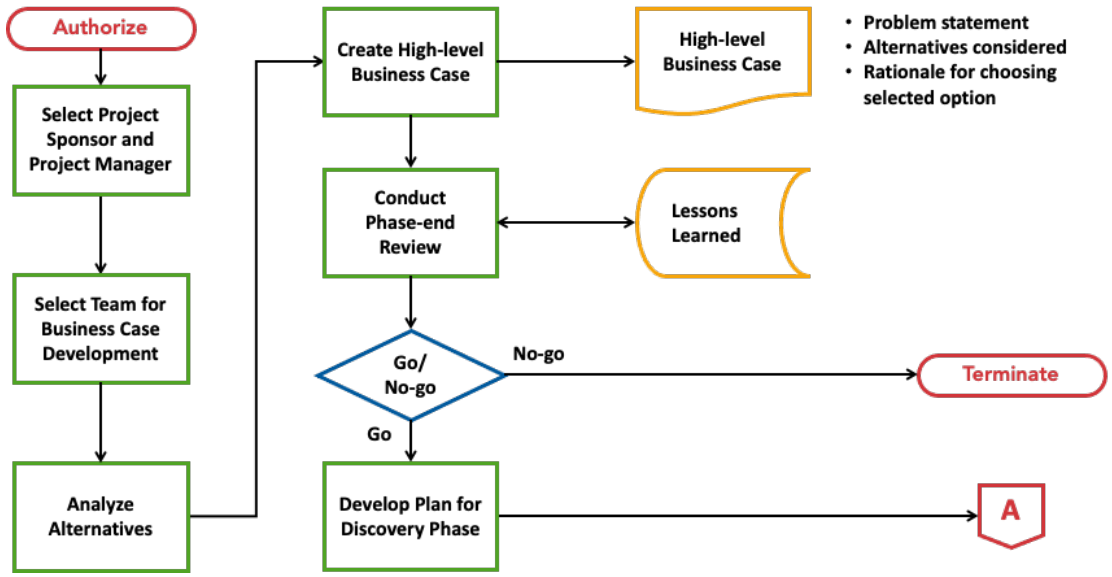
Authorize. Authorizing a project involves formal approval to invest organizational resources in the project. This may come from a project portfolio management system or via a management mandate. Even the smallest project should be properly authorized.

Select Project Sponsor and Project Manager. The project sponsor provides overall guidance and support to the project and the project manager. The project manager is appointed to handle day-to-day responsibility for planning and managing the project. How each is selected should be defined by the organization's governance practies.

Select Team for Business Case Development. For smaller, simpler projects, the business case "team" might include only the project sponsor, or perhaps the project sponsor and the project manager. For larger, more complex projects, additional resources will usually be required to help develop the business case.

Analyze Alternatives. The business case team should identify and analyze alternatives for the project objectives as well as alternatives for achieving those objectives. This analysis should take into consideration factors such as cost, schedule, expected benefits, risk, sustainability, resource availability, and resource capabilities.

Figure 5.4 Pre-Project Phase Activities



Create High-level Business Case. The contents of the business case are discussed in more detail below in Section 5.3.1. In the Pre-project Phase, there may not be enough detail available to develop more than a high-level business case that includes a problem statement (justification), brief descriptions of the alternatives considered, and the rationale for choosing the selected option.

Conduct Phase-end Review. At the end of each PRiSM phase, the project management team must evaluate what has been accomplished in the current phase in order to determine if the project should proceed to the next phase. The evaluation is done against the business case: is the project still necessary and useful?

Make Go/No-go Decision. The project sponsor will use the results of the phase-end review to decide whether to proceed to the next phase or to end the project.

Develop Plan for Discovery Phase. Once approval to proceed has been received, the project management team must develop a plan to guide the work of the Discovery Phase. The planning process is described in more detail in Chapter 0.

5.2.2. *Discovery Phase*

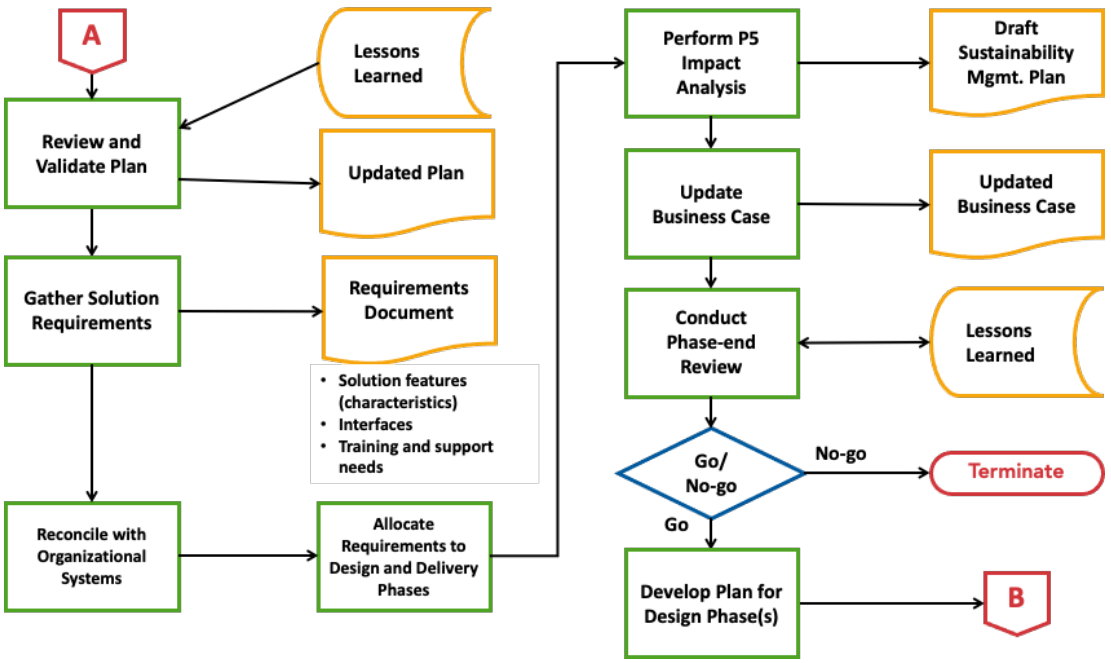
The PRiSM *Discovery Phase* is where requirements are defined, the business case is aligned to organizational strategy, and sustainability impacts are identified, analyzed, and transformed into opportunities to create social, environmental, and economic value.

Review and Validate Plan. The plan developed at the end of the previous phase should be reviewed by the team for the current phase to ensure that it remains useful and relevant. Delays in starting this phase or changes to staffing can have a significant impact.

Gather Solution Requirements. The process of gathering the information needed to complete a requirements document is described in Section 5.3.3.

Reconcile with Organizational Systems. This step involves balancing the project's objectives and plans with existing organizational systems.

Figure 5.5 Discovery Phase Activities



Allocate Requirements to Design and Delivery Phases. This step involves determining which requirements will be addressed in each design and delivery phase.

Perform P5 Impact Analysis. Analyzing the solution and discovery processes against environmental, social, and economic criteria to ensure sustainable outcomes.

Update Business Case. Ensure that the business case remains valid.

Conduct Phase-end Review. At the end of each PRiSM phase, the project management team must evaluate what has been accomplished in the current phase in order to determine if the project should proceed to the next phase. The evaluation is done against the business case: is the project still necessary and useful?

Make Go/No-go Decision. The project sponsor will use the results of the phase-end review to decide whether to proceed to the next phase or to end the project.

Develop Plan for Design Phase(s). Once approval to proceed has been received, the project management team must develop a plan to guide the work of design. Design work may be planned as a single phase or as multiple, iterative phases. The planning process is described in more detail in Chapter 0.

5.2.3. Design Phase

The PRiSM *Design Phase* is where the solution is designed, the sustainability analysis is refined, and acceptance criteria are established. For larger, more complex projects, the Design Phase may be iterated.

Review and Validate Plan. The plan developed at the end of the previous phase should be reviewed by the team for the current phase to ensure that it remains useful and relevant. Delays in starting this phase or changes to staffing can have a significant impact.

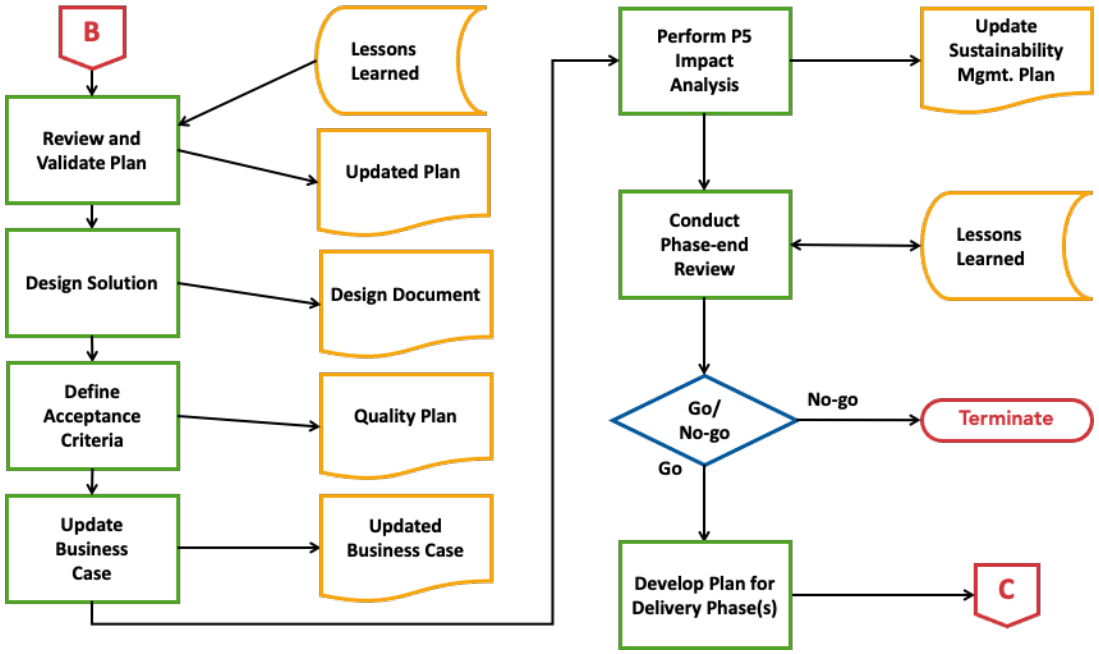
Design Solution. The process of designing the product or service of the project by dividing it up into smaller components in order to determine resource needs, costs, schedule, risk, value, benefits, and impacts.

Define Acceptance Criteria. The process of documenting the criteria which must be satisfied before the project sponsor will approve the project deliverables.

Update Business Case. Ensure that the business case remains valid.

Perform P5 Impact Analysis. Re-analyzing the solution and analyzing design processes against environmental, social, and economic criteria to ensure sustainable outcomes.

Figure 5.6 Design Phase Activities



Conduct Phase-end Review. At the end of each PRiSM phase, the project management team must evaluate what has been accomplished in the current phase in order to determine if the project should proceed to the next phase. The evaluation is done against the business case: is the project still necessary and useful?

Make Go/No-go Decision. The project sponsor will use the results of the phase-end review to decide whether to proceed to the next phase or to end the project.

Develop Plan for Delivery Phase(s). Once approval to proceed has been received, the project management team must develop a plan to guide delivery of the project solution. Delivery work may be planned as a single phase or as multiple, iterative phases. The planning process is described in more detail in Chapter 0.

5.2.4. Delivery Phase

The PRiSM *Delivery Phase* is where the project team produces the deliverables needed to achieve expected outcomes and benefits. For larger, more complex projects, the Delivery Phase may be iterated.

Review and Validate Plan. The plan developed at the end of the design phase should be reviewed by the team to ensure that it remains useful and relevant. Delays in starting the phase or staffing changes can have a significant impact.

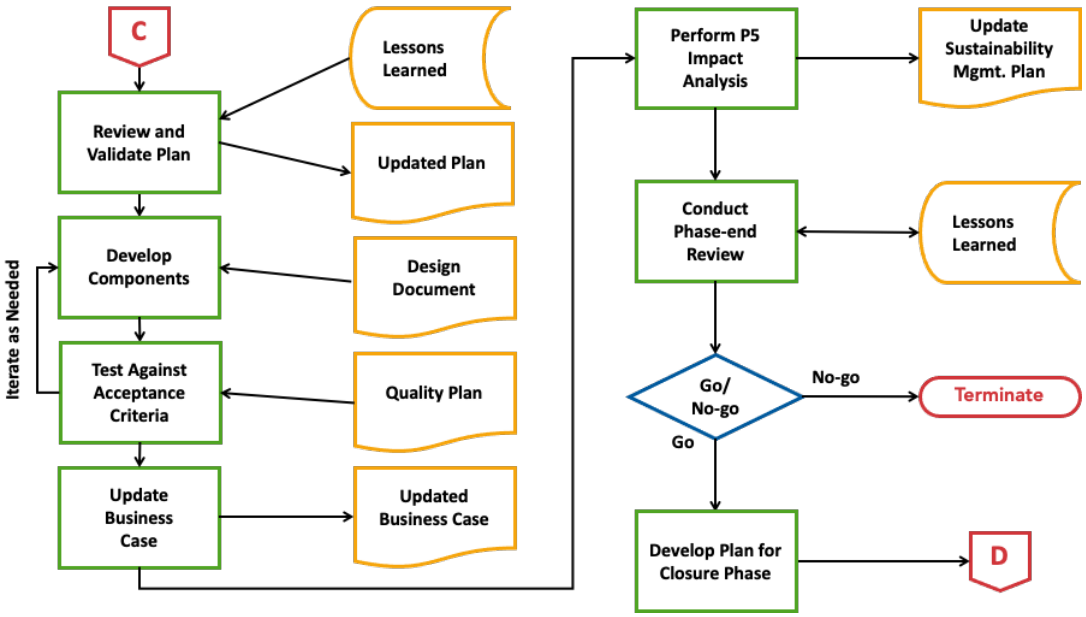
Develop Components. The process of making or buying the deliverables of the project.

Test Against Acceptance Criteria. The process of performing the test scenarios derived from the acceptance criteria to allow the project sponsor to make a decision about the project deliverables.

Update Business Case. Ensure that the business case remains valid.

Perform P5 Impact Analysis. Re-analyzing the solution and analyzing delivery processes against environmental, social, and economic criteria to ensure sustainable outcomes.

Figure 5.7 Delivery Phase Activities



Conduct Phase-end Review. At the end of each PRiSM phase, the project management team must evaluate what has been accomplished in the current phase in order to determine if the project should proceed to the next phase. The evaluation is done against the business case: is the project still necessary and useful?

Make Go/No-go Decision. The project sponsor will use the results of the phase-end review to decide whether to proceed to the next phase or to end the project.

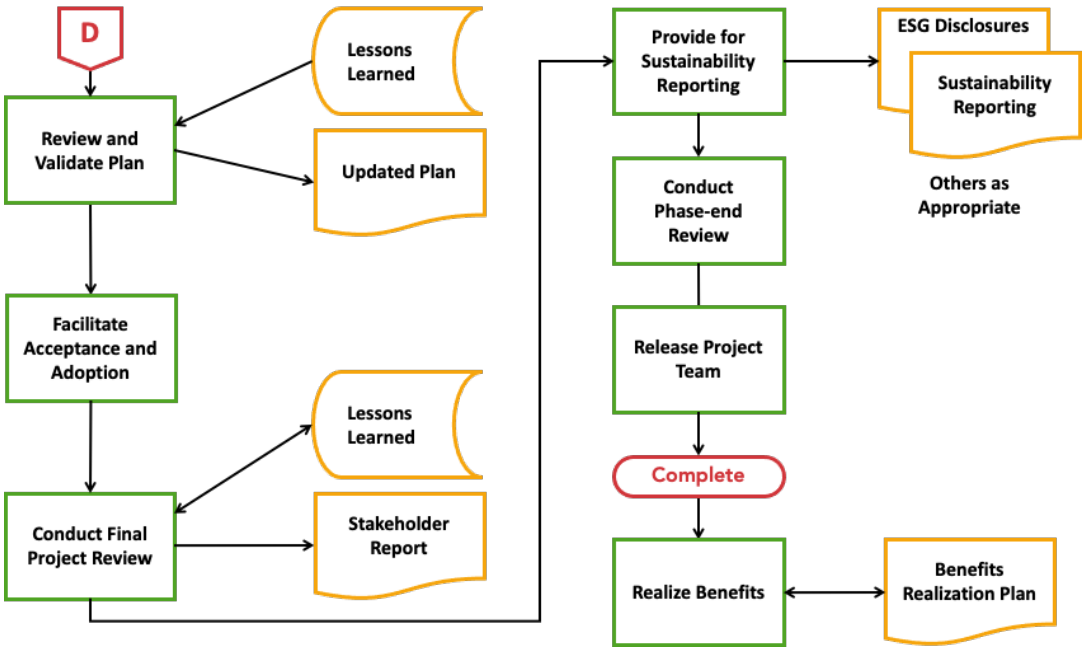
Develop Plan for Closure Phase. Once approval to proceed has been received, the project management team must develop a plan to guide the activities required to close the project. The planning process is described in more detail in Chapter 0.

5.2.5. Closure Phase

The PRiSM *Closure Phase* is where the project team facilitates adoption of the project deliverables and administratively closes out the project.

Review and Validate Plan. The plan developed at the end of the previous phase should be reviewed by the team for the current phase to ensure that it remains useful and relevant. Delays in starting this phase or changes to staffing can have a significant impact.

Figure 5.8 Closure Phase Activities



Facilitate Acceptance and Adoption. This involves coordinating the handover of the deliverables to the relevant party and adoption into production. It may also include some level of support for ongoing operations and maintenance, organizational changes, and end-of-life planning.

Conduct Final Project Review. The process performed with the project team to review elements of the project that were successful or unsuccessful.

Provide Information for Sustainability Reporting. Produce organizational materiality report from the Sustainability Management Plan to support sustainability reporting

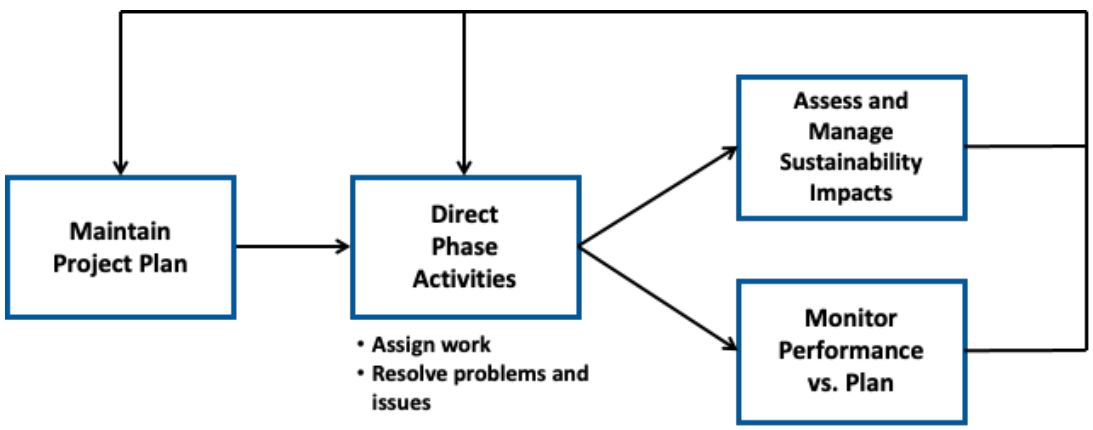
Release Project Team. Formally release project team members from their project obligations.

Realize Benefits. Benefits are realized as a result of the project.

5.2.6. Overview of Managing a PRiSM Project Life Cycle Phase

Managing a PRiSM project life cycle phase is covered in depth in Chapter 0 while coverage of additional supporting activities is included in Chapter 7. Figure 5.9 presents a high-level view.

Figure 5.9 PRiSM Project Management Activities



Maintain Project Plan. The project plan should be updated at the end of each phase and validated at the beginning of the next phase. This includes continued relevance as well as continued support for the business case. Project planning activities are detailed in Chapter 0.

Direct Phase Activities. This covers management of all of the phase's activities.

Assess and Manage Sustainability Impacts. In PRiSM projects, environmental and social impacts should be monitoring throughout the project.

Monitor Performance vs. Plan. This includes taking remedial action when significant variances are discovered.

5.3. Key PRiSM Deliverables

5.3.1. Business Case

The *business case* documents *why* one particular project should be favored over others. The business case should explain how the project supports the strategy of the funding organization. It should contain enough information to enable a good decision about whether or not to fund the project. It should include at least:

- A description of the strategic fit: what strategic objectives the project supports and how.
- Project objectives, including sustainability objectives.
- A list and brief descriptions of the options considered to demonstrate that the option chosen is the best one based on the information currently available. The list of options should generally include the option of deferring the project and of not doing it at all.
- Expected benefits, including sustainability benefits.
- Product and project management success criteria (see Section 5.3.6).
- Acceptance criteria to be applied at the end of the project. In some cases, these will have to be developed during the project and added to the business case.

Most business cases will also include a high-level project plan with:

- Major deliverables
- Key schedule targets
- Cost estimates
- Assumptions and constraints
- Primary risks

Additional planning detail will be developed as the project proceeds through the phases of the PRiSM Project Life Cycle. Additional detail that has a significant effect on the business case should be incorporated into the business case.

In addition to being the primary support for project approval, the business case also provides important input to:

- Phase end reviews
- Evaluating change requests
- Lessons learned
- Verification of expected benefits

5.3.2. P5™ Impact Analysis

The *P5 Impact Analysis(P5IA),* also called as a sustainability impact analysis, is a summary of the steps that will be taken by the project team to decrease negative sustainability impacts and to increase positive ones. It is based on the *P5 Standard* discussed in Section 3.3.

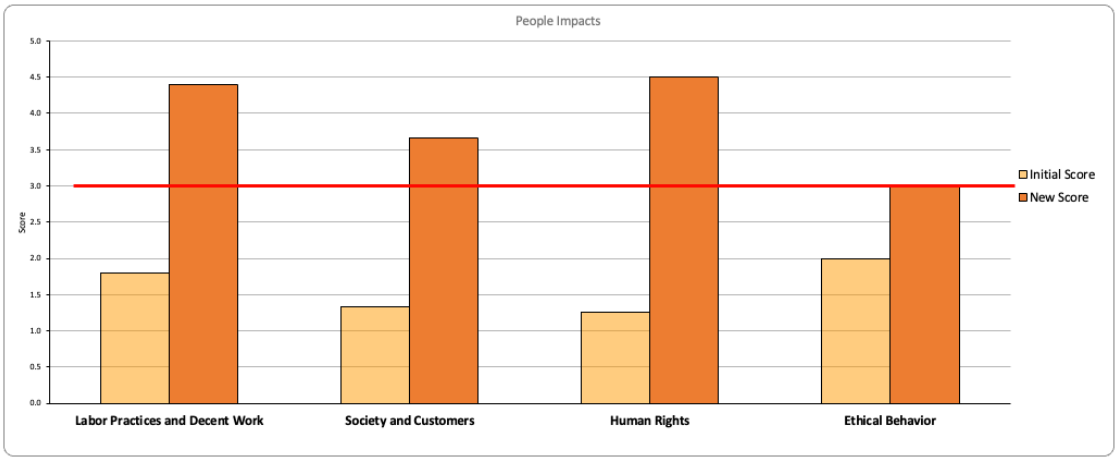
Figure 5.10 Extract from a P5 Impact Analysis

People Impacts					
Subcategory / Element	Varies by Example / Definition	Lens	Scored?	Description (Cause)	Potential Sustainability Impact
Wind Farm Project					
Local Competence Development	Local competence development is the process of fostering and expanding skills, knowledge, and expertise in the localities in which the project operates. It can involve providing training or education to local individuals, as well as encouraging collaboration and the sharing of resources between the project organization and local organizations or local individuals.	Lifespan	Yes	There is currently no local training that focuses on the development of local talent in renewable energy technology, such as wind turbine maintenance and repair. This makes it nearly impossible to promote the expansion of renewable energy enterprises within the region.	There will be no local based talent to support our asset long term.
		Servicing	Yes	There are currently no programs for students who desire to pursue work in renewable energy technology. In particular, there are none with a concentration in wind turbine maintenance.	There will be a shortage of maintenance options to keep the factory running.
		Effectiveness	Yes	The project management methods being taught in the trade schools don't include sustainability.	Team members will be less able to mitigate sustainability risks.
		Efficiency	No		
		Fairness	No		
Beverage Company: Energy Efficiency Project					
	Sustainable procurement and contracts includes practices for obtaining goods, raw materials, and services that take into account environmental, economic, and social impacts. It means contracting for resources in an ethical manner. It requires establishing agreements which adhere to environmental, social, and human rights standards.	Lifespan	Yes	The machinery available from approved vendors has a short lifespan and is sourced from overseas.	Does not support the local economy, is wasteful at EOL and costly.
		Servicing	Yes	We have no current collaborations with suppliers that have a high priority on sustainability across their supply chain.	Does not allow us to meet scope 3 emission goals and creates concerns around ethics in procurement.
		Effectiveness	Yes	Our procurement processes do not include criteria for vendors and suppliers that adhere to sustainable practices.	Limits our ability to have a sustainable supply chain.
		Efficiency	Yes	Our project management methods do not have provisions for sustainable procurement.	Unable to track and measure sustainability with suppliers.
		Fairness	Yes	Our procurement practices have no provisions for preferring local and small/medium sized businesses.	Not in line with sustainable procurement.

The primary purpose of this deliverable is to ensure that the project team members and other key stakeholders remain alert to what could affect the project's impact on sustainability. The *P5 Standard* provides a comprehensive checklist of topics to consider, and the impact analysis itself is similar to a risk register for sustainability.

The *P5 Standard* addresses impacts on People, Planet, and Prosperity. Figure 5.10 shows an example of People Impacts from two sample projects. When the various elements have been evaluated through the five lenses, the tool generates summary reports and charts. Figure 5.11 is an example of the People Impact chart.

Figure 5.11 P5 Impact Analysis, People Impact Example



The *P5 Impact Analysis* is usually best done in a workshop to encourage awareness and understanding. The tool includes built-in instructions and can be downloaded for free at http://www.greenprojectmanagement.org/p5.

5.3.3. Requirements Document

The *requirements document* describes the externally visible functions and attributes of the various deliverables. The fact that a requirement must be externally visible also implies that it must be possible to test any requirement. The ways to elicit and document requirements varies by domain, but in general, if something is needed to satisfy the project's objective, it is a requirement.

The requirements documents should be verified against the business case to ensure that the specified requirements are consistent with the project objectives.

The requirements document is maintained throughout the project in response to new requirements, changed requirements, and clarified requirements.

Requirements will generally fall into one of the following categories:

- **Sustainability requirements.** Descriptions of what the project must do or deliver in order to be considered *sustainable*.
- **User requirements.** Descriptions of the needs of a particular stakeholder or group of stakeholders. They usually describe how to interact with the intended solution.
- **Functional requirements.** Descriptions of specific capabilities, behavior, and information that the solution will need.
- **Non-functional requirements.** Descriptions of the conditions under which the solution must remain effective such as reliability, testability, and maintainability.
- **Implementation requirements.** Descriptions of capabilities or behavior required to enable transition from the current state of the funding organization to the desired future state.

The Requirements Document is the major input into the design phase(s). It is also an important input into the verification process since tests should trace back to specific requirements.

It allows stakeholders to understand *what* the project's deliverables should do without defining *how* they should do it.

5.3.4. Design Document

The *Design Document* describes the physical aspects of how the deliverables will be created. For complex deliverables, there may be multiple levels of design such as a conceptual design followed by a detailed design. The Design Document may include sketches, flowcharts, and calculations as well as narrative material.

As with the Requirements Document, the contents and structure will vary by domain. Many organizations will have templates.

The design document is a living document that is updated throughout the project in response to new requirements, changed requirements, clarified requirements, and new information from either the design or delivery activities.

5.3.5. Sustainability Management Plan

The *Sustainability Management Plan* (SMP) is one of several management plans (see Section 6.7) that describe and document how the sustainability aspects of the project will be managed. The SMP describes how the project management team plans to balance the often-conflicting needs of economic, environmental, and social responsibility.

The SMP will normally cover at least the following topics:

- **Key Performance Indicators (KPIs).** These will be as outlined in the P5 Impact Analysis.
- **Environmental impact assessment.** A summary of the planned environmental impact and steps that will be taken to decrease the effects or increase the opportunities identified.
- **Scope Exclusions.** Any known areas of potential sustainability impact that the project will not address.
- **Sustainability risk management.** Any differences from standard practices in the approach to identifying, analyzing, and responding to sustainability risks.
- **Reviews and reporting.** Steps to take in a project audit regarding sustainability and how sustainability metrics will be reported throughout the project.

The SMP document should also include the following:

- **P5 Impact Analysis (P5IA).** A snapshot of the project's P5 score and incremental re-baselining from previous assessments. It should include recommended actions to be taken in order to increase benefits and mitigate risks.
- **Approvals and Signoffs Page.** A section to gain approval for the project manager to take action based on the P5 impact analysis.
- **Sustainability Reporting Summary.** A description of how the project and its outcomes contribute to the organization's sustainability strategy and utilized as material for sustainability reporting.

Note: organizations that are committed to sustainability will usually have a Sustainability Management Plan at the executive level as well as SMPs for each project.

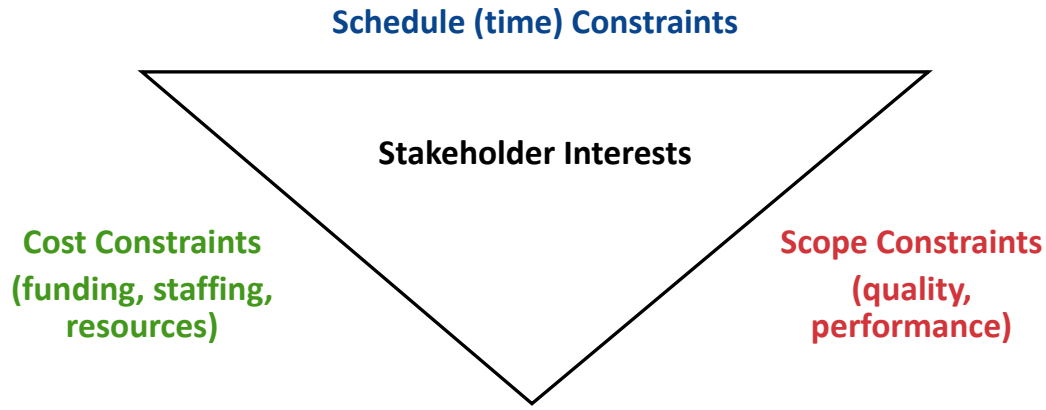
5.3.6. Project Success Criteria

Project success has traditionally been defined in terms of completing the project within cost, schedule, and scope constraints as shown in Figure 5.12.

On occasion, quality and stakeholder satisfaction have been called out separately rather than being subsumed within scope. This concept was often called the *Triple Constraint* or the *Iron Triangle*. The common theme in all cases was that project success was defined:

- In ways that could be measured the day the project was finished.
- Using measures that were mostly under the control of the project team.

Figure 5.12 A Modern View of the Triple Constraint



But what about the Sydney Opera House? It cost somewhere around *sixteen* times as much to build and took at least *twice* as long to complete as the original estimates. Yet it is an enduring and inspiring civic symbol. Was that project really a failure?

The Sydney Opera House illustrates that project success has two dimensions:

- **Product success** — were the expected benefits realized?
- **Project management success** — was the project well-managed?

Simple yes-or-no answers will not suffice since different stakeholders will have different answers. With PRiSM, we no longer ask, “was this project a success?” Instead, we ask, “how successful was this project along each dimension?”

Structured Success Criteria

To ensure useful project success criteria, PRiSM uses a structured format. For example, here's an example of a structured statement for schedule success:

- **Measurable item** — the completion date of every major milestone
- **Comparison statement** — must be within
- **Some number** — one week of the baseline schedule date

Each project is unique, so here are some other examples of schedule success criteria:

- All work completed by the original agreed date.
- All priority functions fully tested and ready for release at least one week before the announced release date.
- Receipt of a valid occupancy permit by November 15, 2025.

Product Success Criteria

Most of the potential product success measures such as reduced carbon footprint, operational improvements, revenue increases, and cost savings are usually beyond the direct control of the project team and are not measurable until well after the project is finished.

But the project management team still needs to know what these measures are so it can make good decisions in support of them. For example, if one of the measures of product success for a software development project is to reduce maintenance costs by 50%, the team might choose to shorten the time for parallel operations to satisfy that criterion.

Project Management Success Criteria

All projects should have at least four measures of project management success—one each for cost, schedule, and scope, and another for stakeholder satisfaction. Larger projects may have more, but four is the minimum. One aspect of stakeholder satisfaction is attainment of sustainability objectives during the project.

Criteria for Good Success Criteria

As with any other tool or technique, project success measures can be overdone. Use the following checklist to help ensure that your measures are good measures. They should be:

- **Complete** — anything unmeasured is likely to be compromised
- **Relevant** — variances should clearly indicate a need for action
- **Valid** — measuring what you intended to measure
- **Easy to understand** — so that stakeholders will accept them
- **Economical to obtain** — to help ensure that they will be collected

5.4. Summary

This chapter provided an introduction to the PRiSM methodology which was designed by GPM to ensure that projects were sustainable. The chapter started with a review of core project management definitions and concepts and then reviewed the phases of the PRiSM project life cycle in some detail. The chapter's final section covered six key PRiSM deliverables.

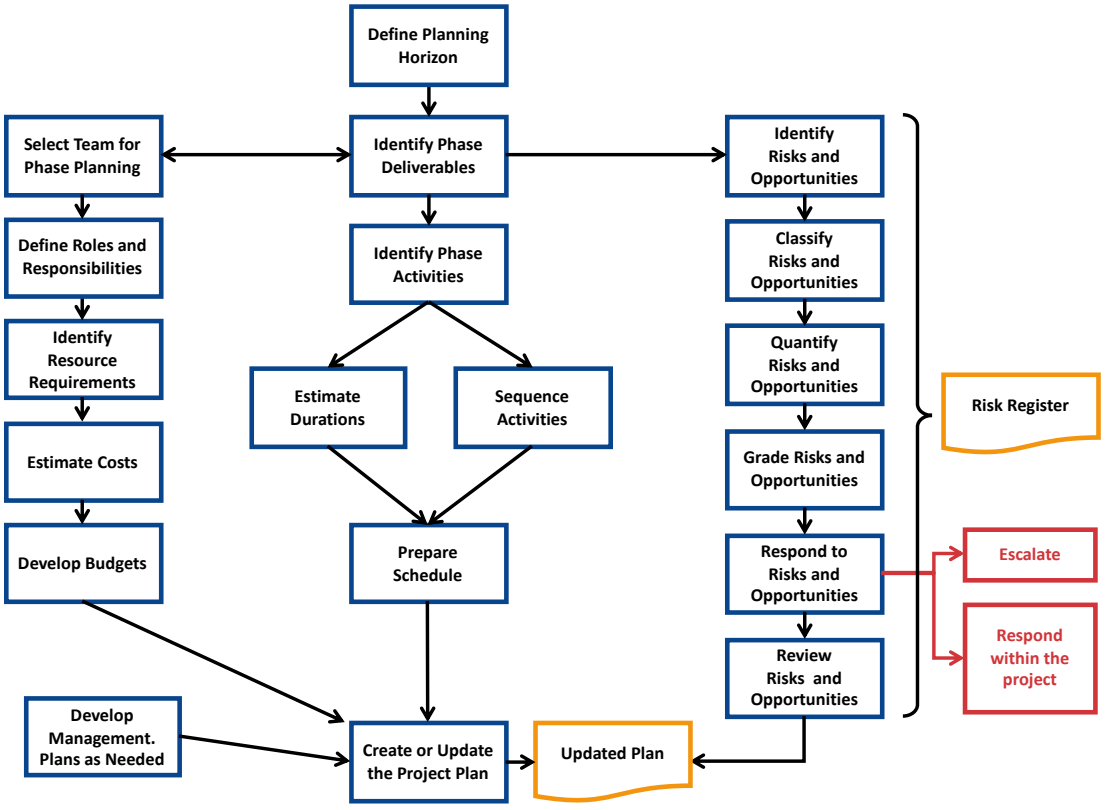
Notes

6. Managing a PRiSM Project Life Cycle Phase

"If you can't describe what you are doing as a process, you don't know what you're doing." — W. Edwards Deming

This chapter describes the activities used to manage the creation of the deliverables described in the previous chapter. For most projects, each phase of the project life cycle will require repeating each activity. However, the amount of effort required for each will vary significantly.

Figure 6.1 Project Management Activities in Each PRiSM Phase



6.1. Basic Planning

Plans are statements of intent: they define what the project is intended to achieve and how to achieve it. Plans will be larger and more complex for larger and more complex projects. Plans are expected to change in response to new information and changing circumstances.

6.1.1. Define Planning Horizon

The first activity requires determining how far into the future to plan. In general, you should plan at least through the end of the upcoming phase. If that is not feasible, the planning horizon should focus on how to get the information required to allow planning through the end of the upcoming phase.

The planning horizon may be extended if all of the following conditions are met:

- This project is similar to others that the team members have completed successfully before.
- You have reliable historical data to support accurate budgeting and scheduling decisions.
- The project's risk profile is within acceptable limits for the funding organization (i.e., project failure would not bankrupt it).

6.1.2. Create or Update the Project Plan

This activity can be performed in parallel with the other project management activities, or it can be the final step in the planning process.

The project plan is a comprehensive set of documents that provides the guidance needed to manage the project. It includes, but is not limited to, the budget, the schedule, identified risks and risk responses, team roles and responsibilities, and the management plans described in Section 6.7.

Access to the project plan will vary based on the project. Proprietary information may need to be protected, and there could be individual privacy issues, but in general, PRiSM assumes widespread availability.

6.2. Staffing and Personnel

The activities described below may include individuals and groups both internal and external to the performing organization. They should always include anyone who contributes directly to the completion of a project deliverable.

6.2.1. Select Team for Phase Planning

As with many other aspects of project management, who needs to be involved with phase planning will vary based on the phase and the nature of the work to be planned. Larger and more complex projects may need several levels of planning teams. Subject matter expertise is almost always required to support planning.

6.2.2. Define Roles and Responsibilities

Defining roles and responsibilities requires answering several basic questions:

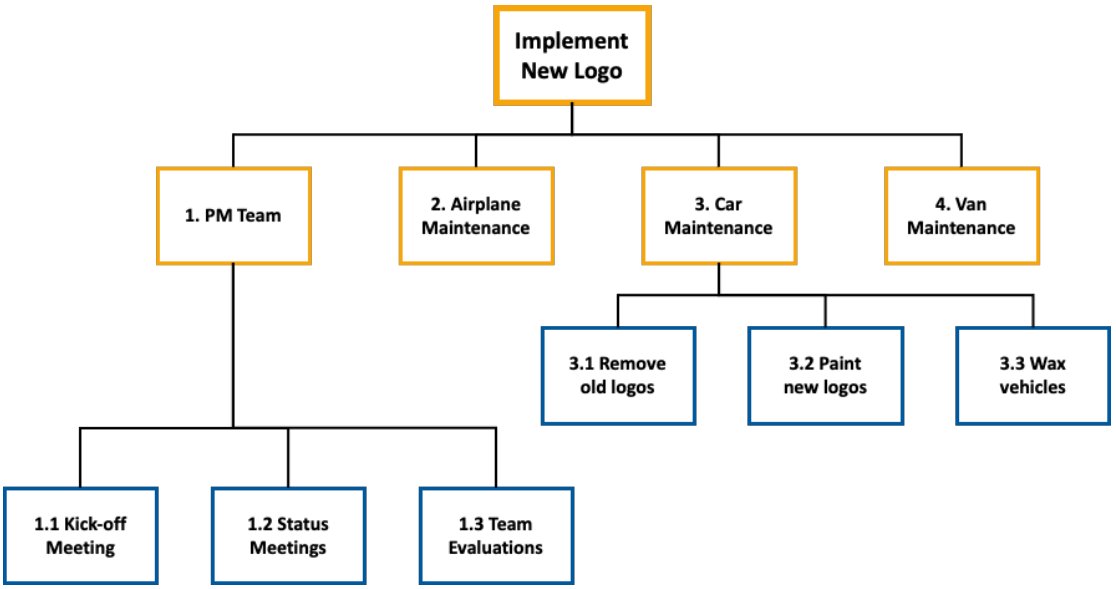
- Who is going to report to whom about what?
- Who will be responsible for creating, reviewing, and approving project deliverables?

Roles are usually documented in a Communications Management Plan as described in Section 6.7. Responsibilities are generally documented using an Organization Breakdown Structure (OBS), a Responsibility Assignment Matrix (RAM), or both. There are two main differences between an OBS and a RAM:

- An OBS includes reporting relationships; a RAM does not.
- A RAM includes what each individual or group is responsible for by deliverable; an OBS does not.

In both cases, the source for the deliverables should be either the Work Breakdown Structure (WBS) or Product Breakdown Structure (PBS) to ensure that all items have been included.

Figure 6.2 Upper Levels of an Organizational Breakdown Structure



There are many varieties of RAM, usually named after the coding used to describe responsibilities. These include PARIS (illustrated below), RACI (Responsible, Accountable, Consulted, Informed), RASCI (RACI plus Support), and others. A RAM may also be called a Linear Responsibility Matrix.

Table 6.1 Partial Example of a Responsibility Assignment Matrix

Team Member → / Deliverable ↓	Sponsor	Project Manager	Educator #1	Educator #2	Designer	Support Staff
1.1 Course outline	A	R	P	S		
2.1 Course content	I	A	P	S	R	
2.2 Graphic elements	I	A			P	
2.3 Participant activities	I	A	S	P		
3.1 Assessment tool	A	R		P		
4.1 Pilot offering	I	A				P

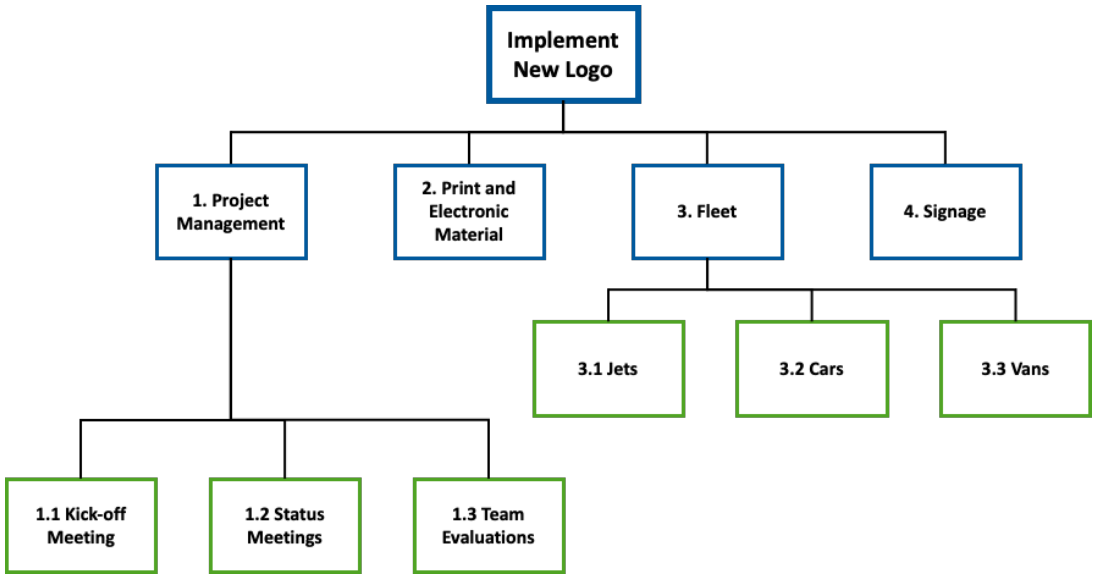
6.3. Deliverables

Deliverables are the physical artifacts that the project produces. They will include management deliverables (status reports, updated project plans, etc.), interim product descriptions (requirements document, design document, etc.), and final products and services (software, buildings, etc.).

6.3.1. Identify Phase Deliverables

Phase deliverables are generally identified through either a Product Breakdown Structure (PBS) or a Work Breakdown Structure (WBS).

Figure 6.3 Upper Levels of a Work Breakdown Structure

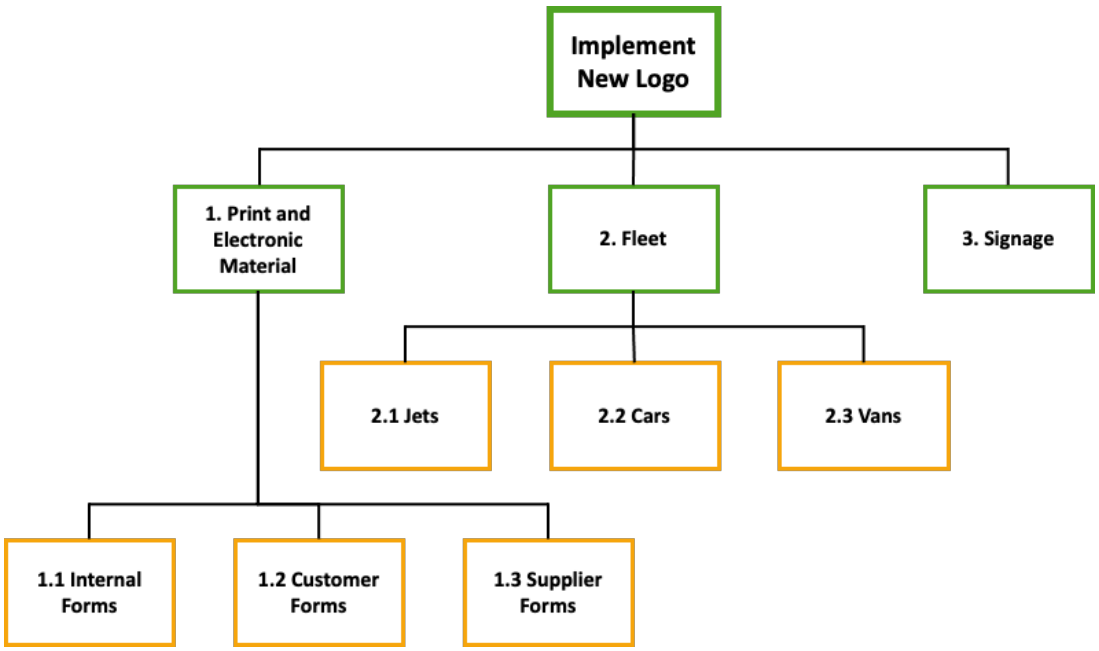


A WBS is a hierarchical breakdown of the components that will be delivered to satisfy the project objectives (see Figure 6.3). As with any breakdown, the lower levels provide more detail about the higher levels. In a WBS, every item is described as a noun (a *thing*). The acceptance criteria for each item are included in a supplementary document.

Some authors mistakenly argue that the items in a WBS should be described using a verb (making each box an *action*). This is incorrect as can readily be determined by examining any recognized project management standard that describes the use of the WBS.

A PBS is also a hierarchical breakdown of the components that will be delivered to satisfy the project objectives. Both breakdown structures should have a numbering system to allow clear reference to each element.

Figure 6.4 Upper Levels of a Product Breakdown Structure



The main difference between a PBS and a WBS is that the WBS includes a branch for management activities (review meetings, status reports, etc.) while a PBS does not.

Neither a PBS nor a WBS is normally developed for the Pre-Project Phase: a simple list is usually adequate to define the deliverables for that phase. If the output of the project is well-understood, it may be possible to develop a reasonably complete PBS or WBS for the balance of the project during the Discovery Phase. For most projects, the coverage of either the PBS or the WBS will be limited to the current phase.

Deliverables should have *acceptance criteria* defined and agreed as soon as possible (but no sooner). Project stakeholders must be made aware that changes to acceptance criteria will almost always affect both budget and schedule. Acceptance criteria are used to determine if the project has delivered what was requested. They must be measurable and unambiguous. They must be achievable within the constraints of the project.

6.3.2. Identify Phase Activities

Each deliverable requires two or more *activities* for its completion. By convention, activities are not included in either the PBS or WBS even though they represent an additional level of breakdown.

For large, complex projects, it may be necessary to create additional levels of detail before defining activities. Additional detail may be required to provide:

- Single-point responsibility for each deliverable
- Sufficient detail to estimate both costs and duration
- Smaller or shorter activities for progress reporting

External contracting—the possibility of controlling external work through contracts—can reduce the need for detailed breakdowns. In this way, areas of the PBS/WBS can be "blocked off" and allocated to the contractor for their own structure to be developed.

6.4. Risks and Opportunities

Risks and opportunities are present in all projects as a consequence of uncertainty: more things can happen than will happen. Risks are possible future events that could have a negative impact on the project while opportunities are possible future events that could have a positive impact.

Throughout the risk and opportunity management process, sustainable project managers should keep in mind:

- Different organizations and different individuals will find different levels of risk acceptable. For example, some people find roller coasters exhilarating while others find them terrifying.
- Almost all of the numbers used in analyzing both risks and opportunities are estimates with varying ranges of uncertainty. In some cases, estimates of probability and impact will be little more than informed guesses.
- Impacts, particularly negative impacts like the loss of life, often have an intangible component that can be hard to factor into the decision-making process.
- Research (Kahneman, 2011) has shown that most individuals are not good at estimating either probabilities or impacts due to factors such as confirmation bias.

6.4.1. Identify Risks and Opportunities

Tools commonly used to *identify risks and opportunities* include:

- **Risk and opportunity checklists** — are domain-specific lists of risks and opportunities that have occurred on previous projects. Many organizations have risk and opportunity checklists that they have developed themselves, and the web is an excellent resource as well.
- **P5 Impact Analysis** — is a sustainability risk assessment intended to analyze the project's product and process impacts across social, environmental, and economic domains.
- **Environmental impact assessment** — is similar to a risk checklist in that it is intended to ensure that all reasonable possibilities have been considered. Environmental scans may be structured or unstructured. One of the more popular structured approaches is called PESTLE which asks the team to consider political, economic, social, technological, legal, and environmental factors.
- **Interviews** — with stakeholders or subject matter experts can elicit ideas that the project team may not have considered.
- **Lessons learned** — are historical records from previous projects, especially similar projects, and can be an excellent source of ideas about future events that could affect this project.
- **Brainstorming** — is an interactive, open format group method to identify risks and opportunities.
- **Assumptions analysis** — all assumptions and constraints can be converted into risk or opportunity statements.

A risk register should be opened at the start of the project, and new risks and opportunities should be recorded as they arise. The risk register (typically, a spreadsheet) documents basic information about each item:

- Cause and effect (*effect* is also called *impact*)
- Probability of occurrence
- Planned response (see Section 6.4.5 below)
- Owner

The risk or opportunity owner is the person responsible for monitoring events to determine if the planned response should be implemented or if the estimated probabilities and effects have changed.

6.4.2. Classify Risks and Opportunities

The first step in classifying risks and opportunities is to determine whether to manage the identified potential event as a risk or an opportunity since most events can be described as either. For example:

- Risk: key staff may become unavailable before the project is over.
- Opportunity: retaining key staff will help meet budget and schedule targets

The next step is to document the components of the potential future event:

- **Cause** — also called *driver* or *source*. This is the situation that allows the uncertainty to exist. For example, *staff turnover* is a source of risk.
- **Event** — the specific event that might arise from the source. For example, if the project's lead engineer gets a new job, that would be a risk event.
- **Effect** — how the event will affect the project's objectives.

6.4.3. Quantify Risks and Opportunities

Quantifying risks and opportunities involves documenting absolute or relative values for the event characteristics that will be used to grade the identified risks and opportunities. Event characteristics always include probability of occurrence and magnitude of effect. They may also include proximity, frequency, and vividness.

Absolute values for effects are usually given in monetary units. Relative values are usually given as a point on a rating scale as illustrated in the next section.

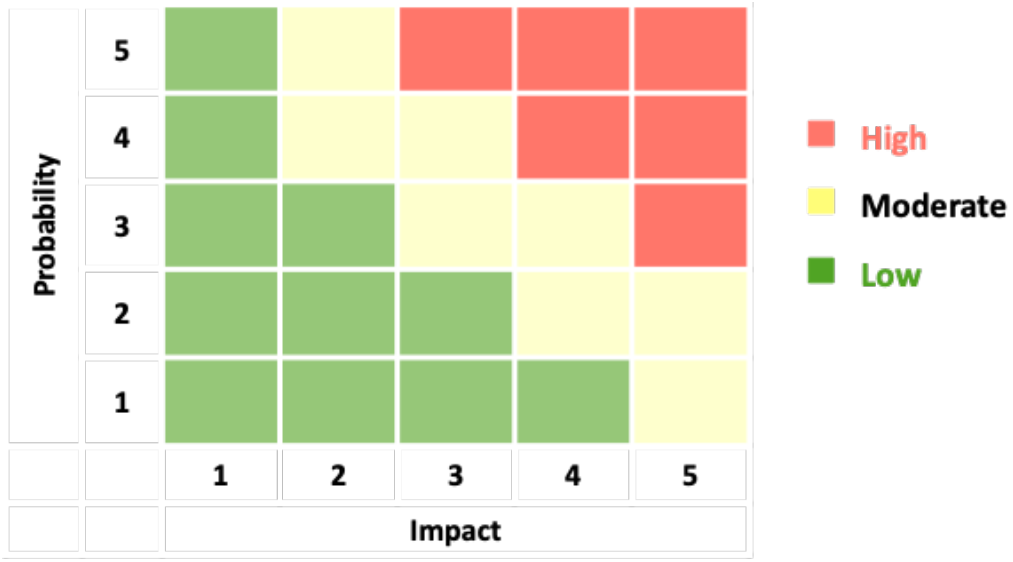
6.4.4. Grade Risks and Opportunities

The most common way to grade risks and opportunities is with a Probability-Impact matrix (P-I matrix) as shown in Figure 6.5. A P-I matrix can be 5x5 as shown or 3x3 if the additional granularity is unlikely to be useful.

The color coding shown here is typical, but not universal. For example, some organizations make all high impact risks red for all levels of probability.

When using a P-I matrix, the ratings should not be multiplied or added since the results of those calculations lack meaning. For example, a result of 20 (5 x 4) does not mean that the risk in that cell is twice as bad as a risk with a result of 10 (2 x 5). In fact, as illustrated in Figure 6.5, a result of 5 x 1 may not be rated the same as one with a score of 1 x 5.

Figure 6.5 Probability-Impact Matrix



Each row and column represents a range that must be defined. For example, in the matrix above, a high cost impact (5) may be greater than US$500,000 while on another project, a rating of 5 might be over US$50,000,000. Each risk or opportunity is placed on the matrix based on its estimated probability and impact with its placement determining how the team should respond.

6.4.5. Respond to Risks and Opportunities

Response plans can be developed and implemented once the risks have been assessed and graded. There are a number of generic response strategies:

- **Mitigate** — do something to reduce the probability, the impact, or both. Contingency plans and cost and schedule reserves are common mitigation approaches.

- **Accept** — this is the response of choice for low probability, low impact risks. Acceptance means that the team will do nothing unless and until the risk becomes a problem.
- **Transfer** — shift responsibility to an organization better placed to manage the risk. Most contracting is done in order to transfer common risks to the contractor.
- **Avoid** — a change in strategy or approach may allow the team to avoid the risk completely. Avoidance means that the risk cannot affect the project in any way: either the probability or impact is zero.
- **Escalate** — pass the risk up the management chain if the team lacks the ability to respond.

Responses to opportunities include:

- **Exploit** — take action to ensure that the opportunity can be realized.
- **Enhance** — do something to increase the probability or the impact that the opportunity can be realized.
- **Share** — shift the responsibility for trying to enhance the opportunity to another party. Where transference usually involves an outside party, sharing is normally done within the organization.
- **Ignore** — do nothing in advance to take advantage of the opportunity.

Response plans are developed after the risks and opportunities have been graded. Responses should be recorded in the risk register.

6.4.6. Review Risks and Opportunities

Risks and opportunities should be reviewed regularly to identify changes to previously identified items as well as to identify new ones. Both changed items and new items should be prioritized and responded to.

When a risk or opportunity is realized (when the potential event actually occurs), either the planned response is executed, or a response is developed if the risk was accepted or the opportunity ignored.

6.5. Cost and Finance

Cost is about how much money can be spent for the project while *finance* is about securing the funds to be spent. On most projects, the project manager only needs to manage cost. On some projects, such as grant-funded projects, they may also need to worry about finance. However, since finance is mostly managed by the project sponsor, we'll focus on cost in this section.

When projects are done under contract, *price* (how much the supplier charges the customer) is also a consideration that may affect project management decisions. The supplier's price can be greater than or less than the supplier's cost.

6.5.1. Identify Resource Requirements

In order to *identify resource requirements*, we start by analyzing the project's deliverables and activities. This activity is focused on identifying what kinds of resources will be required: *estimate costs* below is about identifying how much of each type of resource will be required.

Table 6.2 Typical Resource Categories

Major Categories	Subcategories
Consumables	Raw materials, money (funding), natural resources
Non-consumables	Machinery, technology, facilities, equipment, people, knowledge

6.5.2. Estimate Costs

An *estimate* is an informed assessment of an uncertain event. *Informed* means that you have an identified basis for the estimate. *Uncertain* recognizes that multiple outcomes are possible. Estimates are expressed as ranges. Estimating is covered in more depth in Section 7.1.3.

Cost is a measure of resource usage—employees and contractors must be paid, equipment must be bought or rented, and so on. Cost is usually expressed in monetary terms (dollars, euros, yuan, etc.), but it can also be expressed in terms of hours of effort. Using monetary units instead of effort hours makes it easier to compare estimates within or across projects.

Cost estimating includes identifying and considering alternatives. For example, if you need a hole in the ground for a building's foundation, you may be able to dig that hole with a bulldozer, a backhoe, or a steam shovel.

When preparing cost estimates, you should also document the assumptions behind them to facilitate later analysis if the estimates prove inaccurate. Costs are normally estimated for each resource required to complete the deliverable or activity.

6.5.3. Develop Budgets

A *budget* provides a management control to be used to track project progress. Unlike a cost estimate which is always a range, a cost budget is a single number. Cost budgets should be based on the cost estimates with higher budgets for more uncertain estimates. Many projects will have separate budgets for tracking different categories of costs (e.g., risk responses) or to satisfy the information needs of some stakeholders (e.g., cashflow).

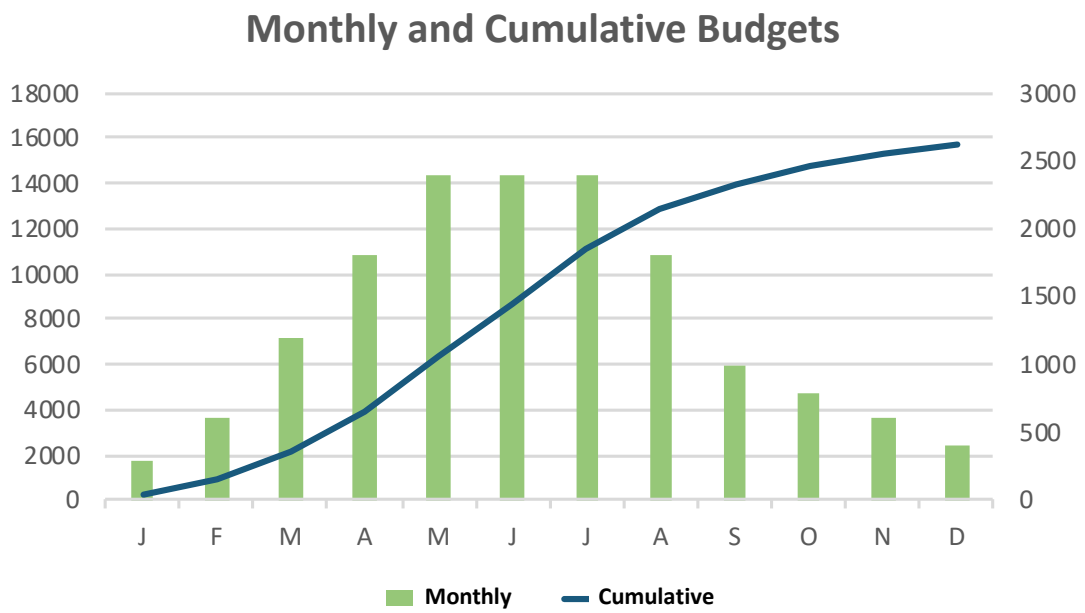
For most projects, the cost budgets will be developed bottom-up: budgets will be developed for the lowest level of planning detail, then summed to obtain a project budget as illustrated in Table 6.3:

Table 6.3 Bottom-up Budget Development

Deliverable	Activity	Activity Budgets	Summed Budgets
Project Total			1,155
Item 1			700
	Activity 1.1	100	
	Activity 1.2	200	
	Activity 1.3	250	
	Activity 1.4	150	
Item 2			455
	Activity 2.1	125	
	Activity 2.2	135	
	Activity 2.3	195	

Budgets may also be displayed graphically. In Figure 6.6, the project has been divided into months. The green bars represent monthly amounts, and the blue line shows the cumulative numbers.

Figure 6.6 Monthly and Cumulative Project Budgets



The cumulative numbers typically take the shape of a stretched letter "s" and are commonly referred to as an "s-curve." In addition to the total project budget shown here, s-curves may be generated for other cost categories.

Larger projects may also require the creation of a Cost Breakdown Structure (CBS). The CBS sums budget items by cost category as shown in Table 6.4.

Table 6.4 Cost Breakdown Structure

Deliverable	Activity	Activity Budgets	Summed Budgets
Project Total			1,075
Labor			575
	Activity 1.1	200	
	Activity 1.2	100	
	Activity 2.1	100	
	Activity 2.2	175	
Materials			500
	Activity 1.1	200	
	Activity 2.2	300	

6.6. Time and Schedule

The schedule is of major importance on most projects, and sustainable projects are no different. Time can be of paramount importance when it comes to responding to natural disasters or taking action to reduce an organization's carbon footprint.

6.6.1. Estimate Durations

As with estimating costs, *estimating durations* involves making informed assessments of uncertain events. Estimates are again expressed as ranges. Estimating is covered in more depth in Section 7.1.3.

The default assumption for estimating durations is to use the duration that produces the lowest cost. If necessary, this assumption can be modified as part of preparing a schedule. Other assumptions which may affect duration estimates include:

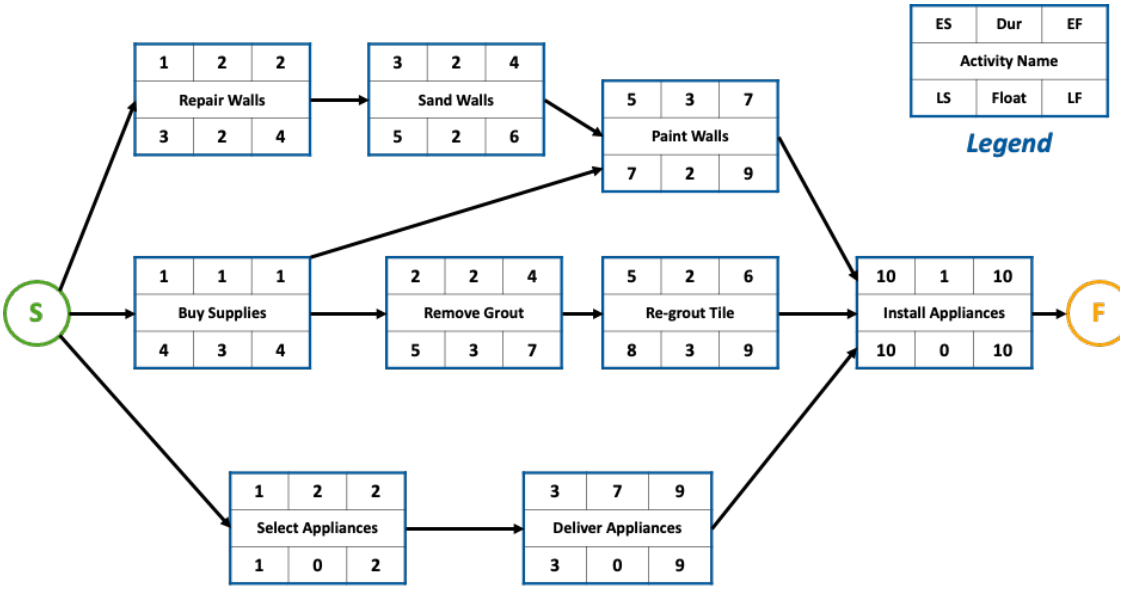
- Resource productivity (resource availability is addressed as part of preparing a schedule)
- The impact of team size if multiple individuals will be involved

Durations are estimated at the most detailed level available, then summed using network analysis to determine the project schedule.

6.6.2. Sequence Activities

In order to *sequence activities*, the planning team must examine the WBS for dependencies: which activities must be done first, what can then be done next, and so on until all activities have been linked. Sequencing can also be done back-to-front: what is the final deliverable, what must be finished before it can be finished, and so on back to the start. Sequences are typically captured in a network logic diagram as illustrated in Figure 6.7.

Figure 6.7 Sample Network Logic Diagram



Sequencing for larger, more complex projects can be quite challenging and may require the services of a professional scheduler. Such projects may require knowledge of specialized dependencies (finish-to-finish and start-to-start) and the proper use of leads and lags. These topics are beyond the scope of this book.

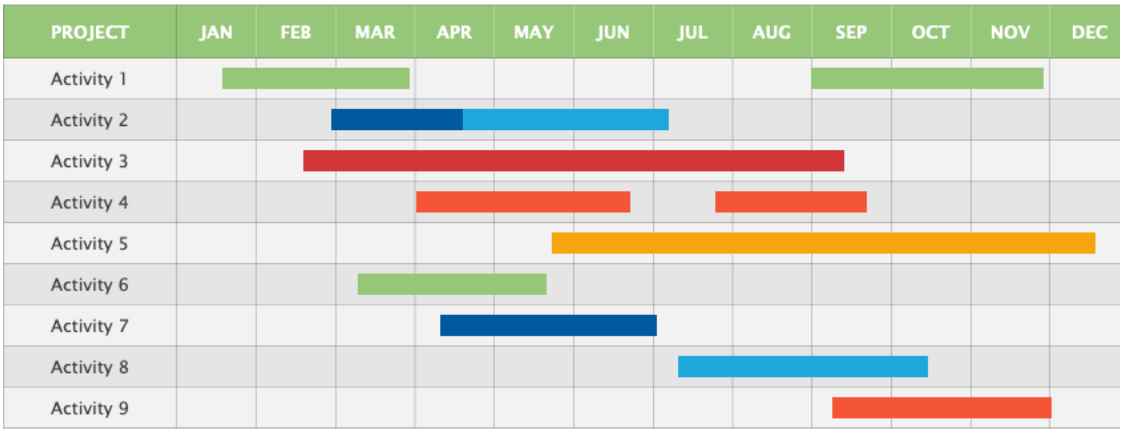
6.6.3. Prepare Schedule

Preparing a schedule involves establishing reasonable start and finish dates for all planned project activities. *Reasonable* means that resources are highly likely to be available to do the work when and as scheduled.

Preparing a schedule also involves doing at least rudimentary network analysis to determine which activities control project completion. This sequence of activities is called the *critical path* and exists on every project whether it is known or not. The network logic diagram in the previous section also includes the results of critical path analysis.

Schedules are often displayed in the form of a Gantt Charts as illustrated in Figure 6.8.

Figure 6.8 Sample Gantt Chart



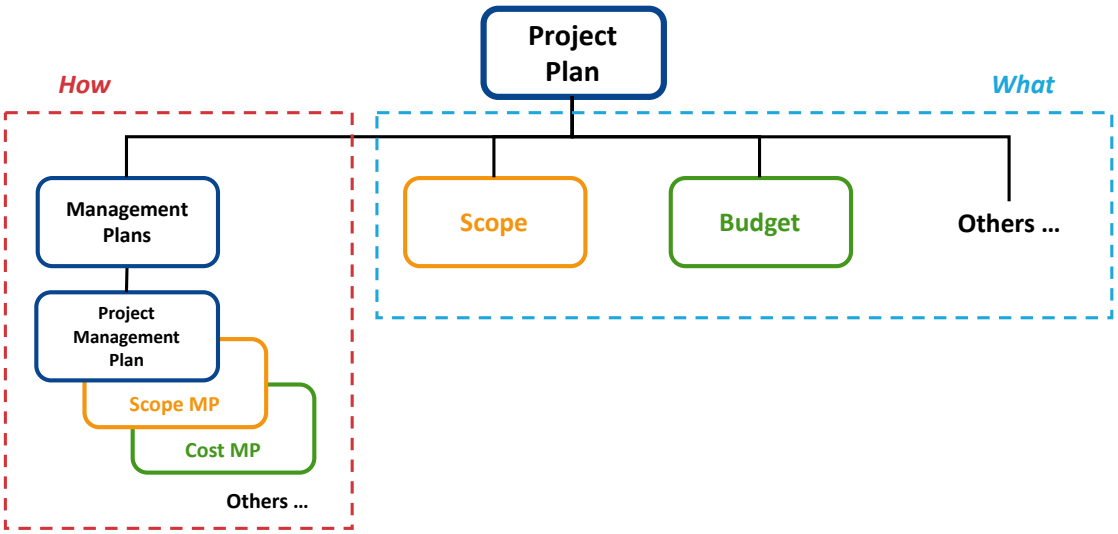
6.7. Management Plans

Management plans are narrative documents that describe the project management team's approach to dealing with project challenges that arise in every project. The depth and detail of each management plan should be determined based on the needs of the project. For example:

- On smaller projects, the Stakeholder Engagement Management Plan and the Communications Management Plan may be combined.
- If a project is being done entirely with internal resources, a Procurement Management Plan would not be needed.

Management plans are subsets of the overall project plan that deal with *how* challenges will be managed. Most of the project plan deals with what needs to be done to complete the project. This relationship is shown in Figure 6.9.

Figure 6.9 Relationship Between the Project Plan and Management Plans



Section 5.3.5 provides more detail about the Sustainability Management Plan. Templates for the other management plans are available from GPM and many other web sources.

Table 6.5 Overview of Typical Contents of Common Management Plans

Management Plan	Typical Contents
Sustainability Management	▪ Key Performance Indicators (KPIs). These will be as outlined in the P5 Impact Analysis. ▪ Environmental impact assessment. A summary of the planned environmental impact and steps that will be taken to decrease the effects or increase the opportunities identified. ▪ Scope exclusions. Any known areas of potential sustainability impact that the project will not address. ▪ Sustainability risk management. Any differences from standard practices in the approach to identifying, analyzing, and responding to sustainability risks. ▪ Reviews and reporting. Steps to take in a project audit regarding sustainability and how sustainability metrics will be reported throughout the project.
continued	

Management Plan	Typical Contents
Benefits Realization Management	▪ Roles and responsibilities ▪ Expected benefits and dis-benefits ▪ Benefits measurement process ▪ Reporting
Communications Management	▪ What information each stakeholder needs ▪ Where the information will be found and how it will be accessed and collected ▪ What each report will contain ▪ How the information will be stored ▪ How frequently each report will be distributed ▪ Which stakeholders will get which reports
Cost Management	▪ Roles and responsibilities ▪ Estimating approach and guidelines ▪ Budgeting approach and guidelines ▪ Units (usually staff hours or currency) ▪ How changes will be managed
Procurement Management	▪ The overall procurement strategy: make or buy, supplier selection practices, etc. ▪ Key products to be purchased, from whom ▪ Acceptance criteria and relevant quality assurance requirements ▪ Methods used to evaluate, select, and manage suppliers ▪ Contractual terms and conditions ▪ Types of pricing and methods of reimbursement ▪ Methods to be used to satisfy legal and regulatory requirements which apply to purchased goods
Risk Management	▪ General approach ▪ Roles and responsibilities ▪ Budgets and timing ▪ Prioritization approach

continued

Management Plan	Typical Contents
Quality Management	▪ Objectives ▪ Roles and responsibilities ▪ Processes and methods ▪ Quality practices ▪ Resources ▪ Sequence of quality management activities ▪ Links to organizational quality management processes and systems
Schedule Management	▪ Roles and responsibilities ▪ Scheduling approach and guidelines ▪ Source of scheduling inputs (e.g., Work Breakdown Structure, Master Formats, contract) ▪ How changes will be managed
Scope Management	▪ Roles and responsibilities ▪ General approach ▪ How changes will be managed ▪ How changes will be integrated into the project ▪ Expected stability of scope
Stakeholder Engagement Management	▪ Roles and responsibilities ▪ Stakeholder list ▪ Engagement strategy ▪ Link to communications management plan

6.8. Summary

This chapter detailed the activities involved in managing a PRiSM project life cycle phase—these activities repeat within each phase. It covered basic concepts for planning, accomplishing, and controlling the work of each phase. The chapter concluded by describing key management plans used to provide support and oversight when using PRiSM.

7. PRiSM Supporting Processes

Good process is everything, but without great people, even the best process will fail. — Michael Dell

The interactions described in the two previous chapters are generally well-defined. For example, a design is a prerequisite for delivery, and identifying phase deliverables is a prerequisite for identifying phase activities.

However, interactions among the supporting processes are dependent on the specifics of the project. For example, estimating happens throughout the project, and different stakeholders may be engaged at different times. Although PRiSM supporting processes are performed intermittently and as needed, they are not optional.

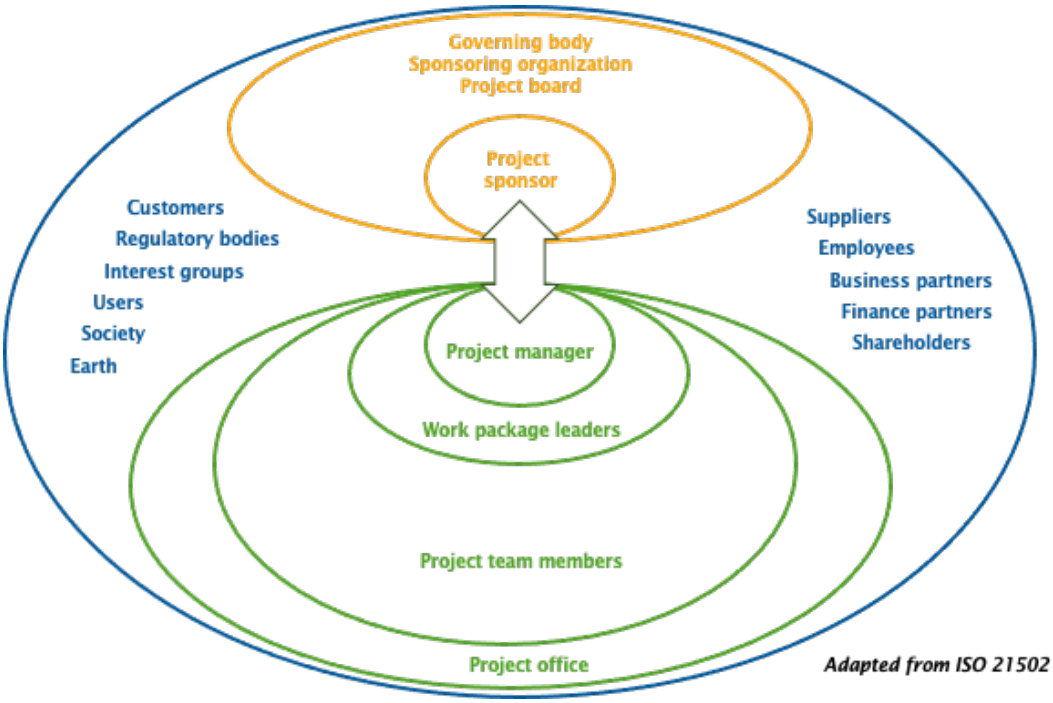
7.1. Stakeholder Engagement

Stakeholders are individuals and organizations who can help or harm the project. Their likelihood of helping or harming is based on how the project affects their interests. *Stakeholder engagement* can be regarded as management of social risks and opportunities and should consider both external and internal stakeholders. In a PRiSM project, stakeholders are invited to participate and are *engaged* rather than *managed* to reflect the fact that that most stakeholder relationships involve influence and negotiation rather than control.

7.1.1. Stakeholder Categories

Stakeholder roles vary widely by type of project, industrial sector, organizational maturity, and other factors. The following paragraphs describe typical roles for the stakeholders identified in Figure 7.1.

Figure 7.1 Project Stakeholders



The stakeholders in green are those most directly involved with the day-to-day activities of the project:

- **Project manager**. Manages day-to-day project activities, ensures effective stakeholder communication, and aligns project deliverables with objectives. May be assisted by a **project management team**. A PMT assists the project manager with expertise in areas such as scheduling, risk management, resource allocation, and quality assurance.
- **Work package leaders.** A work package is a collection of similar activities bundled together to create a kind of mini-project. Work package leaders are thus mini-project-managers.
- **Project team members**. Execute project tasks, contribute specialized knowledge, and ensure work contributes to project objectives.
- **Project Management Office (PMO)**. The PMO is called a Project office in the ISO 21502 diagram. It facilitates good project management practice, aligns projects with strategic goals, and provides governance, tools, and methodologies.

The stakeholders in orange are those responsible for project governance (see Chapter 8):

- **Project sponsor**. Authorizes and supports the project at an executive level, ensuring alignment with organizational strategy and resolving escalated issues.
- **Project board**. Also called a project steering committee. Provides strategic direction and decision-making support.
- **Sponsoring organization.** The entity within the governing body that is funding the project. It may be a department, an agency, or a business unit.
- **Governing body.** The parent of the sponsoring organization.

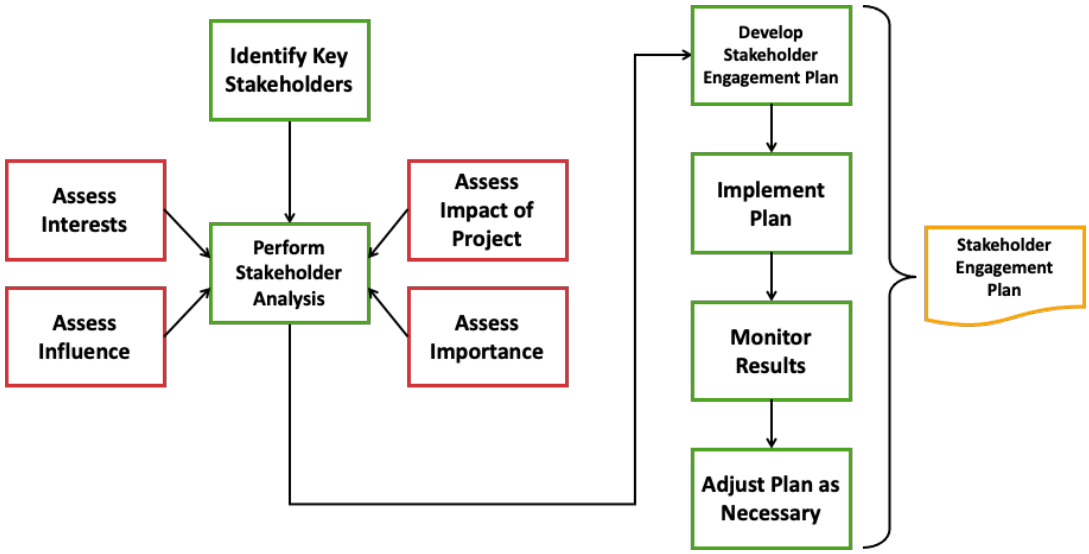
Finally, the stakeholders in blue are those who are not always directly involved with the activities of the project. This does not, however, mean that they are less important. Failure to engage blue stakeholders has wrecked many projects:

- **Customers**. Help define characteristics of the project deliverables, provide feedback on them during the project, and accept the final deliverables.
- **Regulatory bodies.** Mostly government agencies. Usually have some connection to the technical content of the project.
- **Interest groups.** Organizations whose interests may be affected by the project. May be casual assemblies or incorporated entities.
- **Users.** Individuals and organizations that will use the results of the project.
- **Society**. Represents the broader community that can be affected by the project's outcomes. Treating society as a stakeholder helps ensure that societal benefits are addressed.
- **Earth**. Represents the environmental aspects of the project, emphasizing the need for responsible use of natural resources and minimizing the ecological footprint of the project.
- **Suppliers**. Also called vendors or sellers. Supply necessary resources and services, managed through sustainable procurement processes to ensure quality and timely delivery.
- **Employees.** Individuals on the payroll of the sponsoring organization.
- **Business partners.** Organizations that are legally involved with the project.
- **Finance partners.** Organizations that are providing funding to the project.
- **Shareholders.** Organization and individuals owning stock in the governing body.

7.1.2. Stakeholder Analysis

The *stakeholder analysis* process involves identifying the stakeholders and gathering information on their interest (needs, aims) and power (influence) on the project.

Figure 7.2 Stakeholder Analysis Process



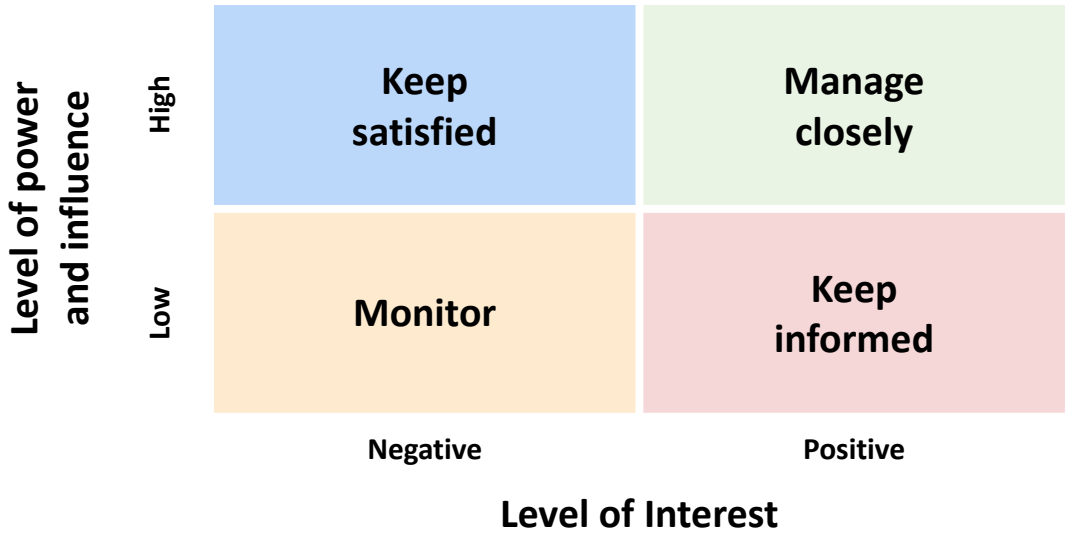
Action plans are developed and implemented to deal with each stakeholder or stakeholder group. These are monitored and controlled to ensure effectiveness.

The composition and influences of project stakeholders usually change as the project progresses, and often change significantly at phase boundaries. The process of stakeholder analysis is, therefore, applied continuously.

Figure 7.3 shows one approach to aid in stakeholder analysis by classifying stakeholders according to their interests and influence:

- **High Power-High Interest Stakeholders.** These occupy the upper right block. These stakeholders are key to project success. They should be fully engaged in all important decisions.
- **High Power-Low Interest Stakeholders.** These stakeholders need less information and less involvement than the high interest stakeholders. Because they have power—formal or informal—to impact the project, it is important to keep them connected and satisfied about progress, but not to overwhelm them with details.

Figure 7.3 Stakeholder Analysis Matrix



- **Low Power-High Interest Stakeholders.** These stakeholders have limited ability to influence the project. It is important to keep them well informed so that you can get their feedback. They can help you solve problems or guide you on how to avoid them in the first place.
- **Low Power-Low Interest Stakeholders.** These stakeholders need only minimal information. Which stakeholder belong in this quadrant and what defines "minimal information" will vary by project.

7.1.3. Fair Process

Fair process is used to create space for authentic, equitable, and inclusive stakeholder engagement. Practicing fair process means being clear about who the decision maker is, inviting input from those who will be affected, being explicit about how their input will be used, explaining the decision-making process, and outlining expectations for after a decision has been made. While it is especially helpful for bigger or trickier decisions, the elements of fair process provide helpful guideposts for all decisions no matter their size or scope.

There are three fundamental steps in a fair process:

- **Engagement.** This means involving individuals in decisions by inviting their input and encouraging them to challenge one another's ideas. Engagement communicates respect for individuals and their ideas. It generates better decisions and greater commitment from those involved in implementing those decisions.
- **Explanation.** Explanation requires clarifying the thinking behind a decision. Explanations reassure stakeholders that their opinions have been considered. With a clear explanation, individuals are more likely to trust the decision maker's choices even if their own ideas were rejected.
- **Expectation Clarity.** This means clearly stating the implications of the decisions and choices made. In particular, stakeholders should be made aware of any impacts on them.

Using fair process does not require unanimity. While fair process gives every idea a chance, the merit of the ideas—and not the level of agreement—is what drives the decision making. In addition, using fair process does not mean that managers forfeit their prerogative to make decisions. Fair process pursues the best ideas whether they are put forth by one or many, or by someone in or out of power.

7.2. Estimating

As noted in Section 6.5.2, an *estimate* is an informed assessment of an uncertain event. *Informed* means that you have an identified basis for the estimate. *Uncertain* recognizes that multiple outcomes are possible. Estimates are expressed as ranges with each value in the range having a discrete probability of occurrence. Table 7.1 illustrates some ranges in use for different kinds of projects.

Estimating accuracy should improve—the range of the estimates should decrease—as the project moves through the phases of the PRiSM project life cycle and more information becomes available.

Estimates can be made at any level of size or detail. Smaller items and more detailed items will normally have smaller ranges.

Table 7.1 Comparative Accuracy of Various Estimate Classes

ANSI Z94.0	AACEI (US)	ACostE (UK)	NASA
Order of Magnitude (–30/+50)	Class 5 (–100/+200)	Order of Magnitude (–30/+30)	Level 4 (–45/+45)
Budget (–15/+30)	Class 4 (–60/+120)	Study (–20/+20)	Level 5 (–35/+35)
	Class 3 (–30/+50)	Budget (–10/+10)	Level 6 (–25/+25)
Definitive (–5/+15)	Class 2 (–15/+30)	Definitive (–5/+5)	Level 7 (–15/+15)
	Class 1 (–5/+10)		Level 8 (–5/+5)

Most projects will require estimates for effort (staff time), cost, duration, elapsed time, and expected future performance. Estimates of expected future performance are typically called *forecasts*.

7.2.1. The Relationship Between Estimates and Budgets

Again, as noted in Section 6.5.2, a *budget* is a management control and is always a single number. For example, if we estimate the effort required to complete a design activity as being between 50 and 80 hours of effort with all of the numbers within that range having an equal probability of occurrence, we can take:

- A *highly conservative* approach, and budget the activity for 80 hours with the expectation that the activity will almost certainly be completed for *less* than the budget.
- A *highly aggressive* approach, and budget the activity for 50 hours with the expectation that the activity will almost certainly be completed for *more* than the budget.
- A *moderate* approach, and budget the activity for 65 hours and expect that the activity is as likely to be over budget as under budget.

With PRiSM, we will generally take a moderate approach based on the assumption that underruns and overruns will balance out over the course of the entire project.

7.2.2. Basis of Estimate

The *Basis of Estimate* (BOE) documents the premise, or basis, for how the estimates were developed. It includes documentation of assumptions, of any studies or analyses used as references, and any other details which influenced the estimates.

7.2.3. Estimating Approaches

There are three basic *estimating approaches*:

- **Parametric** — use measurable attributes (square feet of space, lines-of-code, weight of satellite, etc.) in a mathematical model.
- **Analogous** — factor the actual cost of previous, similar projects.
- **Bottom-up** — sum individual item estimates (tasks, activities, work packages).

They are used at different points in the PRiSM project life cycle as illustrated in Table 7.2. Each has strengths and weaknesses as illustrated in Table 7.3.

Table 7.2 Estimating Approach by PRiSM Phase

Approach	Pre-Project	Discovery	Design	Delivery	Closure
Parametric	Yes	Yes	Maybe	No	No
Analogous	Yes	Yes	Maybe	Maybe	No
Bottom-up	Maybe	Maybe	Yes	Yes	Yes

Table 7.3 Strengths and Weaknesses of Estimating Approaches

Strengths	Weaknesses
Parametric	
Once developed, models can be used for "what if" analysis	May be difficult to explain the details of the model
Replaces opinion with observation	Developing a model may be difficult
Results are defensible	Collecting input data can be costly
continued	

Strengths	Weaknesses
Analogous	
Based on actual historical data	Typically relies on a single result
Quick and inexpensive	Can be difficult to find a similar project
Easy to understand	Adjustments may be unrealistic
continued	
Bottom-up	
Easily understood by others	May require significant time and effort
Credibility provided by visibility into the details	Limited ability to do "what if" analysis
Errors in one item unlikely to compromise overall estimate	No measures of statistical confidence
Provides basis for preparation of performance measurement baselines	Limited visibility into drivers

7.2.4. Three-point Estimates

The most common approach to estimating on projects today is to use *three-point estimates* to describe the range of possible actuals:

- **Most likely** — the value that is more probable than any other
- **Optimistic** — the lowest reasonable value
- **Pessimistic** — the highest reasonable value

Three-point estimates can be used with any of the basic estimating approaches described above.

Triangular Distribution. Using a *triangular distribution* means that we assume the three-point estimate defines a "curve" in the shape of a triangle. The expected value or mean of the distribution is normally used as the budget for the item estimated and is calculated as follows:

$$\text{Expected Value} = (\text{Optimistic} + \text{Most Likely} + \text{Pessimistic}) \div 3$$

For example, if we think an activity is most likely to take 5 days, unlikely to take less than 4, and equally unlikely to take more than 12, the expected duration would be:

Expected Value = (4 + 5 + 12) = 21 ÷ 3 = 7 days

Beta Distribution. The Program Evaluation and Review Technique (PERT), developed in the late 1950s, assumed a beta distribution as the likely shape of an activity range estimate. The inventors of PERT approximated the expected value of a beta distribution using the following formula:

Expected Value = (Optimistic + (4 x Most Likely) + Pessimistic) ÷ 6

Typically, we use this value as the budget for the activity. For example, if we think an activity is most likely to take 5 days, unlikely to take less than 4, and equally unlikely to take more than 12, the expected duration with the PERT approximation would be:

Expected Value = (4 + (4 x 5) + 12) = 36 ÷ 6 = 6 days

7.2.5. Summing Estimates

Since estimates are ranges, statistical techniques must be used to sum them. Cost and effort estimates can be summed using the Method of Moments. Cost, effort, and duration estimates can be summed using a Monte Carlo simulation. Both approaches require a minimum of 25 data points (estimates) for their results to be reliable.

Remember that the results of these calculations are still estimates: because of the uncertainty of the inputs, there is uncertainty in the outputs as well.

Method of Moments. Calculate the expected value of each distribution as described above. Total the expected values to obtain the expected value for the project.

Calculate the variance of each distribution using the following formulas:

Triangular Distribution = ((Pessimistic – Optimistic) ÷ 5)^2

PERT = ((Pessimistic – Optimistic) ÷ 6)^2

Sum the variances, then take the square root of that number to obtain the standard deviation for the project. Use one of the following approximations for an estimate of the project range:

±1 standard deviation = 70% likelihood of results within that range
±2 standard deviations = 90% likelihood of results within that range
±3 standard deviations = 99% likelihood of results within that range

Monte Carlo Simulation. To perform a Monte Carlo simulation, use a random number generator to select a random value from within the range of each estimate. Add these numbers to obtain the results for the first trial. Run additional trials (usually at least 100, although simulations with 1000 trials are not uncommon) and record the results. Calculate the expected value (mean) and the standard deviation of the trial results. Use the approximations above for an estimate of the project range.

7.3. Team Development

Team development is fundamentally about trying to create a situation where "the whole is greater than the sum of the parts."

7.3.1. Teams vs. Work Groups

Teams are based on mutual accountability rather than individual accountability. An effective team is cohesive, aware of the success criteria, motivated towards achieving them, and committed to supporting other team members. Typically, team members communicate well, share information, and make decisions together.

7.3.2. Team Building Activities

Team building activities can be used to enhance team performance through:

- Building more effective working relationships
- Reducing team members' role ambiguity
- Finding solutions to team problems

Fun is an important component to team building, but the project manager must remember that the intended result is to become more productive, more focused, and better aligned. Team building activities should be chosen to suit the team's personalities or the results may be damaging rather than constructive.

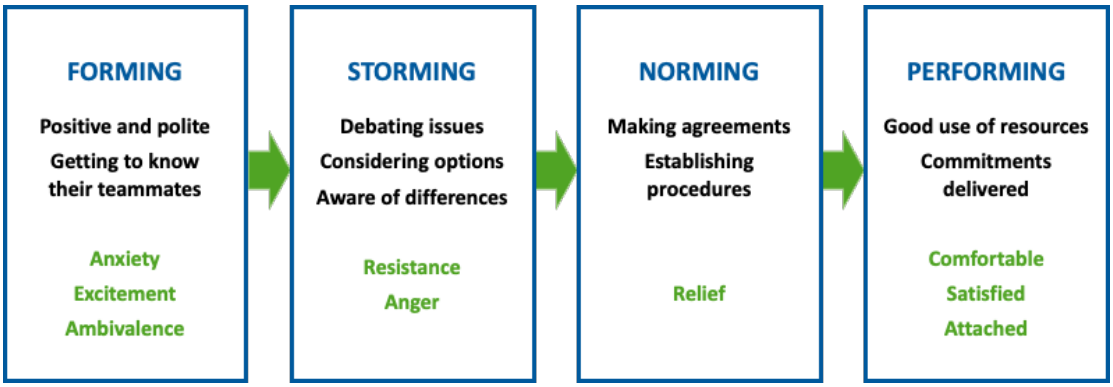
7.3.3. Tuckman's Stages of Team Development

In 1965, Dr. Bruce W. Tuckman suggested that teams need to go through three stages of development before reaching the fourth stage of *performing*:

- **Forming** — the team is established. Individuals are anxious about their personal identity, role, the impression they make, and the attitudes and backgrounds of others.
- **Storming** — differences emerge between individuals as they sort out their roles. This stage is characterized by hostility and disruption.
- **Norming** — the team develops ways of working together. Closer relationships are created, and real camaraderie may emerge. Roles and norms are established.
- **Performing** — the team becomes productive.

In Figure 7.4, the black text describes what the team members are doing at each stage while the green text describes how they are feeling. The project manager will generally being more relationship-oriented in the first three stages and more task-oriented in the final one.

Figure 7.4 Tuckman's Stages of Team Development



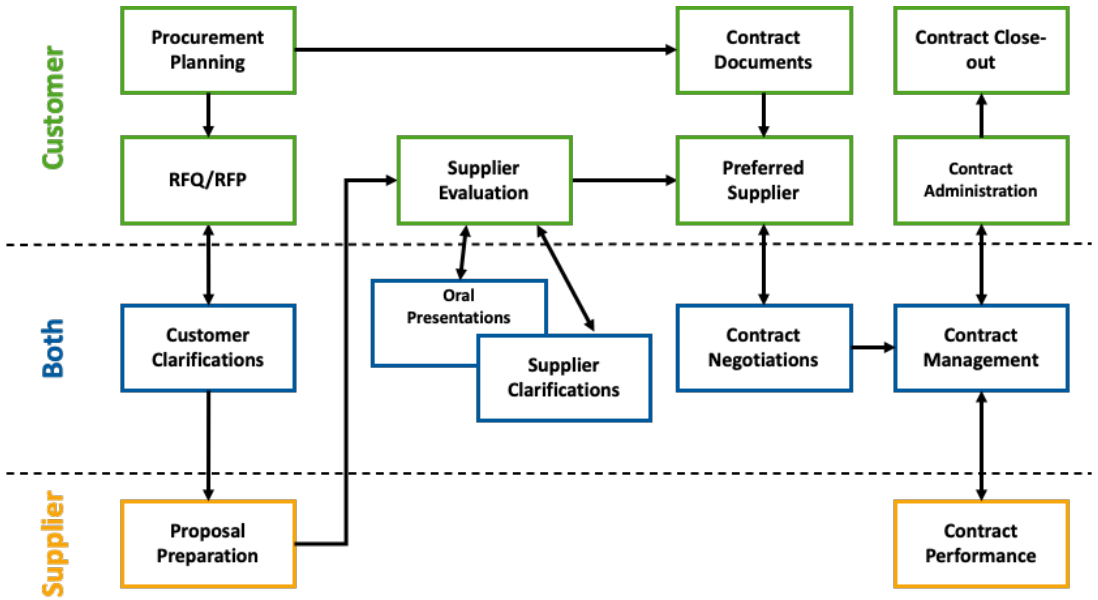
Project managers need to understand these stages (and especially the team's feelings) to help their teams reach the performing stage. For example, attempts to avoid storming can actually prevent the team from norming.

In 1977, Tuckman added a fifth stage—adjourning—to deal with the process of closing down the project. Failing to deal with the emotions involved during adjourning can cause last minute problems on a project.

7.4. Sustainable Procurement

Sustainable procurement is the process of sourcing, acquiring, and managing products and services to not only minimize negative impacts but also to actively contribute to ecological restoration and social regeneration. A sustainable procurement process includes planning, developing contract documents, evaluating suppliers, and managing the contracts. Each of these activities should be designed to ensure that procurement activities contribute positively to the project's regenerative sustainability objectives. The PRiSM procurement process is illustrated in Figure 7.5.

Figure 7.5 PRiSM Procurement Process



For a project to be sustainable, its procurement activities must also be sustainable. This generally requires including:

- Sustainability considerations as part of procurement planning.
- Past social and environmental performance of potential suppliers among the criteria for supplier selection.
- Social and environmental performance during the project as a factor in supplier reviews.

7.4.1. Procurement Planning

Unless the project will be done without any procurement (i.e., done entirely with internal resources), the project management team should prepare a Procurement Management Plan as described in Section 6.7. The plan should reflect any relevant organizational policies and procedures and identify the products or services needed while considering their environmental and social impacts. This planning should include an assessment of past sustainability performance and prioritize suppliers who demonstrate a commitment to regenerative practices, such as ecological restoration and social regeneration.

7.4.2. Request for Proposal

A *request for proposal* (RFP) is a document prepared by the customer which describes what the customer would like to purchase and how it plans to manage the contract. It may also be called a request for quotation (RFQ) or an invitation to bid (ITB). An RFP will normally include all of the following items:

- Introduction or overview
- Statement of Work (SOW)
- Decision process and schedule
- Format of the response
- Contract type
- Contact person
- Required contract terms

The SOW is a narrative description of what the supplier is expected to deliver. It should include:

- Characteristics of the item to be supplied
- Schedule requirements
- Cost requirements
- Reporting requirements
- P5 compliance requirements

7.4.3. Contract Type

There are five major contract types:

- Fixed price (also called lump sum)
- Unit price (also called re-measurable)
- Cost reimbursable (also called cost plus)
- Incentive fee
- Hybrid

Table 7.4 illustrates the key characteristics of each type.

Table 7.4 Characteristics of Major Contract Types

Contract Type	Amount Paid to Supplier	Cost Risk Borne by
Fixed Price	One total amount as specified in the contract; usually paid in increments	Supplier
Unit Price	Fixed price by line item with quantities allowed to vary with limits	Supplier
Cost Reimbursable	Based on supplier's actual costs	Mostly by customer
Incentive fee	Fixed price or cost reimbursable as agreed with incentives or penalties as agreed	Shared
Hybrid	A combination of the above	Varies by item

A fixed price contract means that the supplier will bear any losses from price increases in return for obtaining the benefits of price decreases. Fixed price does not directly affect either technical or schedule risk, although the supplier may be tempted to compromise quality to reduce the impact of overruns. Fixed price contracts typically require a more detailed description of the item to be purchased in order to allow the supplier to make an informed decision about accepting the cost risk. Any change to the product characteristics requires an adjustment to the price.

A unit price contract requires a list of items or components with unit prices for each. For example, on a highway construction project, units might include labor, equipment use, gravel, and concrete with estimated quantities of each. Suppliers agree to deliver items for the unit price, and quantities are allowed to vary within specified limits without triggering a price adjustment.

A cost reimbursable contract requires visibility into the supplier's actual costs including fringe benefits for employees and overhead amounts such as rent and general management. With cost reimbursable contracts, changes to product characteristics are usually easier to make since the supplier cannot lose money. Many cost reimbursable contracts include incentives to encourage the supplier to exercise good management control.

The type of contract should be selected based on the needs of the project. For example, fixed price contracts usually work best for products with well-defined requirements. Cost reimbursable contracts are better when the requirements are uncertain.

7.4.4. Supplier Identification

Most larger organizations will maintain a database of suppliers who have been pre-qualified for certain types of work. When such a database is available, the RFP should be sent to qualified organizations.

If there is no database, the project management team will have to develop its own list of potential suppliers. This can be done by researching business directories, industrial libraries, and trade journals, or through networking.

Potential suppliers may also be identified by advertising in professional journals and local publications.

In situations where it is known for certain that only a few suppliers have the necessary abilities, the project management team may identify those suppliers directly: this is called *short-listing*. Whenever possible, a short-list should include at least three potential suppliers.

In extreme cases, or when time is of the essence, the procurement may be limited to a single potential supplier—this is called *sole source* procurement.

Additionally, identifying potential suppliers involves not only traditional methods but also market research and engagement with suppliers who demonstrate leadership in sustainability and regenerative practices. It is important to seek out suppliers who are actively involved in initiatives that restore ecosystems or contribute to community well-being. These suppliers should be prioritized, as their practices align with the project's goals of promoting both sustainability and regeneration.

7.4.5. Selection Criteria and Weights

Selection criteria and weights (the relative importance of the selection criteria) should be driven by the likely effect on the project success criteria and on the sustainability factors. For a PRiSM project, selection criteria should always include the P5 costs and benefits caused by the potential supplier and its supply chain.

Other criteria will depend on the nature of the item being purchased. However, it is also essential to establish selection criteria that prioritize not just sustainability but also regenerative impact. This includes assigning weights to factors such as contributions to biodiversity, circular economy practices, and community development alongside traditional considerations like environmental impact and social responsibility.

7.4.6. Supplier Selection

There are two major approaches to supplier selection:

- **Lowest price, technically acceptable.** Prospective suppliers submit technical and commercial (cost) proposals separately. The technical proposals are screened or scored against the defined selection criteria. Commercial proposals for all technically compliant suppliers are then opened, and the lowest price is selected.
- **Best value.** Proposals are still scored against defined criteria, but with this approach, cost is just another criterion. The highest score is selected.

In both cases, the key is to define appropriate criteria and evaluate those criteria as objectively as possible. Selection criteria should not only focus on technical and financial aspects but also consider the supplier's ability to minimize negative impacts on the environment and society. This means incorporating sustainability and regenerative criteria into the selection process.

Rather than immediately dismissing suppliers who don't fully meet sustainability standards, organizations should implement a benefits system that encourages improvement. Partnering with suppliers allows them time to meet the sustainability expectations, creating a collaborative approach that supports long-term positive outcomes.

Once a supplier has been selected, it will be necessary to negotiate and sign a contract. Some contracts are simple and straightforward; others are more complex. For example, a personal services contract for a technical expert might only require 4-5 pages, while a contract for a bridge construction could easily require a few hundred pages.

7.4.7. Contract Management

Managing contracts with a focus on sustainability and regeneration is crucial. This involves regular monitoring of supplier performance against both sustainability and regenerative criteria. Contract management should ensure that any risks to sustainability or regenerative outcomes are identified and mitigated promptly, with opportunities for continuous improvement integrated into the contract terms.

7.4.8. Contract Close-out

Once the work of the contract has been completed, it must be closed-out. This normally includes:

- Verification that the supplier has accomplished all administrative tasks. These may include return of the customer's property, disposition of classified or confidential material, and settlement of any sub-contracts.
- Settlement of outstanding issues such as disallowed costs or un-liquidated advances.
- Verification that the work is actually complete and that no overpayments have been made.
- Release of any unneeded amounts from the organization's budgeting system.
- Ensuring that all required paperwork has been submitted to the proper authorities.
- Approval of the final payment.
- Obtaining a contract completion statement from the supplier.
- Disposition of files.

Some of the information in the contract files must be kept for a specific number of years. These record-keeping retention requirements are sometimes the result of an external legal requirement and sometimes included in the contract's terms and conditions.

7.5. Performance Monitoring and Control

Performance monitoring (also called *status reporting, progress reporting*, or *performance measurement*) is the process of collecting and reporting information about how the project is progressing towards its objective. The purpose of performance monitoring is to discover variations from plan.

Control is the process of analyzing that information, evaluating the impact of variations, and responding as necessary. The purpose of control is to determine the best way to achieve the project's success criteria. Tolerances and triggers allow work to continue when the variations are minor.

In general, performance should be checked monthly, and more often if the project scope is unstable or the project is expected to take less than a year.

7.5.1. Performance Measures

Virtually all projects should report performance against the following measures:

- **Planned costs** — amounts expected to be spent. These amounts may also be called *budgeted costs*, and if they have been assigned to a particular time period, *scheduled costs*.
- **Actual costs** — amounts spent on project activities. Actual costs include labor, materials, rentals, and purchases. Actual costs are usually reported in monetary units (dollars, euros, yuan, etc.), but they may also be reported in labor hours.
- **Work completed** — this may involve a simple count of completed activities or more complex measures as described below in Section 7.5.3 on Earned Value Management.
- **Schedule results** — a comparison of planned start and finish dates to actual start and finish dates.
- **Stakeholder satisfaction** — are the key stakeholders satisfied with the project to-date?

Many projects, particularly larger projects and projects using contractors to do much of the work, will also want to report performance against the following measures:

- **Committed costs** — amounts that have been set aside for future work.
- **Accrued costs** — amounts owed for work that has been done but not yet recorded as an actual.
- **Cashflow** — the difference between amounts paid and amounts received.

7.5.2. Variance Analysis

Variance analysis involves comparing the current (actual) state of the project to its expected (planned) state. Both the current state and the expected state can be measured used any of the performance measures described above. Variance analysis can compare static data or trends (also called *trend analysis*).

Variance analysis is used to provide guidance for taking corrective action by forecasting future performance. In preparing and using such forecasts, project managers should keep in mind the insight from statistician Charles Box: all forecasts are lies; some forecasts are useful.

Earned Value Management, described in Section 7.5.3, is fundamentally a form of variance analysis.

Variance analysis typically includes tolerances and triggers for each measure as illustrated in Table 7.5. Tolerances and triggers should be defined for each of the project's success criteria to facilitate decision making at the appropriate management level. For example, variances within the tolerance limits for a given work package would be handled by the manager at that level without involvement from the sponsor or project manager.

Table 7.5 Typical Management Responses to Variances

<table>
<tr><th rowspan="2">Percent of Budget</th><th colspan="2">Activity Results</th><th colspan="2">Cumulative Results</th></tr>
<tr><th>Mgmt. Response</th><th>Reporting Status</th><th>Mgmt. Response</th><th>Reporting Status</th></tr>
<tr><td>+20 or more</td><td rowspan="3">Investigate</td><td>Red</td><td rowspan="2">Corrective action</td><td rowspan="2">Red</td></tr>
<tr><td>+15</td><td rowspan="2">Amber</td></tr>
<tr><td>+10</td><td>Investigate</td><td>Amber</td></tr>
<tr><td>+5</td><td rowspan="3">No action</td><td rowspan="3">Green</td><td rowspan="3">No action</td><td rowspan="3">Green</td></tr>
<tr><td>0</td></tr>
<tr><td>–5</td></tr>
<tr><td>–10</td><td rowspan="3">Investigate</td><td rowspan="3">Amber</td></tr>
<tr><td>–15</td><td>Investigate</td><td rowspan="2">Amber</td></tr>
<tr><td>–20 or more</td><td>Corrective action</td></tr>
</table>

Tolerances are often defined through a color-coding system: Red-Amber-Green (RAG) after the colors of traffic lights.

7.5.3. Earned Value Management

Earned value management (EVM) compares the amount of completed work to the amount of planned work at any time in the project. To be effective, earned value measurements must be applied and analyzed at both project and detail levels. Variances show areas that are under- or over-achieving.

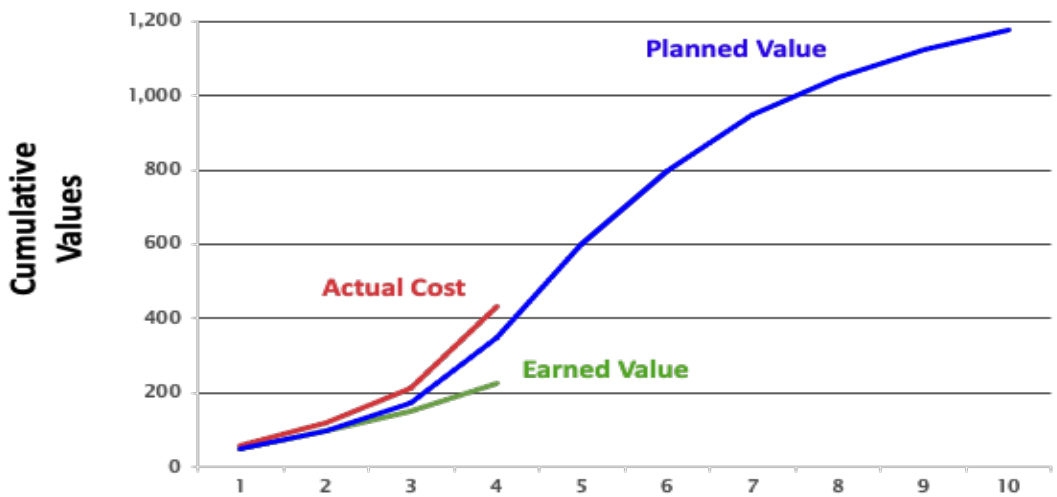
Earned value management uses the following measures:

- **Planned Value (PV)** — the amount budgeted for each activity or deliverable sorted by the reporting period when it is expected to be spent. PV includes all of the work of the project.
- **Actual Cost (AC)** — the amounts spent for the work accomplished.
- **Earned Value (EV)** — the amounts budgeted for the work accomplished.

Following is a simple example illustrated in Figure 7.6. This project has:

- A total budget of US$1.2 million
- 1,000 activities, each with an expected cost of US$1,200
- A 10-month schedule

Figure 7.6 Earned Value Measures



Planned value is established first. The activities were scheduled using critical path analysis. The schedule has been analyzed for resource usage, and the necessary resources have been committed. Since the number of staff assigned to the project will start out low, then ramp up in the middle before tapering off at the end, the Planned Value line shows the classic *s-curve* shape.

After four months, 175 activities have been completed for an **Earned Value** of US$210K. These 175 activities incurred a total **Actual Cost** of US$420K. The schedule called for 320 activities to be complete at the end of month 4 at a cost of US$384K. We can use this information to calculate the variances shown in Table 7.6.

Table 7.6 Earned Value Formulas and Sample Calculations

Metric	Formula	Sample Values
Planned Value	Input	384,000
Actual Cost		420,000
Earned Value		210,000
Cost Variance	EV – AC	-210,000
Schedule Variance	EV – PV	-174,000
Cost Performance Index	EV ÷ AC	0.50
Schedule Performance Index	EV ÷ PV	0.55

The performance indices can be used to predict future project performance. For example, if we assume that project performance to-date is representative of likely future performance, we can divide the total project budget by the CPI to get a prediction that our project will cost US$2.4 million before it's done.

7.5.4. Corrective Action

Corrective action is anything done to improve the project's chances of meeting its success criteria. It is typically taken in response to variances from plan, but it can also be taken in response to changes in the outside environment, and in particular, in response to changes that affect the business case.

Corrective action normally involves adding, deleting, or modifying activities. Any such changes should be handled through the change control process. The most extreme form of corrective action is cancelling the project.

7.6. Change Control

The purpose of *change control* is to ensure traceability and accountability for any modifications made to project documentation such as the project plan or product descriptions. Uncontrolled changes will undermine the validity of baseline plans and forecasts. Uncontrolled change is a frequent cause of project failure.

Any changes should be clearly and swiftly communicated to the relevant stakeholders to ensure that there is no misunderstanding of what versions or what specifications the project is working to.

Note that change control practices should *never* be used to stifle change. Change is normal and natural on all projects. Changes may be generated internally by the project team or externally by clients, regulators, or the needs of the funding organization.

7.6.1. Change Control Board

A *change control board* (CCB), also called a change advisory board, has ultimate responsibility for approving changes. On smaller, less complex projects, the CCB may be the project sponsor or the project manager. On larger, more complex projects, it will typically include other key stakeholders as well. When the project has a steering committee or project board, that entity will often function as the CCB.

On very large or very complex projects, there can be multiple CCBs with responsibility for different kinds of changes. In every case, responsibilities must be clearly defined.

7.6.2. Change Control Process

A typical *change control process* is shown in Figure 7.7.

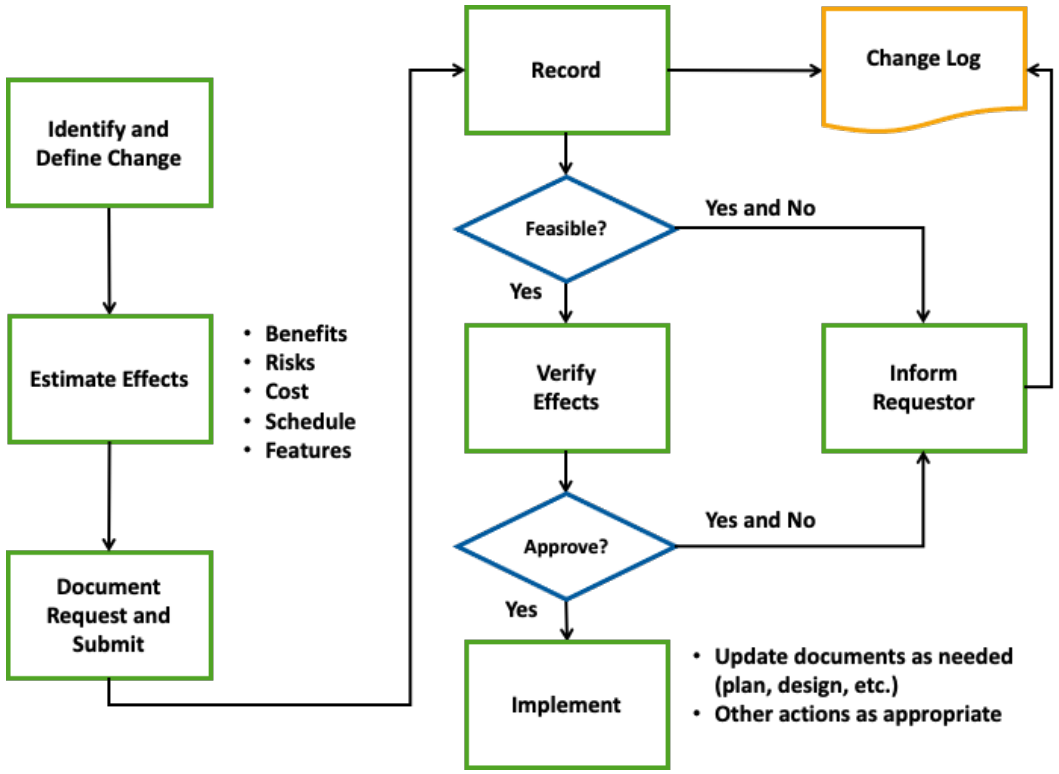
Requests may come from any stakeholder. All requests should be made on a change request form and recorded in a change request register (also called a change request log or simply change log).

The change request process should capture the following information:

- **Description** — a narrative description of the change along with the date submitted, the priority, the reason for the change, and expected benefits.

- **Impact assessment** — how will the disposition of the change (accepted or rejected) affect the project? The change should be evaluated against at least the business case and the P5 factors. Assessment includes estimating cost, schedule, risk, and quality impacts.
- **Disposition** — was the change accepted, rejected, or modified?
- **Updates** — what documentation was modified as a result of the disposition?

Figure 7.7 Change Control Process

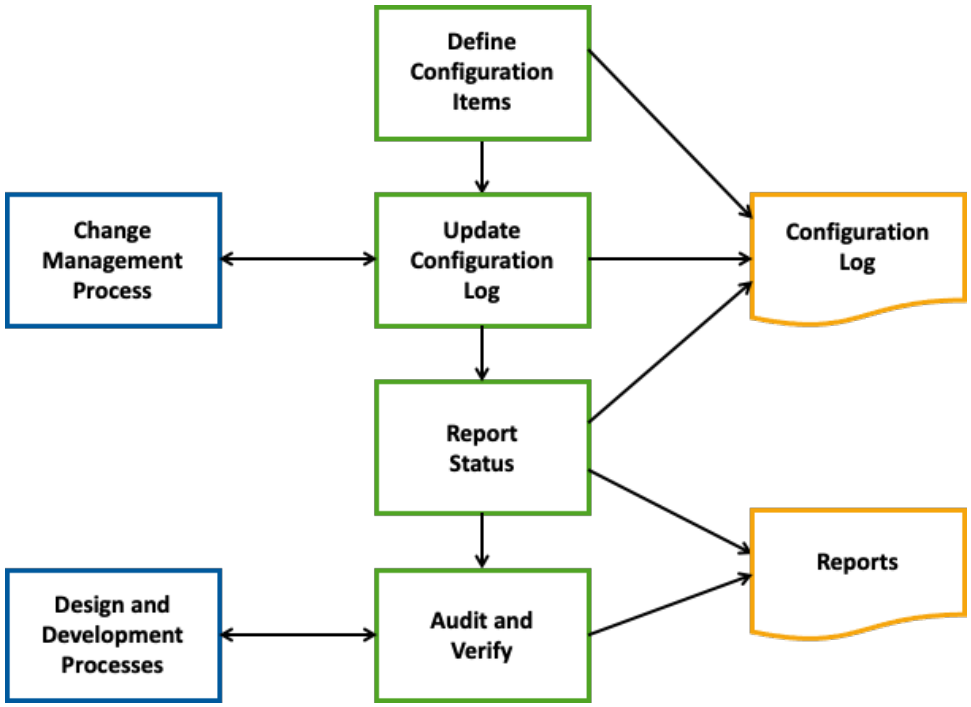


7.7. Configuration Management

The purpose of *configuration management* is to ensure the integrity of the deliverables by ensuring that their description (specification) matches their actual form and function. It is most commonly applied to physical products but can be applied to documents such as the project plan as well.

The configuration of an item defines what it is (observable characteristics) and what it does (functional characteristics). A configuration item is a product or component controlled by the configuration management system. A configuration item can only be changed through the change control process.

Figure 7.8 Configuration Management Process



Configuration management is undertaken alongside the change control process and involves four main activities: identification, control, status accounting, and auditing:

- **Identification** — products that are to be controlled are called configuration items. The items to be controlled are identified by the project team and approved by the project manager. Each item is given a unique reference number.
- **Control** — once a configuration item comes under control, it is "frozen." This means that the change process must be applied before the configuration (description) of the item can be changed. This prevents ad hoc changes and ensures that changes can be tracked during the life of the configuration item.

- **Status accounting** — all approved changes are recorded in a log (register).
- **Auditing** — checks are made to ensure that each item conforms to its technical specification and that each component in a system is compatible with others.

7.8. Issue Management

In PRiSM, an *issue* is defined as a realized risk or opportunity that cannot be handled by the project manager. This is often because the project manager lacks either the authority or the resources to deal with it. Issues differ from problems in that problems can be resolved by the project manager.

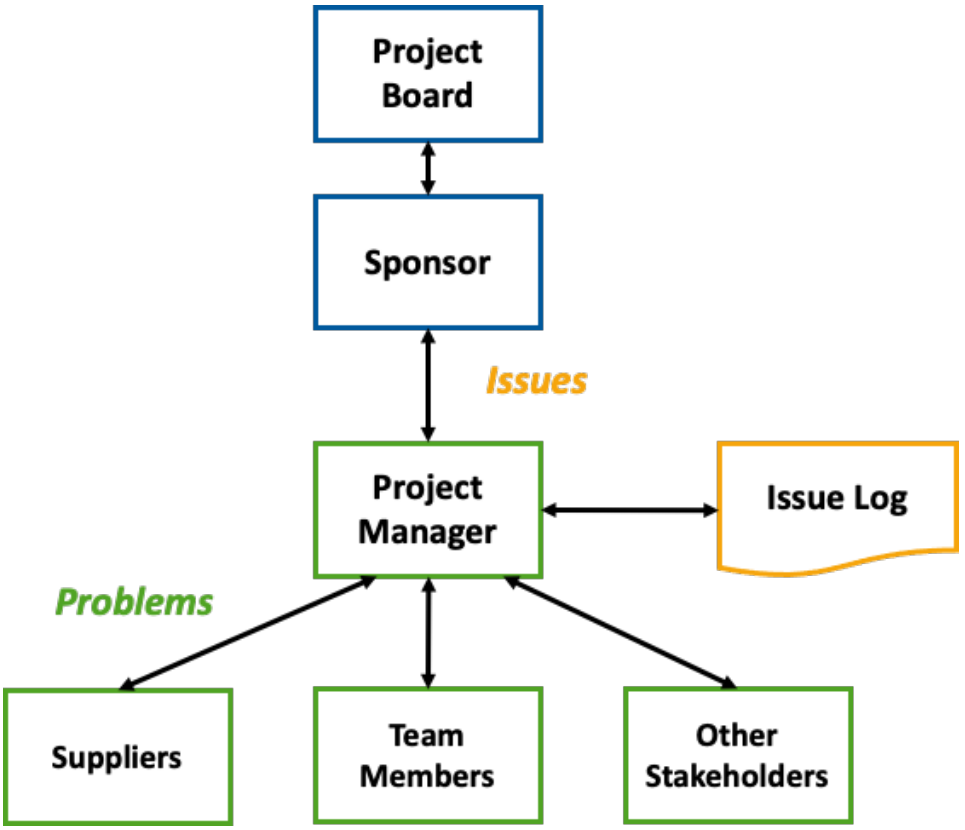
Issues that remain unresolved are likely to interfere with the project's success criteria and may even cause outright project failure.

Common challenges in issue management include:

- Failing to escalate issues in a timely manner
- Diverting the sponsor by escalating problems
- An apathetic or unavailable sponsor
- Delays in issue resolution

Figure 7.9 illustrates a typical issue management process. Identified issues are recorded in an issue log which can then be used to monitor issue status. All issues are escalated to the project sponsor for resolution. Open issues are reviewed during project status review meetings.

Figure 7.9 Issue Management Relationships



7.9. Summary

This chapter has outlined several processes that support the PRiSM approach: stakeholder engagement, estimating, team development, sustainable procurement, performance monitoring and control, change control, configuration management, and issues management. These processes ensure that the project remains aligned with its objectives and delivers the expected outcomes and benefits to stakeholders.

Notes

PART THREE: Getting More from PRiSM

Notes

8. Governance

Good governance is less about structure and rules than about being focused, effective, and accountable. — Pearl Zhu

Traditionally, governance is considered to be the collection of rules, norms, and practices by which management ensures accountability, fairness, responsiveness, and transparency in the organization's decisions. In the context of sustainable project management, this "collection" must also include ethical standards and sustainability objectives to ensure that projects contribute to long-term social, environmental, and economic resilience.

Governance is often subtle—rules may be unwritten and norms may be tacit. Good governance fosters a setting where decisions are guided by shared values to ensure choices that contribute to both the organization's long-term viability as well as its regenerative impact.

There are many effective approaches to good governance. Each organization should regularly evaluate and adjust its approach to support its sustainability objectives.

8.1. Characteristics of Good Governance

Good governance is fundamentally about establishing efficient and effective processes for making and implementing decisions. A well-defined decision-making process—and therefore good governance—positively influences many aspects of the organization, from stakeholder engagement to meeting practices to worker conduct to resource usage. Furthermore, a good decision-making process helps to ensure that the organization acts prudently, legally, and ethically.

The first eight items in the following list are adapted from a framework developed by the UN, while the final two have been added by GPM.

Broad participation. Stakeholders affected by the organization's decisions should have a voice in those decisions, either directly or through intermediaries that represent their interests.

Compliance with the rule of law. Governance must uphold both criminal and civil laws. At all times, the organization's decisions must protect both people and the planet. Additionally, good governance means honoring agreed contract terms and conditions.

Openness and transparency. Openness and transparency are built on the free flow of information. Information should be directly accessible by those who need it. In the context of sustainability, transparency also involves clearly communicating the environmental and social impacts of decisions and being open and honest about the organization's sustainability objectives.

Responsiveness. Good governance requires that decisions be made within a reasonable timeframe.

Consensus orientation. Governance requires procedures for reconciling any conflicting interests. This means making decisions to ensure that the organization can meet its objectives without compromising the ability of future generations to meet theirs.

Equity and inclusiveness. The benefits of the organization's activities should be distributed fairly. Disadvantaged groups should be aided in achieving their full potential. Vulnerable populations should not be disproportionately affected by environmental degradation or resource depletion.

Effectiveness and efficiency. For governance to be effective and efficient, decisions must result in using resources efficiently and ensuring that resource use is regenerative. Decisions should contribute to the replenishment and enhancement of natural systems rather than depleting them.

Accountability. In the context of sustainability, accountability means being answerable for the environmental and social impacts of decisions, and for the organization's progress toward its sustainability objectives.

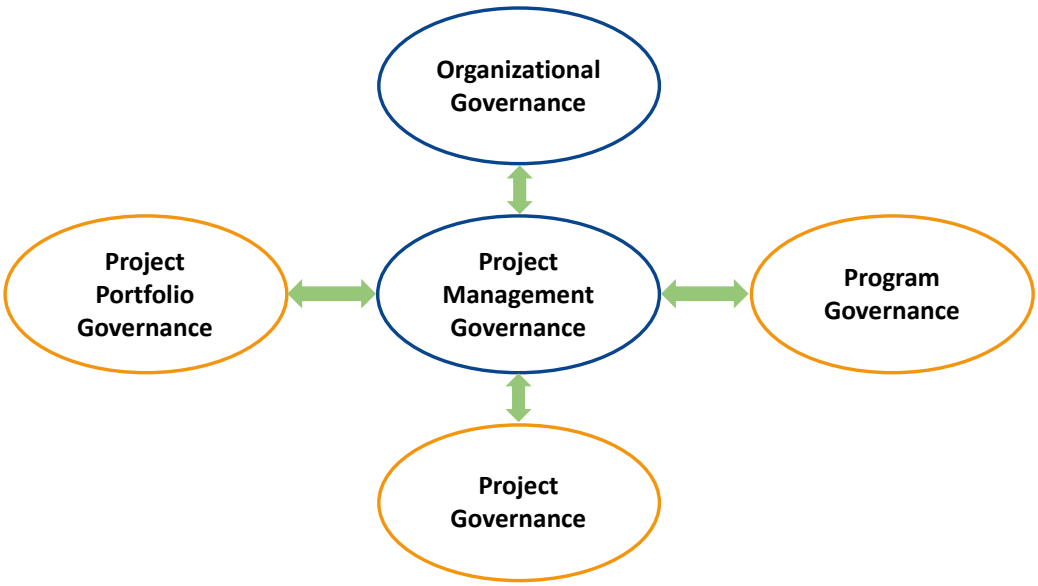
Strategic vision. The organization should have a strategic vision that includes the long-term health of both human and natural systems.

Explicit agreements. Good governance involves establishing explicit agreements between the organization and its stakeholders regarding the distribution of responsibilities, rights, and rewards. In the context of sustainability and regeneration, these agreements define how stakeholders will collaborate to achieve shared environmental and social goals.

8.2. Project Governance Framework

Governance frameworks communicate the relationship between different levels and types of governance. For sustainable project management, this involves five discrete components as illustrated in Figure 8.1.

Figure 8.1 Governance Framework for Projects



8.2.1. Organizational Governance

Organizational governance includes the rules, norms, and practices through which decisions about the strategic direction of the organization are made. It also includes deciding about the means of supporting that direction and monitoring performance towards it. It operates at a whole-of-organization level and usually focuses on Business-as-Usual (BAU or normal execution of standard functional operations).

8.2.2. Project Management Governance

Project management governance includes the rules, norms, and practices needed for projects, programs, and portfolios to support organizational governance. As such, it also includes consideration of the organization's sustainability objectives. Effective project management governance will ensure that the organization's projects are aligned to the organization's strategic direction, and that they are delivered efficiently and sustainably.

8.2.3. Project Portfolio Governance

Project portfolio governance comprises the rules, norms, and practices needed to support project portfolio decisions. It includes establishment and maintenance of structures, procedures, and methods to ensure appropriate decisions about projects and programs within the portfolio.

Project portfolio governance is often implemented as a subset of organizational governance.

Portfolio governance decisions include:

- Which projects to include in the portfolio based on the organization's strategy, the portfolio optimization strategy, and the organization's capabilities.
- Which projects to start, end, suspend, or terminate.
- Allocation of resources to projects based on strategic and sustainability objectives.
- Mitigation strategies for portfolio level risks and issues.

8.2.4. Program Governance

Program governance consists of the rules, norms, and practices needed to support delivery of programs. Since programs consist primarily of projects, program governance will affect the vast majority of projects. Sustainable program governance requires:

- Ensuring the business cases for constituent projects are sound, in line with the program objectives, and supportive of sustainability.
- Overseeing benefits management to increase the likelihood of benefits realization.
- Handling risks and issues that cannot be managed at the project level.
- Assigning project managers and other resources to the constituent projects.
- Supporting sustainability training and the use of sustainability tools.

8.2.5. Project Governance

Project governance includes the rules, norms, and practices for decision making in a project. Typically, project governance will be essentially the same throughout the organization, but differences may exist by type of project (e.g., Information Technology, New Product Development, management restructuring, strategic planning, etc.).

Requirements for project governance should be documented and communicated to all relevant stakeholders to ensure common understanding of what is required.

Project governance should ensure that each project aligns with ethical standards, organizational objectives, and sustainability objectives. Sustainability principles should be integrated into it to ensure that projects meet traditional project objectives while contributing to long-term environmental, social, and economic resilience.

The responsibility for defining and maintaining appropriate governance for a project usually rests with a Project Management Office (PMO). Tailoring would be assigned to the project sponsor or the project board with assistance from the project manager. If governance practices have not been specified, the project sponsor and project manager will need to define them.

Project governance typically includes:

- How project governance integrates with organizational, portfolio, and program governance.
- When during the project the business case should be validated.
- Criteria for choosing the appropriate level of agility.
- Clear statements of roles, authorities, responsibilities, and accountabilities. Authority, responsibility, and accountability should be supported by the resources needed to make good decisions.
- Requirements for stakeholder engagement to ensure that they are involved at a level commensurate with their importance and in a manner that fosters trust.
- Criteria for reporting project status and performance
- Authority to speak on behalf of the project. This should include the expectation of frank internal disclosure of project information.
- Criteria for the escalation of risks and issues.
- When a project audit or other type of external review is needed, and who is responsible for requesting one.
- Preferred supplier arrangements, if any.

8.3. Importance of Good Governance

There are many reasons why projects require good governance. The subsections below explain the major reasons that consistently emerge from research in this area.

8.3.1. Enhanced Prospects for Success

As discussed in Section 5.3.6, project success is measured against defined success criteria. In the context of sustainability and regeneration, this includes achieving positive environmental and social impacts that align with the organization's sustainability objectives.

Failure factors such as poor alignment to strategy, unclear requirements, inadequate resourcing, and poor communication are more likely to be identified and addressed when good governance is in place. Good governance also ensures that sustainability risks are managed and that opportunities for regenerative outcomes are seized, enhancing the overall success of the project.

8.3.2. Support for Senior Management

Senior management is ultimately responsible for ensuring that projects contribute positively to the organization's sustainability objectives. This includes minimizing waste, reducing carbon footprints, enhancing social equity, and making ethical use of organizational resources. Good governance of projects is necessary to be informed and accountable.

8.3.3. Sound Investment Decisions

Good project governance helps an organization ensure that its project investments contribute positively to overall organizational performance by:

- Giving priority to projects that contribute to the organization's environmental and social goals to ensure that project investments support long-term sustainability and regenerative outcomes.
- Requiring that projects focus on both results and outcomes, especially with regard to sustainability. This may include adopting practices that reduce environmental impacts, restructuring for greater social equity, and implementing technologies that support regenerative practices.

8.4. Summary

We started this chapter with a review of the characteristics of good governance. From there, we presented a model of how different kinds of project-related governance map. We then reviewed the characteristics of each element of the model. The chapter closed with a brief review of the importance of good governance.

Notes

9. Systems Thinking

Systems thinking is a discipline for seeing wholes.
It is a framework for seeing interrelationships rather than things,
for seeing patterns of change rather than static snapshots. — Peter Senge

Systems thinking, also called system dynamics, is a discipline for understanding the structures and relationships that underlie how our actions and decisions interact. With roots in disciplines as varied as biology, cybernetics, and ecology, systems thinking provides a useful way of looking at how a sustainable world works. Systems thinking is fundamentally a problem-solving approach that involves identifying variables and their relationships to better understand problems and how to solve them.

9.1. Core Concepts

Systems thinking is built around two *core concepts*: a broad view of what a system is and the importance of feedback loops and time delays in problem solving.

9.1.1. Systems

A *system* is a set of interdependent components working together to achieve a specific objective. A project is a system. A supply chain is a system. A biome is a system. Many project results such as buildings, highways, new consumer products, and software applications are systems.

Systems have several defining characteristics:

- **Purpose.** The purpose describes the expected function of the overall system. For example, the purpose of a regenerative project is to deliver the expected results while supporting the organization's sustainability objectives.
- **Interaction.** A system's components are arranged in a particular way. If they are arranged in a different way, the system will perform either differently or sub-optimally.

- **Interdependence.** If one or more components are missing, the system will either not perform the expected function, or it will perform it sub-optimally.
- **Stability.** A system at or near its normal state is relatively stable and predictable. Conversely, a system that is far from its ideal state can be chaotic and unpredictable.

9.1.2. Feedback Loops and Time Delays

Systems thinking acknowledges the importance of the traditional problem-solving approach of cause-and-effect, but then expands it to include *feedback loops* and *time delays*.

Feedback loops occur when an effect has an impact on the original cause. Feedback loops can be reinforcing (both the cause and the effect are affected in the same way) or balancing (the cause and the effect are affected in opposite ways) as illustrated in Figure 9.1.

Figure 9.1 Sample Causal Loop Diagram

When the variables change in the *same* direction, we mark the causation arrow with an "s": an increase in job stress causes an increase in mistakes made while a decrease in job stress causes a decrease in mistakes made. At the same time, an increase in mistakes made is likely to increase job stress. This is called a *reinforcing loop* as shown by the loop on the left.

An "o" indicates that the variables change in the *opposite* direction: use of coping strategies causes a reduction in job stress. With one "s" and one "o," the loop is called a *balancing loop* as shown by the loop on the right.

The balancing loop in Figure 9.1 also includes a *delay* to indicate that increased use of coping strategies will not reduce job stress immediately but only after a period of time. The presence of a delay can lead us to believe (erroneously) that the coping strategies are not working.

9.2. Becoming a Systems Thinker

At GPM, we view society, the environment, and the economy as interconnected systems that can be better understood with a systems thinking perspective. As a sustainable project manager begins to think about how to accomplish project objectives sustainably, systems thinking is often the best way to do so.

Senge (1990) suggests that the discipline of systems thinking requires several shifts in how we process information:

- **From parts to the whole.** With any system, the whole is different from the sum of the individual parts. By shifting focus from the parts to the whole, we can better grasp the connections between the different system elements.
- **From objects to relationships.** In systems, the relationships between individual parts may be more important than the parts. An ecosystem is *not* just a collection of species. It includes living things interacting with each other and their non-living environment.
- **From quantitative to qualitative.** Science and management both often focus on things that can be measured and quantified. Some aspects of systems, however, like the relationships in a food web, cannot be measured. Rather, they must be mapped.
- **From structure to process.** Living systems develop and evolve. Understanding these systems requires a shift in focus from structures to processes such as evolution, emergence, renewal, and change. This may mean that the ways in which choices are made are as important as the choices themselves.
- **From contents to patterns.** Within systems, certain configurations of relationships appear again and again in cycles and feedback loops. Understanding how a pattern works in one natural or social system helps us to understand other systems that manifest the same pattern.

The approach to systems thinking that GPM encourages reflect the insights of leading global thought leaders such as Peter Senge and Donella Meadows, as well as principles from systems ecology and complexity science. These principles are designed to help project managers navigate the complexity of interconnected systems, recognizing that effective management and sustainability are deeply interrelated.

By understanding feedback loops, patterns, and long-term impacts, project managers can align their projects with the world's most advanced systems thinking approaches.

The following list embodies this thinking, integrating cutting-edge sustainability and resilience concepts to guide decision-making in complex, dynamic environments:

- Identify and analyze feedback loops, recognizing the cyclical nature of cause and effect within complex systems.
- Consider how mental models shape both present realities and future outcomes.
- Observe patterns and trends within the system, understanding that these emerge from interactions over time.
- Make connections between different systems and recognize how changes in one can influence others.
- Account for time delays on the effects of decisions and actions, understanding that immediate outcomes may differ from long-term results.
- Understand that the behavior of a system is generated by its underlying structure, not just individual components.
- Take a holistic approach, avoiding premature conclusions by considering all aspects of a system.
- Continuously monitor outcomes and adapt actions in an iterative process of learning and refinement.

9.3. Examples of Systems Thinking

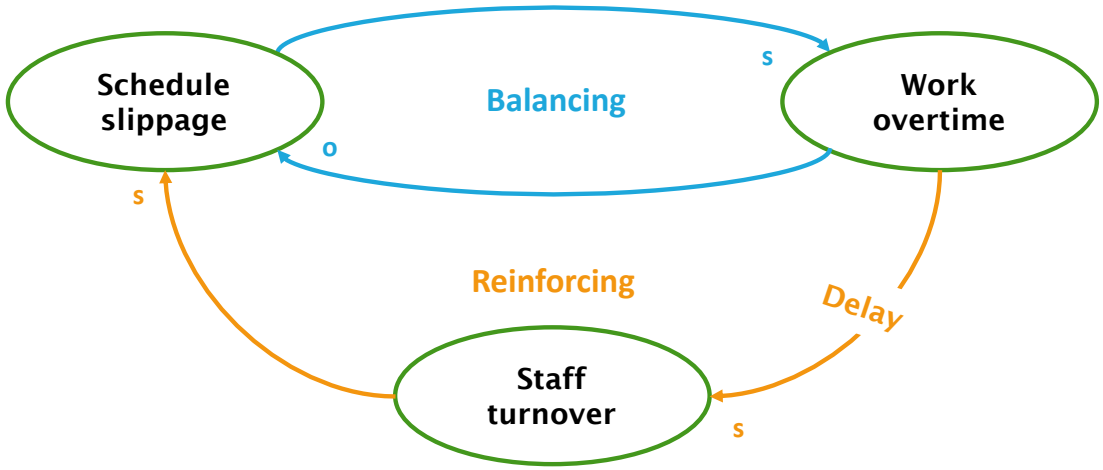
Systems thinking can help us understand our projects, our society, our environment, and our economy better. This section includes some illustrative examples.

9.3.1. Systems Thinking Archetypes

The systems thinking community has identified numerous *archetypes* that are seen over and over again. Two of these models are explained below. Additional examples can be found online by searching for *systems thinking archetypes*.

Fixes that fail. In this model, a problem (schedule slippage) is solved by a fix (working overtime) that has an immediate positive effect. In Figure 9.2, this is shown as a balancing loop: overtime reduces the schedule slippage and less slippage reduces the demand for overtime. However, if the schedule slippage continues (perhaps due to poor estimates), continued overtime is likely to lead to staff turnover. Staff turnover is likely to cause further schedule slippage, and thus we have the reinforcing loop shown.

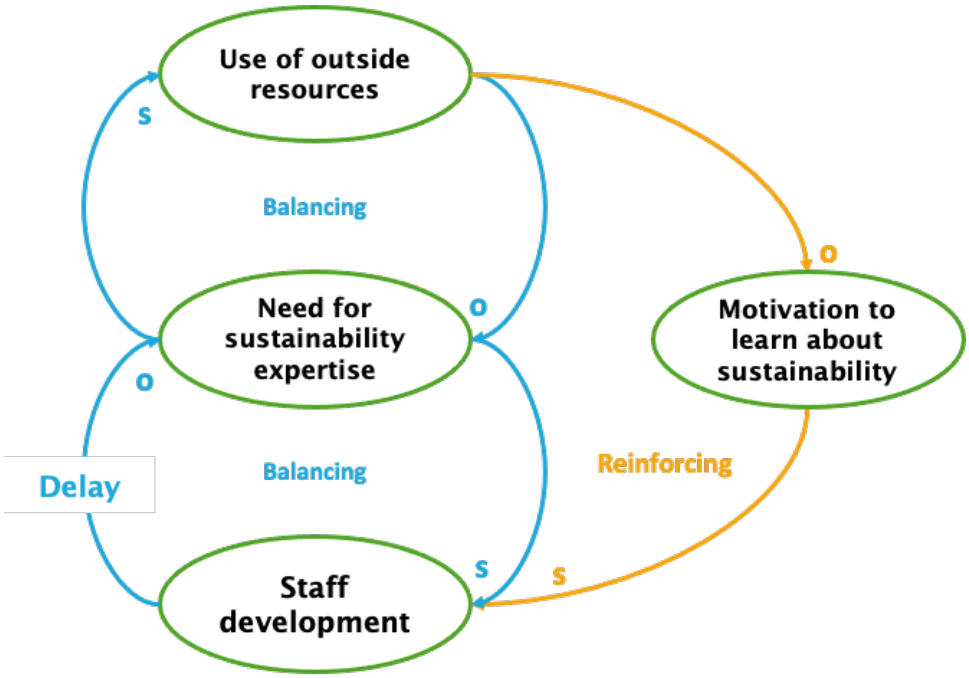
Figure 9.2 Causal Loop Diagram for Fixes that Fail



Shifting the burden. In this model, the organization has a need for expertise in sustainability. The preferred solution is the lower balancing loop: develop the skills of the project team. However, staff development takes time, and there will be a delay before the desired expertise is available.

As a result, the organization hires a consultant who can provide the expertise immediately as shown in the upper balancing loop. But the use of outside expertise is likely to lower the level of interest in staff development as shown in the reinforcing loop on the right. The decision to use outside help is a well-intentioned solution which seems to have solved the problem. But the underlying problem (lack of sustainability expertise) has not been addressed. As a result, the organization must continue to use outsiders.

Figure 9.3 Causal Loop Diagram for Shifting the Burden



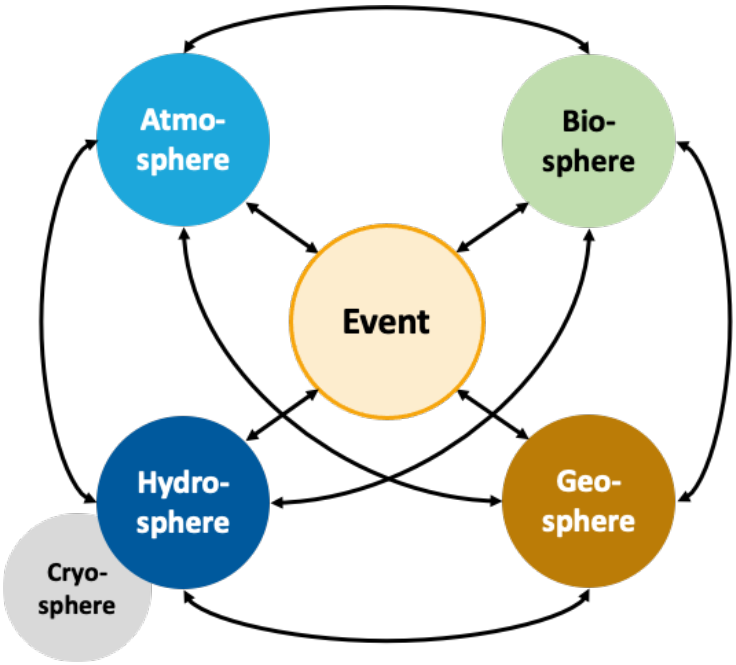
9.3.2. Earth as a System

Our planet is a system that consists of the following subsystems:

- **Biosphere** — all living organisms and matter that has not yet decomposed.
- **Geosphere** — the core, mantle, crust, and soil.
- **Atmosphere** — the mixture of gases and particles suspended in the air that surrounds the geosphere.
- **Hydrosphere** — liquid ocean, inland water bodies, and groundwater.
- **Cryosphere** — a subset of the hydrosphere that consists of frozen water.

As illustrated in Figure 9.4, there are ten possible interactions that can occur within this system. The double-headed arrows indicate that the cause-and-effect relationships go in both directions. For example, the arrow connecting the hydrosphere with the geosphere says that either can have an effect on the other.

Figure 9.4 Interactions Among Earth's "Spheres"



By viewing this figure with a systems thinking perspective, we see that an event can affect one or more of the spheres, and that the effect on each sphere can then affect the others. For example:

- A *forest fire* is an event that may ravage both animals and plants—the event interacts with the biosphere.
- That same fire would release contaminants into the air—the event interacts with the atmosphere.
- Fewer plants could lead to an increase in soil erosion—the biosphere interacts with the geosphere.
- Increased amounts of soil entering streams can lead to increased turbidity, or muddiness, of the water—the geosphere interacts with the hydrosphere.
- Increased turbidity of stream water can have negative impacts on the plants and animals that live in it or near it—the hydrosphere interacts with the biosphere.

9.3.3. The Sustainable Development Goals as a System

In Section 2.6, we introduced the Sustainable Development Goals (SDGs). As we noted then, all seventeen are interconnected to form a system where improvements in one area affect other areas. This is illustrated in Figure 9.5 using the first three SDGs (the names of the variables have been modified slightly to make the relationships clearer).

Figure 9.5 Causal Loop Diagram of Selected SDGs

In the reinforcing loop on the left, reductions in poverty reduce hunger levels almost immediately, while less hunger has a delayed effect on poverty by making individuals better able to work. The relationship between poverty and good health is similar, but with delays in both effects: when poverty goes down, health levels go up after a delay, and when health levels improve, poverty goes down after a delay.

9.4. Summary

In this chapter, we started by presenting the core concepts of systems thinking that differentiate it from traditional root cause analysis—delays and feedback loops. While project management is often presented as a linear, cause-and-effect process, the real world contains relationships and interactions.

We followed that with some advice about how a sustainable project manager can improve their systems thinking skills. Then we looked at a number of examples of real life systems showing how seemingly constructive interventions do not always result in positive outcomes. Finally, we looked at the components of the system we call *Earth* and how they interact.

10. Organizational Change Management

Change is the law of life. And those who look only to the past or present are certain to miss the future. — John F. Kennedy

Organizational change management (OCM) is the practice of applying a structured approach to transition an organization from a current state to a future state to achieve expected benefits (ACMP, 2014). It includes supporting both the organization itself and the individuals in the organization.

When the OCM process incorporates sustainability—addressing the dimensions of planet and prosperity as well as people—it increases the value of the expected benefits. As well, OCM can be used to help an organization become more sustainable.

OCM can affect the entire organization or a subset such as a business unit, a department, or a location. Extreme changes are often called *transformations*. The concepts in this chapter apply to all types of organizational changes.

OCM can be all of a project, part of a project, or part of ongoing operations. In this chapter, we will cover OCM as all or part of a project.

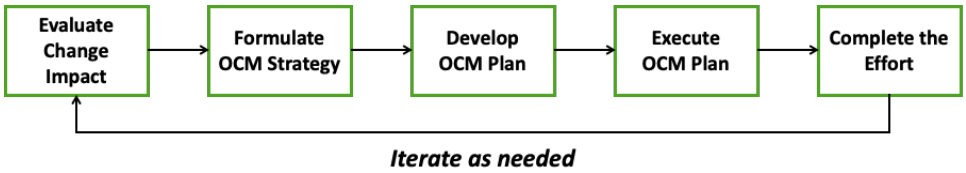
OCM is sometimes shortened to *change management*. However, in the project context, change management also refers to managing changes to requirements, specifications, plans, and other aspects of the project. To ensure clarity, we will consistently refer to OCM when discussing changes in the organization or its workers.

10.1. An Organizational Change Management Process

A typical approach to the OCM process is illustrated in Figure 10.1 and briefly described in the paragraphs which follow. This process assumes that the need for change has been properly reviewed and approved.

- **Evaluate Change Impact.** This step involves evaluating the organization's readiness and capacity to undergo a transition from the current state to the future state.

Figure 10.1 The Organizational Change Management Process



- **Formulate OCM Strategy.** This step involves determining how to incorporate OCM activities into the existing operations of the organization. Of particular concern when developing an OCM strategy is the timing and sequence of the activities.
- **Develop OCM Plan.** The OCM plan should include all the elements of a good PRiSM project plan as described in Chapter 0.
- **Execute OCM Plan.** This is when the expected benefits of the change are realized. Both strategy and plan may be modified based on interim results.
- **Complete the Effort.** This step is similar to PRiSM's closure phase. It includes measuring benefits and comparing them to what was expected.

10.1.1. Leading OCM

Leading OCM requires a set of guiding principles that are particularly important when including sustainability as part of the OCM process. These principles ensure that leaders not only manage change but do it sustainably.

- **Lead with the culture.** Leverage the organization's existing culture to support OCM initiatives. Highlight elements of the culture that align with project objectives and use them to build momentum for change.
- **Start at the top.** Ensure that senior leaders are committed to change and model desired behaviors. Their buy-in is crucial for aligning the entire organization with the change.
- **Involve every layer.** Engage workers at all levels in change efforts. Their involvement is essential for identifying potential challenges and ensuring widespread adoption of the change.
- **Make the case together.** Combine rational strategic objectives with emotional appeals to change, helping employees see the personal and organizational value in supporting change.

- **Act your way into new thinking.** Encourage leaders to demonstrate the value of the change through their actions, making it clear that change is a priority in both decision making and daily operations.

10.1.2. The Importance of Culture

The success of any change is closely tied to the organization's culture (see also Section 4.4). When the change is integrated into the culture, it becomes a natural part of how the organization operates, making change efforts more effective and lasting.

Culture is the unseen force that drives behavior. Organizations can leverage cultural strengths by aligning the change with organizational values, creating a sense of shared purpose.

Incorporating change into the culture can be facilitated using a variety of approaches:

- **Aligning values.** Update the organization's mission and values to include support for the change.
- **Behavioral nudges.** Use small changes (nudges) to encourage desired behaviors.
- **Peer influence.** Highlight employees who support the change, using their influence to encourage others to follow suit.

10.2. Sustainability and OCM

Getting an organization to adopt sustainability as a core value represents a profound organizational change that requires thoughtful and structured management—it needs OCM. Becoming thoroughly sustainable is not a one-time initiative but a continuous process that demands strong leadership, clear communication, and active engagement from all levels of the organization.

For sustainability to be fully embedded in organizational practices, it is essential to align the organization's vision and strategy with its sustainability objectives. This alignment helps have sustainability seen as both a responsibility and an opportunity for innovation and growth. By using OCM to manage the change, the organization can ensure that sustainability becomes a natural part of its operations, leading to measurable improvements in environmental and social outcomes.

10.3. Project Management and OCM

Project management and OCM are complementary, not competitive approaches.

For project management, OCM provides support for managing the human aspects of change, ensuring that relevant stakeholders are aligned with project objectives. For OCM, project management provides logistical support to ensure that change efforts are planned and managed effectively.

Effective integration of project management and OCM is required to ensure that change objectives are achieved.

Table 10.1 Project Management and OCM

Area	Project Management	Organizational Change Management
Focus	Application of skills, tools, and techniques required to.	Application of skills, tools, and techniques required to implement and sustain the desired change.
Approaches	Organization and management of resources and activities to accomplish project objectives.	Actions required to prepare the organization for the change, facilitate the transition from the old way of working to the future state, and embed the change as the new norm.
Risk Focus	Threats to scope, schedule, and budget.	Threats to adoption of the change, realization of the expected benefits, and institutionalizing the change.
Outcomes	Add value to society, the environment, and the organization.	

10.4. Change Models

Change models provide structured approaches to managing both organizational and individual changes. Table 10.2 provides an overview of several well-known change models.

Table 10.2 Overview of Organizational Change Management Models

Model Name	Major Components	When to Use
ADKAR	▪ Awareness (of the need to change) ▪ Desire (to participate and support the change) ▪ Knowledge (of how to change) ▪ Ability (to implement required skills and behaviors) ▪ Reinforcement (to sustain the change)	To help individuals change.
Bridges' Transition Model	▪ Ending, losing, and letting go ▪ The neutral zone ▪ The new beginning	When changes will be accomplished slowly.
Kotter	▪ Create a sense of urgency ▪ Build a core coalition ▪ Form a strategic vision ▪ Get everyone on board ▪ Remove barriers and reduce friction ▪ Generate short-term wins ▪ Sustain acceleration ▪ Set the changes in stone	When you need a checklist about what has to be done and in what order.
Kübler-Ross Change Curve	▪ Denial ▪ Anger ▪ Bargaining ▪ Depression ▪ Acceptance	When dealing with emotions is very important to accomplishing change.
Lewin's Model	▪ Unfreeze ▪ Change ▪ Refreeze	When massive changes to processes and practice are needed throughout the organization.

continued

Model Name	Major Components	When to Use
McKinsey 7-S Model	▪ Strategy ▪ Structure ▪ Systems ▪ Shared values ▪ Style ▪ Staff ▪ Skills	To determine what changes are needed by analyzing where the seven items fail to support each other.
Nudge Theory	▪ Clearly define changes ▪ Consider changes from employees' point of view ▪ Use evidence to show the best option ▪ Present the change as a choice ▪ Listen to feedback ▪ Limit obstacles ▪ Keep momentum up with short-term wins	When employee buy-in is particularly important. Relies on convincing individuals to make the choice to change rather than imposing it from above.

10.5. Summary

In this chapter, Organizational Change Management (OCM) was presented as the practice of guiding an organization and its people through transitions to achieve a different state in the future. The chapter explored the processes that underpin effective OCM while emphasizing the critical role of people in creating change. The chapter also included an overview of well-known frameworks that support OCM.

11. Value Management

There is nothing so useless as doing efficiently that which should not be done at all. — Peter F. Drucker

Value management is systematic approach to maximize value from a project's results. It involves finding options to deliver the required functionality for less cost, to deliver additional functionality for the same cost, or both. It includes *value engineering* which is focused on the design of a new product and *value analysis* for a product in-use. The value management process is essentially the same in both cases.

While most treatments of value management do not explicitly consider sustainability, in today's world, *functionality* must include considering positive social and environmental impacts while *cost* must include considering negative ones. When it does so, value management promotes a circular economy by finding more sustainable alternatives without sacrificing functionality. Properly applied, it should result in designing outputs that minimize waste, extend product life, and support the regeneration of natural systems while still maximizing profit.

11.1. Core Concepts

Value management is based on two key concepts—value and function.

Value is the benefit delivered in proportion to the resources used to acquire it—more benefit for fewer resources means higher value. Value can be financial, functional, emotional, or social. In the context of sustainability, value includes benefits such as social equity and environmental regeneration, while resources includes negative impacts such as forced labor and water consumption. This extends the traditional definition to ensure that projects contribute positively to societal well-being and a healthy environment.

A **function** or functionality is what something *does* rather than what it *is*. A function is expressed as an active verb and a measurable noun, for example, "bear weight" or "reduce waste." In the context of sustainability, functions should include contributions to long-term sustainability and alignment with circular economy practices.

Figure 11.1 illustrates the difference between *does* and *is*. The deliverable from this project *is* a house with solar panels, but what it *does* is provide protection from the elements, clean energy, and enhanced well-being for its occupant. We'll use this house to illustrate the value management process later in the chapter.

Figure 11.1 Focus on Function

Value management can provide significant benefits in three main areas:

- Reduced whole-life costs for the project's outputs
- An auditable process for enhancing environmental, social, and economic value
- More efficient use of resources

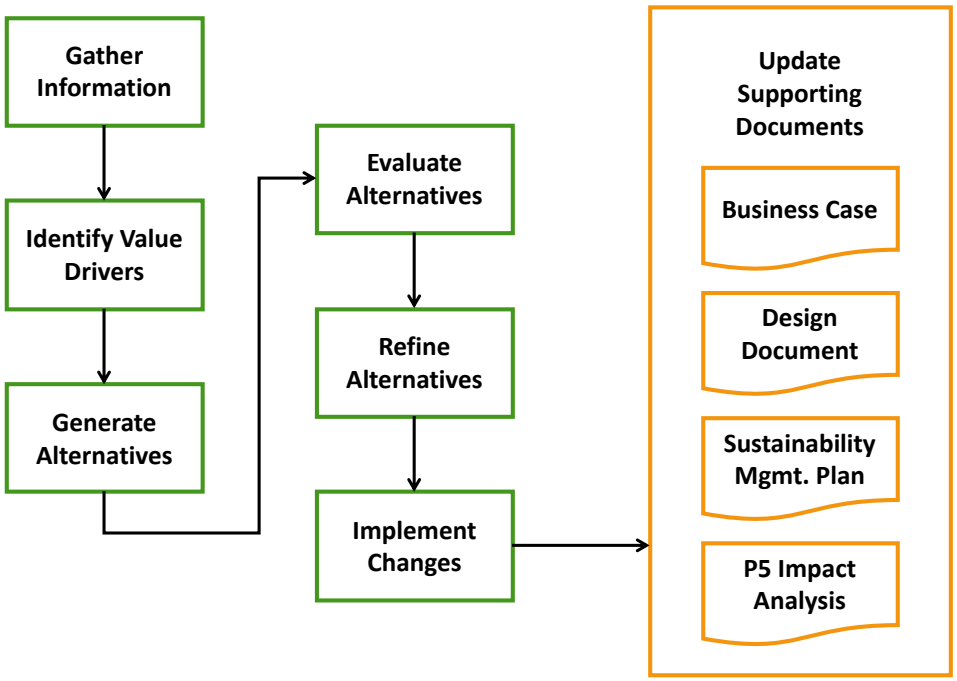
Investing in value management is generally cost-effective—the benefits generated almost always outweigh the resources expended by a significant margin. And while value management is mostly applied on large capital projects, smaller, simpler projects may benefit as well.

11.2. Value Management Process

The GPM *value management process* steps are shown in Figure 11.2 and described in the following sections. In PRiSM, this process would usually be done as part of *Design Solution* in the Design Phase, but it could also be done earlier:

- Pre-project phase — Analyze alternatives
- Discovery phase — Gather solutions

Figure 11.2 Value Management Process



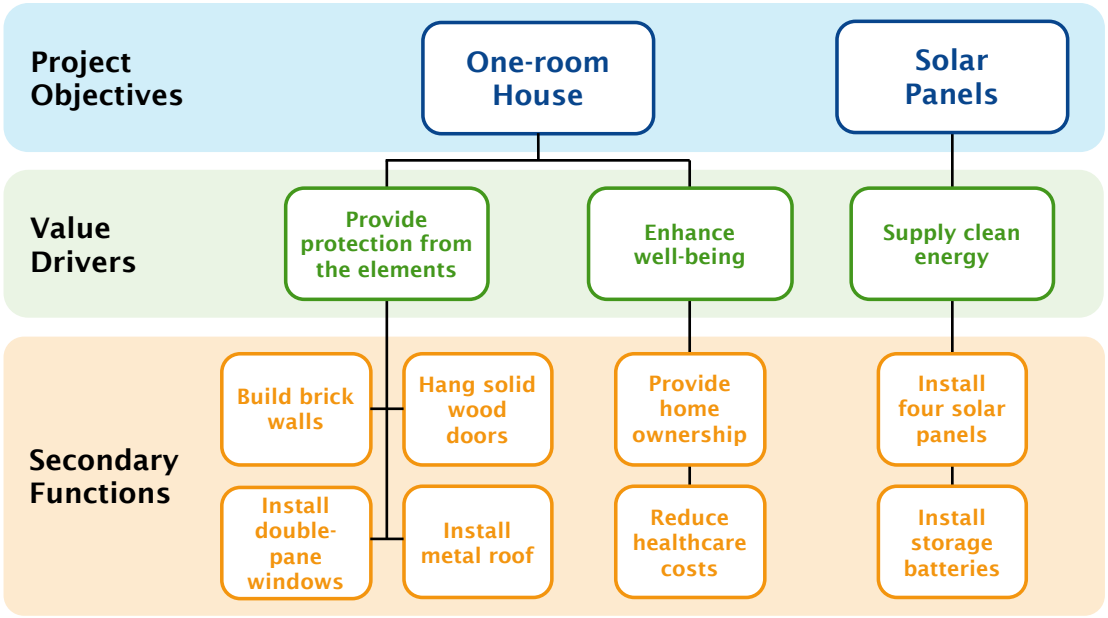
11.3. Gather Information

This step may sound simple, but it is vital. The team must be sure that it understands not only the items to be analyzed but also the larger context of the project. Information to be gathered includes project objectives, design details, materials, costs, estimated operating costs, and of course, sustainability impacts from a *P5 Impact Analysis* or similar tool.

11.4. Identify Value Drivers

A *value driver* is a primary function—one that contributes directly to accomplishing a project objective. Value drivers are identified by breaking the project down into its functional components and identifying the ones that directly support the project objectives. During this step, the team should also identify the functions that support the value drivers and arrange them into a hierarchy as shown in Figure 11.3. From bottom to top, the functional hierarchy illustrates *why* we are doing this, while from top to bottom, it illustrates *how* we will do it.

Figure 11.3 Functional Hierarchy



The functional hierarchy depicts what functions are needed to satisfy stakeholder requirements. It does not address the details of how to implement those functions—that's what project planning is for.

11.5. Generate Alternatives

The *generate alternatives* step may be the most creative part of the value management process. This step is about exactly what it says—generate alternatives to evaluate. Typically, neither the project objectives nor the value drivers should be changed, but everything else can be.

Although analyzing every function is GPM's preferred approach, when resources are limited, preparing a value profile can help focus the team on the functions that are most likely to benefit from alternative approaches. A value profile is created as follows:

- List the Functions in the first column. The example uses only secondary functions, but if the functional hierarchy includes additional levels, list them as well.
- Assign a Weight to each Function based on its perceived importance. In our example, the Weights sum to 100, but that is not a requirement.

- Under Measure, describe what is most important about that function for assigning a Rating. The measures will be used to assess whether the functions are being delivered sustainably and efficiently.
- Assign a Rating, using a scale from 1–10, based on how well the Function as currently planned satisfies the Measure.
- Calculate the Value Score as the Weight times the Rating.
- Enter the estimated Cost of implementing the function. In our example, we have entered the Cost numbers in thousands (000).
- Calculate the Value Ratio as the Value Score divided by the cost.

Table 11.1 Value Profile

Function	Weight	Measure	Rating	Value Score	Cost (000)	Value Ratio
Build brick walls	15	Insulation value	6	90	10	9.0
Hang solid wood doors	10	Insulation value	7	70	3	23.3
Install double-pane windows	20	Insulation value	7	140	5	28.0
Install metal roof	10	Insulation value	6	60	20	3.0
Provide home ownership	5	Annual mortgage	5	25	12	2.1
Reduce healthcare costs	10	Annual insurance	5	50	18	2.8
Install four solar panels	20	Megawatts	6	120	12	10.0
Install storage batteries	10	Kilowatt-hour	6	60	16	3.8
Totals	**100**			**635**	**95**	

The completed value profile shows where the team should concentrate its efforts. The functions in red have the lowest value ratios and are thus prime candidates for either reducing the estimated costs or increasing the rating. The functions in blue have the highest value ratios so it might be appropriate to consider spending more to increase their ratings.

In this case, the project team came up with the following ideas:

- Add insulation under the roof to increase the Rating to 8.
- Install higher grade storage batteries to increase the Rating to 8.
- Use less expensive bricks that provide the same amount of insulation.
- Investigate a less expensive mortgage.
- Investigate a less expensive health care plan.
- Investigate the cost of triple-pane windows.

If the team is having trouble coming up with ideas, one or more of the following approaches may help:

- **Brainstorming** — team members are encouraged to voice any and every idea no matter how unconventional.
- **Mind mapping** — a structured approach to organizing complex information and interrelated concepts. Mind maps can be drawn by hand, or by using one of the many digital tools available.
- **Brainwriting** — brainwriting encourages different perspectives by having team members write their ideas down on paper, then share those ideas with the other team members.
- **SCAMPER** — stands for substitute, combine, adapt, modify, put to another use, eliminate, and reverse. It's a technique to reimagine existing constructs in order to come up with new ideas.

11.6. Evaluate Alternatives

The objective of the *evaluate alternatives* step is, of course, to decide which of the alternatives will provide the most additional value. For example, spending an additional US$5,000 on insulation to get the Rating for "Install metal roof" up to 8 only increases the Value Ratio to 3.2. On this project, the team decided to make the following changes:

- They found a local provider who had a sale on triple-pane windows. That increased the Rating to 9 and reduced the Cost to US$4,000, raising the Value Ratio from 28 to 45.
- They were able to find used bricks for only US$5,000 that had the same insulation value. This raised the Value Ratio from 9 to 18.

11.7. Refine Alternatives

The *refine alternatives* step involves ensuring that the selected changes have been correctly defined and are fully justified. For our simple example, little refinement would be needed. However, on a larger, more complex undertaking such as an urban redevelopment project, this step could require significant effort.

Value management in the context of sustainability must go beyond mere cost efficiency. It should prioritize the ecological and social benefits of the project, such as reducing carbon emissions, improving public health, fostering community engagement, and revitalizing ecosystems. For example, value management for a redevelopment project might consider:

- **Incorporating shared spaces and green infrastructure.** By designing public spaces that serve multiple purposes—such as green roofs that act as both recreational areas and wildlife habitats—the project can deliver greater value without increasing costs.
- **Engaging the community in maintaining green spaces.** Encouraging local community groups to participate in the upkeep of urban gardens and biodiversity initiatives can reduce maintenance costs and enhance social cohesion.
- **Leveraging technology for smart city infrastructure.** Implementing smart grids and energy-efficient technologies can reduce long-term operating costs while improving the overall sustainability of the urban environment.

These options help ensure that the redevelopment project not only meets immediate needs but also contributes to the long-term sustainability and resilience of the city.

11.8. Implement Changes

The design document and the business case would both be updated to reflect the two changes the team made. They examined both the Sustainability Management Plan and the P5 Impact Analysis and decided that neither required updating.

11.9. Summary

This chapter delved into the concepts of value and value management, highlighting the critical role they can play in optimizing project outcomes. It presented a function-based approach, emphasizing what things do rather than merely what they are. By shifting the focus to the function and purpose of each project component, value management ensures that resources are used efficiently and effectively to maximize the overall impact.

12. Benefits Management

The real conflict is not between profit maximization and social responsibility, but rather between short- and long-term thinking. — Klaus Schwab

In Chapter 3, we defined a project as an investment undertaken to obtain a *desired outcome*. In Chapter 5, we defined project success as a combination of project management success and *product success*. In this chapter, we will tie those two ideas together under the heading of *benefits management*. Benefits include both the desired outcome and product success.

In a study of construction projects done by *ENR* several years ago, over 40% of projects were late, and more than 50% were over budget. Yet nearly 90% of owners were satisfied with the results because of the benefits obtained.

To ensure product success, sustainable project managers must take a long-term perspective. Although the project may not be accountable for benefits realization, it is in the perfect position to improve benefits by reducing operational costs, limiting negative environmental impacts, and enhancing usefulness of project deliverables. It's important for the entire project team to remember that benefits are the reason for the project.

12.1. Definitions

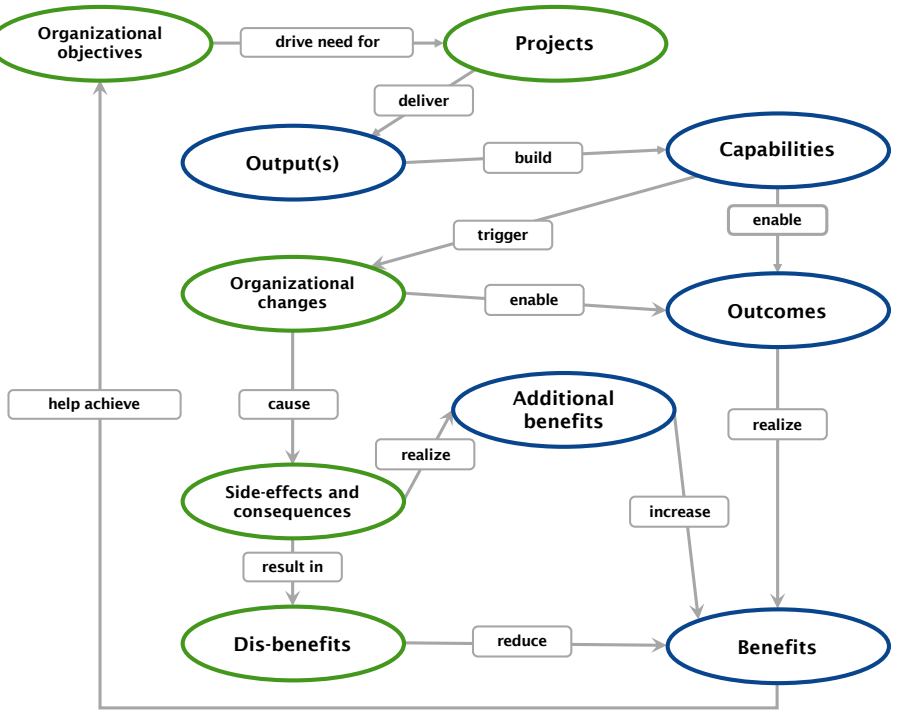
We use the following definitions in this chapter:

- **Outputs.** Deliverables developed by a project. A deliverable may be a service (e.g., a departmental reorganization) or a tangible product (e.g., working software).
- **Capabilities.** What an organization can accomplish. New capabilities typically come from combining existing capabilities with the outputs of one or more projects.
- **Outcomes.** The results of using capabilities.

- **Benefits and Dis-benefits.** The measurable changes resulting from the outcomes. Benefits are expected to contribute towards one or more organizational objectives. Different stakeholders may have different views about whether the changes are benefits or dis-benefits.
- **Organizational Changes.** Changes such as new departments, new reporting structures, or new procedures may be needed to support new capabilities. Organizational changes may or may not be included within the scope of the project whose delivered capabilities trigger them. Organizational change management is covered in Chapter 10.
- **Side-effects and Consequences**. Secondary changes that occur as a result of the primary organizational change. For example, new policies and procedures could affect employee turnover.

Figure 12.1 (adapted from Axelos, 2011) illustrates the relationships among these terms.

Figure 12.1 Organizational Objectives and Benefits Realization



Notice that the potential for additional benefits and dis-benefits helps to reinforce the importance of regularly updating the business case to ensure good decisions during the project to maximize benefits.

Table 12.1 illustrates the major categories of benefits.

Table 12.1 Benefit Categories

Benefit Category	Measures
Sustainability	▪ See the *P5 Standard* described in Section 5.3.2 for a comprehensive catalogue of sustainability benefits
Efficiency and cost avoidance	▪ Budget reductions ▪ Lower unit costs ▪ Time saved ▪ Enhanced infrastructure
Revenue	▪ Revenue from new products or services ▪ Revenue from new markets ▪ Increased revenue from existing products or services ▪ Revenue retained that otherwise would have been lost
Intellectual property	▪ Patents ▪ Copyrights ▪ Competitive advantage

12.2. Benefits Management Process

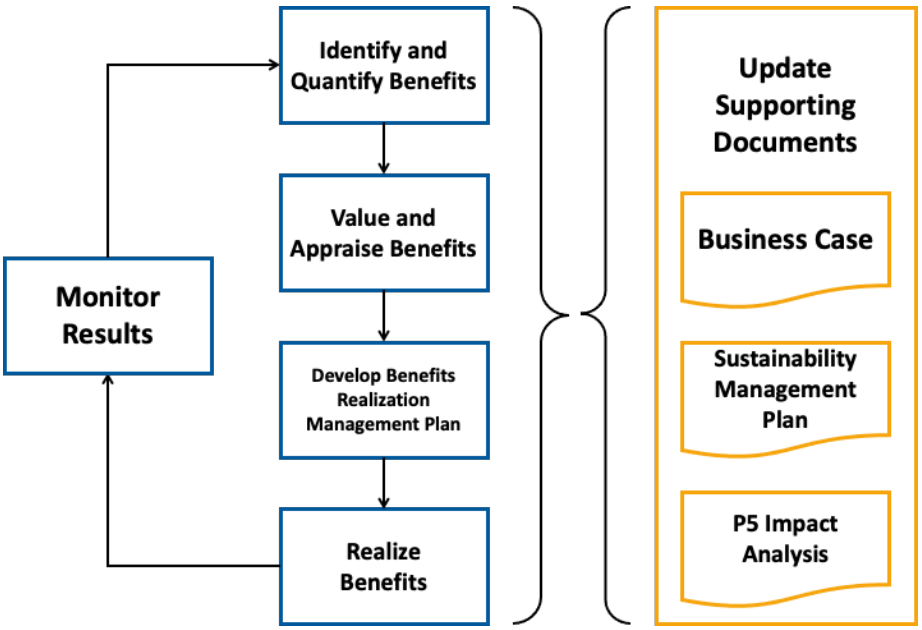
Figure 12.2 illustrates GPM's recommended process for benefits management. The descriptions of the steps are adapted from Jenner (2014).

Identify and Quantify Benefits. This step would might include benefits discovery workshops, benefits mapping, voice-of-the-customer sessions, and forecasts of anticipated improvements.

Value and Appraise Benefits. This step involves estimating the monetary and non-monetary value of expected benefits to support alternatives analysis, investment appraisal, and portfolio prioritization.

Develop Benefits Realization Management Plan. This step encompasses validating and prioritizing benefits, assigning ownership, selecting benefits measures, and planning stakeholder engagement.

Figure 12.2 Benefits Management Process



Realize Benefits. While most benefits will be realized after the project is complete, some benefits may be realized during the project, especially when there are multiple design-and-delivery phases.

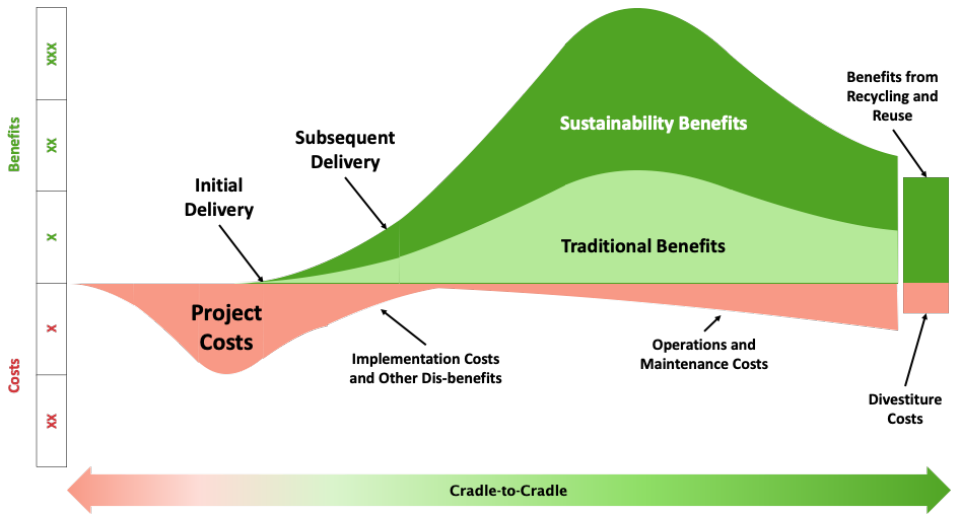
Monitor Results. This step provides the basis for learning and improvement before, during, and after the project. It includes the phase-end reviews called for in the PRiSM project life cycle (see Chapter 5).

Update Supporting Documents. The results of each of the above steps should be incorporated as needed into the Business Case, the Sustainability Management Plan, and the P5 Impact Analysis. These documents are described in more detail in Chapter 5.

12.3. Sustainability Benefits

One of the fundamental assumptions of sustainable project management is that a project is part of a product life cycle that runs cradle-to-cradle. This is shown in Figure 12.3. This figure illustrates the importance of benefits management since project costs are usually relatively small in comparison to the benefits expected. The figure also suggests that a sustainable project manager must be aware of the long-term impact of their project decisions.

Figure 12.3 Cradle-to-Cradle Life Cycle



Most organizations assign accountability for benefits realization to the sponsor and ask the project manager to focus exclusively on the project's outputs. The rationale for this position is that the project manager is not involved in what happens after project completion.

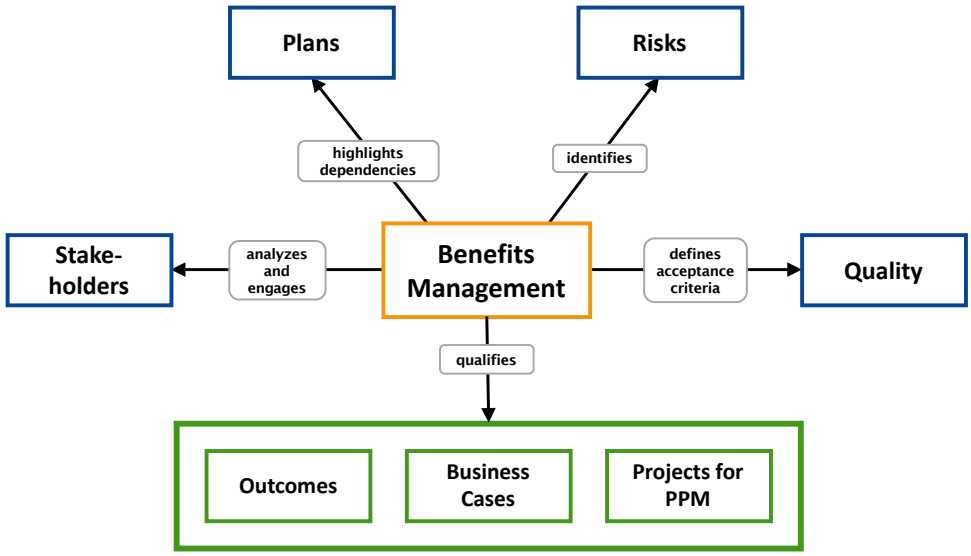
However, project managers (and the project team) clearly have the ability to influence benefits through their decisions about how to resolve problems, respond to risks, and develop the project's outputs. For example, cutting corners during the project to save money could result in a low-quality product that fails to deliver the expected revenues.

GPM's position is that the project team must consider the impact of their decisions on the acceptance, adoption, and integration of the project outputs into a new capability to help ensure sustainability and benefits realization.

12.4. Additional Benefits of Benefits Management

Good benefits management helps support a number of different organizational and project areas as shown in Figure 12.4. Benefits management can help support and empower other disciplines such as project portfolio management (PPM), risk management, project planning, and stakeholder engagement.

Figure 12.4 Benefits Management Interfaces



In short, benefits management isn't simply a nice-to-have component of project management. Benefits management is the primary purpose for the investment in the project and should be a factor in all project decisions.

12.5. Summary

This chapter started with a model showing how benefits were related to outputs, outcomes, capabilities, and other aspects of project results. It then presented a process designed to ensure that the realization of benefits is supported throughout the project. It also covered the concept of a cradle-to-cradle life cycle illustrating the very substantial benefits delivered by sustainability.

PART FOUR: Standards

Notes

13. Standards Supporting Sustainable Project Management

Standards are like the foundation of a building: if you compromise on them, the whole structure is at risk. — Alan Greenspan

This chapter presents an overview of standards that support sustainability. Implementation of these standards can help facilitate the delivery of sustainable projects.

Standards help to ensure that products and services are safe, reliable, and of good quality. The standards in this chapter are open ended, multi-national, multi-cultural, and multi-linguistic. For many organizations, they are strategic tools that reduce costs by minimizing waste, reducing errors, and increasing productivity.

The standards in this chapter can be implemented by organizations in both the public and private sectors irrespective of size, activity, or geographical location. GPM has incorporated many of the concepts of these standards into the PRiSM methodology and the P5 Standard.

Most of the standards in this chapter were developed by the *International Organization for Standardization (ISO)*. ISO is an independent, non-governmental organization with a membership of over 170 national standards bodies. ISO standards are regularly reviewed for relevance and updated as needed.

13.1. Sustainability Reporting Standards and Frameworks

Sustainability reporting has become essential for organizations to provide transparency about their sustainability spending and practices. Projects are a major factor in both categories as shown in Section 1.5.

Whether it's reducing greenhouse gas emissions, improving social equity, or fostering economic sustainability, projects are how organizations address sustainability issues.

Unfortunately, many organizations fail to include project spending in their sustainability reports. By treating projects as material entities in sustainability reporting, organizations can ensure their reports are accurate, decision-useful, and reflective of both the financial and non-financial impacts of their activities.

Several key standards and frameworks have emerged to guide organizations on how to report on their sustainability efforts in a way that is both meaningful and actionable for stakeholders. The following paragraphs describe the main reporting standards and frameworks used globally.

European Sustainability Reporting Standards (ESRS). The ESRS are a mandatory reporting framework under the Corporate Sustainability Reporting Directive (CSRD) in the European Union (EU). These rules affect any organization doing business in Europe, so their impact is substantial. They are designed to align with the EU's sustainability and climate goals by requiring companies to disclose comprehensive sustainability information including climate-related impacts, human rights impacts, and social impacts. Organizations must assess and report on both the financial impact of their actions and how their actions affect the environment and society. ESRS includes a mandatory audit to ensure credibility and accuracy.

International Financial Reporting Standards (IFRS) Foundation. IFRS now includes the International Sustainability Standards Board (ISSB) and has also absorbed the work of Task Force on Climate-related Financial Disclosures (TCFD).

ISSB was established to develop a comprehensive global baseline of sustainability related disclosure standards. Although compliance with ISSB is not mandatory, it is widely adopted by organizations seeking to align their sustainability reporting with financial impact assessments, especially in emerging regions looking to harmonize with global standards. Materiality assessments focus on financial impacts, helping companies identify which sustainability factors have the most significant effect on their financial performance.

TCFD was a globally recognized framework for disclosing climate-related risks and opportunities. It provided guidance on how organizations can disclose how climate change impacts their financial performance.

Global Reporting Initiative (GRI). The GRI is one of the most recognized sustainability reporting frameworks globally. It emphasizes transparency on a broad range of topics, encouraging organizations to report on their social, environmental, and economic impacts. While GRI is not mandatory, it is widely adopted. GRI takes a double materiality approach considering the impact of sustainability issues on both the organization's financial performance and its broader impacts on society and the environment. Audits are not required under GRI but are encouraged to enhance the credibility of the reports.

Table 13.1 Key Aspects of Sustainability Reporting

Standard or Framework	Mandatory?	Impact Materiality?	Financial Materiality?	Environment?	Social?	Governance?	Audit?	Sector Specific?
ESRS	Y	Y	Y	Y	Y	Y	Y	Y
IFRS	1	N	Y	Y	N	2	3	4
GRI	N	Y	5	Y	Y	Y	6	Y
SASB	N	N	Y	Y	Y	Y	N	Y
TNFD	N	Y	Y	Y	N	2	N	7

1 Can be made mandatory by national adoption
2 Includes some aspects of governance
3 Determined by local regulations
4 Provides a set of principles for climate-related disclosures that are cross-industry and also offers sector-specific guidance
5 Allows for consideration
6 Encouraged
7 Provides supplemental guidance for some sectors

Sustainability Accounting Standards Board (SASB). The SASB framework is designed to help organizations disclose financially material sustainability information to investors. SASB standards are tailored to specific industries, ensuring that organizations report on the sustainability issues that are most relevant to their financial performance. Like ISSB, SASB is not mandatory, but it is commonly used for investor-focused sustainability reporting. Materiality assessments focus on financial impacts, and audits are recommended for investor confidence.

Task Force on Nature-related Financial Disclosures (TNFD). The TNFD is a global, market-led, science-based initiative providing organizations with the tools to act on evolving nature-related issues. Its recommendations focus on reporting the impacts of nature and biodiversity. It offers guidance on how organizations should disclose financial risks and opportunities related to nature. TNFD reporting is not mandatory, but its importance is growing as organizations increasingly recognize the material risks posed by biodiversity loss and ecosystem degradation. Materiality assessments cover both financial impacts and environmental considerations. While audits are not required, organizations are encouraged to ensure the reliability of their disclosures.

13.2. Circular Economy

ISO 59004 Circular Economy — Vocabulary, principles and guidance for implementation focuses on the principles, framework, and requirements for implementing a circular economy within an organization. This standard guides organizations in transitioning from a traditional linear economy—where resources are used and discarded—to a circular economy that emphasizes sustainability, resource efficiency, and waste minimization. It provides a structure for organizations to:

- Enhance resource use and reduce environmental impacts
- Implement practices that support circularity such as product life cycle extension and recycling
- Measure and monitor progress towards circular economy goals
- Ensure compliance with relevant environmental regulations

ISO 59004 is designed to integrate circular economy principles into organizational strategies, fostering sustainable development and long-term resilience.

ISO 59020 Circular economy — Measuring and assessing circularity performance sets forth requirements and guidance for organizations to measure and assess their circularity performance. It aims to standardize the process by which organizations collect and calculate data using circularity indicators to ensure consistent and verifiable results. It provides a structured framework for setting system boundaries, selecting appropriate indicators, and interpreting data to evaluate the circularity performance at multiple levels.

ISO 59020 helps organizations identify how effectively they are minimizing resource use and optimizing the circular flow of materials. It offers a way to quantify progress and demonstrate commitment to sustainable practices thus enhancing transparency, accountability, and stakeholder trust.

13.3. Sustainable Procurement

Sustainable procurement is about how an organization manages its relationships with both direct and indirect suppliers. Sustainable procurement management, also called sustainable supply chain management, is a core competency for sustainable project management and is discussed in more detail in Section 7.4.

ISO 20400 Sustainable procurement – Guidance provides an approach to help understand the risks and opportunities of sustainable procurement. It covers basics such as category management and the need for stakeholder input, as well as more advanced topics such as institutional complicity with unethical behavior and the need to deal with the entire supply chain and not just direct suppliers.

13.4. Environmental Management Systems

An *environmental management system* (EMS) is a structured system designed to help an organization manage the environmental impacts caused by its products, services, and activities. An EMS normally covers areas such as training, records management, inspections, objectives, and policies. For sustainable projects, the EMS of the performing organization can provide critical support for understanding how to ensure that the project approach and results are environmentally sound.

Subjects addressed by an EMS will typically include air pollution, water access, sewage and waste disposal, soil contamination, natural resource usage, and recycling-and-reuse practices.

An effective EMS can also help:

- Demonstrate compliance with statutory and regulatory requirements
- Increase engagement of employees
- Improve the organization’s reputation (brand) and the confidence of stakeholders
- Achieve strategic aims by addressing environmental issues

- Provide a competitive advantage through increased efficiency and reduced costs
- Encourage better environmental performance of suppliers by integrating them into the organization's systems

The ISO 14000 family provides a series of standards that address environmental management. The most frequently referenced standards include:

Table 13.2 Environmental Management Standards

Number	Title	Description
ISO 14001	Environmental management systems – Requirements with guidance for use	Sets out the criteria for an environmental management system and is certifiable. It provides a framework that an organization can follow to set up an effective environmental management system
ISO 14004	Environmental management systems – General guidelines on implementation	Provides guidance on the establishment, implementation, maintenance, and improvement of an environmental management system
ISO 14006	Environmental management systems – Guidelines for incorporating ecodesign	Gives guidelines for establishing, documenting, implementing, maintaining, and continually improving ecodesign as part of environmental management systems
ISO 14007	Environmental management – Guidelines for determining environmental costs and benefits	Gives guidelines for organizations on how to determine the environmental costs and benefits associated with their activities
ISO 14015	Environmental management – Environmental assessment of sites and organizations (EASO)	Provides a process for the environmental assessment of sites and organizations and outlines requirements for the collection, review, and analysis of information
ISO 14020	Environmental labels and declarations – General principles	Establishes the general principles for the development and use of environmental labels and declarations
continued		

Number	Title	Description
ISO 14040	Environmental management – Life cycle assessment – Principles and framework	Specifies the principles and framework for life cycle assessment (LCA), including the phases of LCA such as goal and scope definition, inventory analysis, impact assessment, and interpretation
ISO 14044	Environmental management – Life cycle assessment – Requirements and guidelines	Details the requirements and provides guidelines for life cycle assessment (LCA)
ISO 14046	Environmental management – Water footprint – Principles, requirements, and guidelines	Specifies the principles, requirements, and guidelines for assessing and reporting the water footprint of products, processes, or organizations based on life cycle assessment
ISO 14064-1	Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals	Provides guidance for quantifying and reporting greenhouse gas emissions and removals at the organization level
ISO 14064-2	Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring, and reporting of greenhouse gas emission reductions or removal enhancements	Specifies requirements for quantifying, monitoring, and reporting GHG reductions or removal enhancements from GHG projects
ISO 14064-3	Greenhouse gases – Part 3: Specification with guidance for the verification and validation of greenhouse gas statements	Specifies principles and requirements and provides guidance for those conducting or managing the validation and/or verification of greenhouse gas statements
ISO 14067	Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification	Provides principles, requirements, and guidelines for the quantification and reporting of the carbon footprint of products

13.5. Energy Management Systems

An *energy management system* (EnMS) helps an organization manage their energy use. Creating an EnMS involves developing and implementing an energy policy, setting targets for energy use, and designing action plans to reach them. This might include implementing energy-efficient technologies, reducing energy waste, or improving current processes to cut energy costs.

ISO 50001 Energy management systems – Requirements with guidance for use provides a framework to enable organizations to:

- Develop a policy for more efficient use of energy
- Fix targets and objectives to meet the policy
- Use data to better understand and make decisions about energy use
- Measure the results
- Review how well the policy works
- Continually improve energy management

ISO 50001 is designed to help the organization get immediate benefits by making better use of its energy-consuming assets.

13.6. Social Responsibility

Social responsibility (SR), also called corporate conscience, corporate citizenship, social performance, corporate social responsibility, or sustainable responsible business, is a form of corporate self-regulation. SR means that organizations actively comply with cultural values, ethical standards, the spirit of the law, and international norms. The intent of SR is to provide processes to accept, adopt, and integrate responsibility for the company's actions, and to encourage it to have a positive impact on the environment and its employees, communities, consumers, and other stakeholders. Project managers are not responsible for corporate SR, but they should be aware of its priorities and objectives.

ISO 26000 – Guidance on Social Responsibility is intended to assist organizations in contributing to sustainable development by being more socially responsible. It encourages them to go beyond legal compliance and seeks to promote a common understanding of social responsibility.

ISO 26000 offers practical guidance to help an organization:

- Understand how it currently impacts society and contributes to sustainable development
- Identify, engage, and respect its stakeholder expectations
- Define which issues are relevant and significant and ensure they are prioritized for action
- Comply with applicable laws and consistent with international norms of behavior
- Integrate responsible behavior throughout their organization and relationships

13.7. Occupational Health and Safety Management

ISO 45001 Occupational health and safety management systems — Requirements with guidance for use specifies requirements for an occupational health and safety (OH&S) management system. It provides a framework for organizations to manage risks and improve OH&S performance.

The standard establishes criteria for OH&S policy, objectives, planning, implementation, operation, auditing, and review. Key elements include leadership commitment, worker participation, hazard identification and risk assessment, legal and regulatory compliance, emergency planning, incident investigation, and continual improvement.

Implementing ISO 45001 can provide significant value to organizations looking to reduce workplace incidents and demonstrate OH&S commitment. Benefits include:

- Enabling organizations to systematically assess hazards and implement risk control measures, leading to reduced workplace injuries, illnesses, and incidents.
- Showing employees and external stakeholders that the organization is committed to worker health, safety and wellbeing. This can boost reputation, morale, and retention.
- Proactive risk management, potentially lowering insurance premiums.
- Strengthening organizational resilience against safety threats and crises.

13.8. Anti-bribery Management

Anti-bribery management systems are intended to help organizations recognize and deal with the increasing level of threat from acts of bribery. *ISO 37001 Anti-bribery management systems – Requirements with guidance for use* defines bribery as, "the offering, promising, giving, accepting or soliciting of an undue advantage of any value (which could be financial or non-financial), directly or indirectly, and irrespective of location(s), in violation of applicable law, as an inducement or reward for a person acting or refraining from acting in relation to the performance of that person's duties."

ISO 37001 supports establishing, implementing, maintaining, reviewing, and improving an anti-bribery management system. The standard deals with:

- Bribery in the public, private, and not-for-profit sectors
- Bribery by or of the organization
- Bribery by or of the organization's employees
- Bribery by or in the organization's supply chain
- Direct and indirect bribery (i.e., a bribe offered or accepted through or by a third party)
- Whistleblowing
- Compliance management systems

The main benefit of an anti-bribery management system is, of course, that it can help to prevent bribery from occurring. It can also help to:

- Prevent losses from misappropriated funds
- Avoid projects being undermined and not properly or safely carried out
- Assist in the organization's defense if it is prosecuted for bribery

13.9. Sustainable Development in Communities

Sustainable development in communities refers to the potential for local communities (cities, towns, counties, regional governments, etc.) to benefit themselves, society, and the environment by becoming more sustainable. *ISO 37101 Sustainable development in communities – Management system for sustainable development – Requirements with guidance for use* is intended to support such efforts.

ISO 37101 provides guidance to:

- Improve the contribution of communities to sustainable development outcomes
- Manage sustainability and foster smartness and resilience in communities while accounting for the territorial boundaries to which it applies
- Assess the performance of communities in progressing towards sustainable development
- Aid in fulfilling compliance obligations

13.10. Quality Management

The purpose of *quality management* is to help organizations provide products and services that meet relevant customer needs and expectations and that comply with relevant regulatory and statutory requirements. The ISO quality management standards require organizations to define their quality objectives and to continually improve their processes in order to reach them.

The ISO quality management standards are built on the following seven principles:

- Customer focus
- Leadership
- Engagement of people
- Process approach
- Improvement
- Evidence-based decision making
- Relationship management

Quality is achieved through a *quality management system*. A QMS is a set of interrelated or interacting elements that organizations use to formulate quality policies and quality objectives and to establish the processes needed to ensure that these policies are followed, and these objectives are achieved.

Implementing a QMS can help an organization demonstrate to key stakeholders that it is capable of meeting customer requirements, enhancing customer satisfaction, and continually improving both its products and services. In turn, this can be expected to minimize risk, improve benefits, reduce costs, and enhance the organization's brand.

Standards in the ISO 9000 family include:

Table 13.3 Quality Management Standards

Number	Title	Description
ISO 9000	Quality management systems – Fundamentals and vocabulary	Covers the basic concepts, principles, and language of quality management, providing the foundation for understanding the requirements of ISO 9001
ISO 9001	Quality management systems – Requirements	Sets out the criteria for a quality management system for an organization of any type or size
ISO 9004	Quality management – Quality of an organization – Guidance to achieve sustained success	Provides guidance for organizations to achieve sustained success by focusing on the quality management principles of ISO 9001, enhancing performance, and improving effectiveness and efficiency

13.11. Asset Management

An *asset management* system supports the process of developing, operating, maintaining, upgrading, and disposing of assets cost-effectively. An asset is an item, thing, or entity that has potential or actual value to an organization. Assets may be tangible (such as buildings or furniture) or intangible (such as human capital or intellectual property).

The outputs of a project will normally be assets for the performing organization.

The benefits of an asset management system include:

- Alignment of processes, resources, and functional contributions
- Creating an audit trail for what is done, when, and why
- Better understanding and usage of data to support informed and consistent decisions
- Improved planning (especially of capital expenditures)
- Alignment and coordination of existing initiatives, including competency development
- Greater engagement of the workforce

ISO currently provides three standards to support asset management:

Table 13.4 Asset Management Standards

Number	Title	Description
ISO 55000	Asset management – Overview, principles and terminology	Gives an overview of asset management and sets out its principles and terminology
ISO 55001	Asset management – Management systems – Requirements	Specifies the requirements for the establishment, implementation, maintenance, and improvement of an asset management system
ISO 55002	Asset management – Management systems – Guidelines for the application of ISO 55001	Provides advice and guidance for how to implement an asset management system that is in compliance with the requirements of ISO 55001

13.12. Risk and Opportunity Management

Risk and opportunity management covers how an organization deals with uncertain future events. It is a core competency for sustainable project management and is discussed in more detail in Section 6.4.

ISO 31000 Risk management – Guidelines provides principles, a framework, and a process for managing risks and opportunities. It outlines a comprehensive approach to identifying, analyzing, evaluating, treating, monitoring and communicating risks across an organization.

Application of ISO 31000:

- Fosters a shared understanding of risks, their nature, and ways to manage them across an organization.
- Helps embed risk management into an organization's governance, strategy, planning, reporting processes, policies, values, and culture.
- Equips organizations to anticipate and address risks head-on, turning potential challenges into strategic advantages.

ISO 31000 can be valuable for any organization seeking to implement a comprehensive approach to risk management including:

- Organizations in heavily regulated industries like financial services and healthcare
- Project management and engineering firms
- Organizations wanting to build a risk management culture

13.13. Summary

This chapter has provided a review of some of the many standards that apply to sustainable project management and sustainability. It has summarized the intent of those standards.

14. Standards for Project Management

Project management is the engine that moves the organization forward. — Joy Gumz

Numerous standards have been developed in the field of project management. These standards provide descriptions of good practice and are typically an accumulation of expert knowledge that has been developed through consensus and codified into a written document.

14.1. ISO 21500

The ISO 21500 series provides standards for projects, programs, and project portfolios. The ones most relevant to sustainable project management include:

Number	Title	Description
ISO 21500	Project, programme and portfolio management — Context and concepts	Specifies the organizational context and underlying concepts for undertaking project, programme and portfolio management
ISO 21502	Project, programme, and portfolio management – Guidance on project management	Guidance on managing projects covering practices from initiation through to delivery and closure
ISO 21506	Project, programme, and portfolio management – Vocabulary	Establishes common terminology for project, program, and portfolio management

14.2. PRINCE2

PRINCE2 (PRojects IN Controlled Environments) is a structured project management method that, like PRiSM, emphasizes dividing projects into manageable and controllable stages. It is driven by seven principles, seven themes, and seven processes.

Its principles are:

- **Continued business justification**. The business case is the most important document and is updated at every stage of the project to ensure that the project is still viable. Early termination should occur if the business case is no longer valid.
- **Learn from experience**. Projects should continually refer to their own lessons and to those of previous projects to avoid reinventing the wheel.
- **Defined roles and responsibilities**. Roles are separated from individuals who may take on multiple roles or share a role.
- **Manage by stages**. A project is planned and controlled on a stage-by-stage basis. Moving between stages includes updating the business case, the risks, the overall plan, and the next-stage plan in the light of any new evidence.
- **Manage by exception**. If defined tolerances are exceeded (e.g., the duration of a stage will exceed its estimated time by more than the tolerance), it is escalated to the next management level for a decision on how to proceed.
- **Focus on products**. A PRINCE2 project focuses on the definition and delivery of tangible products.
- **Tailor to suit the project context**. PRINCE2 is tailored to suit a project's context, size, complexity, importance, team capability, and risk.

14.3. A Guide to the Project Management Body of Knowledge

A Guide to the Project Management Body of Knowledge, also called the *PMBOK Guide*, is from the Project Management Institute, Inc. It is a principles-based framework that emphasizes adaptability. It encourages project managers to design and integrate mechanisms that align with the specific needs, context, and objectives of the project, ensuring effective oversight and decision making throughout the project life cycle.

The PMBOK Guide:

- Emphasizes guiding principles over prescriptive processes
- Encourages tailoring project approaches to specific contexts
- Focuses on delivering value aligned with strategic goals
- Stresses robust governance structures and decision making
- Highlights active and ongoing stakeholder engagement

- Promotes proactive and adaptive risk management
- Prioritizes effective collaboration and communication
- Encourages strong leadership and team accountability

14.4. Individual Competence Baseline

The International Project Management Association's (IPMA) *Individual Competence Baseline* (ICB) provides a competence-based approach to project management by describing perspective, personal, and practice competences. It:

- Describes competences needed for project management
- Identifies key competence indicators (KCIs) that support each competence
- Documents measures that can be used to assess the KCIs

14.5. Summary

This chapter has provided a review of four widely used standards that provide guidance on how to manage projects. It has summarized the content of those standards.

Notes

Authors

Arrwwgggghh grrraaaagghhh wyaaa rwalggghh hrrawhh wyaaaaaa arrwwgggghh hraaawwwghh! — Chewbacca

The following individuals were involved in developing the third edition of this book.

Dr. Joel Carboni stands as the preeminent global authority on the practice of sustainable project management. His pioneering tools and methodologies have become the benchmark for green practices, garnering global adoption by both corporations and governments.

A distinguished alumnus of Ball State University, Dr. Carboni holds a Ph.D. in Sustainable Development and Environment. His portfolio encompasses over 30 years across multifaceted domains of project management spanning government, finance, consulting, manufacturing, and the academic sphere.

An esteemed voice in the industry, Dr. Carboni regularly takes the stage at conferences and symposiums related to project management and sustainability. He has left his mark in more than 55 nations.

Notable accolades include his tenure as President Emeritus of the International Project Management Association (IPMA) in the U.S. and his pivotal role on the IPMA Global advisory board.

As the visionary behind GPM, Dr. Carboni's influence extends into academia, serving as a visiting professor at Skema Business School.

His commitment to global causes is evident as the GPM representative to the United Nations Global Compact. Dr. Carboni was a foundational signatory for both the Business for Peace Initiative and the Anti-Corruption Call to Action. Furthermore, he was instrumental in crafting the UN 2030 Agenda for Sustainable Development.

Dr. Carboni is renowned for introducing the PRiSM™ project delivery methodology and the *P5 Standard for Sustainability in Project Management*. His educational materials are taught in over 145 countries.

William R. Duncan has nearly 50 years of management and consulting experience including five years with a major international consulting firm. He is a graduate of Brown University in Providence, RI and has done post-graduate work in computer science at Boston University.

He was the primary author of the original (1996) version of *A Guide to the Project Management Body of Knowledge (PMBoK Guide),* the most widely used project management guide in the world. In addition, his "process model" of project management was used to organize both *ISO 10006, Guidance on quality in project management* and *ISO 21500:2012 — Guidance on project management*.

He co-authored *Project Management for the Hospitality Industry*, the only textbook available on that topic. He has authored over 40 articles for publications such as the *Project Management Journal*, *PMNetwork*, *Projects@Work*, and *Chief Projects Officer*. He has presented papers at conferences sponsored by AIPM, FOSTAS, PMI, and others. He posts and comments frequently on LinkedIn.

Mr. Duncan is currently Director of Certification for GPM Global.

Mónica González is an Industrial Engineer with more than 40 years of professional experience. She has worked extensively in public and private electrical companies, with a two-year specialization in Houston (Texas, USA) in electrical network automation. She was a member of the Communication Committee and the Environment and Sustainable Development Committee of Electricité de France (EDF) Branch America, along with colleagues from France, Brazil, Mexico, and Argentina. She has an MBA (Universidad Católica de Córdoba, Argentina), an MPM (ADEN and Stetson University, USA), and PMP® (PMI) and GPM-m® (GPM Global) Certifications.

She has been involved with Integrated Organizational Management Systems according to International Standards. As an active player in ISO Standards, she was a collaborating member of the ISO PC/TC for Project, Program and Portfolio Management. She is a member of the GPM Global Leadership Executive Team and main collaborator of the PRiSM Methodology.

As an advocate for the UNGC, her mission is to contribute to Global Sustainability, an imperative of the Society as a whole, tending to improve the quality of life, well-being and safety of people, rational use of resources and energy efficiency. Her legacy is Project Management for Peace.

She has been a Professor of Regenerative Development and Preparation of GPM-b Certification of the Faculty of Economics and Management for the Common Good at the University for International Cooperation, Costa Rica, the leader in virtual education programs in Latin America and the Caribbean.

Dr. Michael Pace is GPM's Director of Academic Practice, focusing on training and educating project managers on how to do their work efficiently, effectively, and sustainably. He holds a BS in forensics, an MS in forensics, and a PhD in business management. He is currently working towards a doctorate in education (EdD) at the University of Glasgow. He is certified in project management, portfolio management, agile methods, sustainability, cultural intelligence, and leadership. He has over 20 years of experience in project, program, and portfolio management across multiple sectors.

He has consulted, mentored, or taught in over a dozen countries across four continents—with plans to hit all seven—and has published books, chapters, and articles on project management topics that focus on methods and practical skills. Additionally, he is the primary creator of a patented method to simplify the explanation of complex laboratory results to healthcare providers.

Dr. Pace also serves as an Assistant Professor of Practice at Texas A&M University's Mays Business School; as a faculty affiliate of the Texas A&M Energy Institute; as director of several study abroad programs in entrepreneurship and sustainable management; and as a consultant for strategic planning projects.

David Smyth is GPM's Executive Vice President and a seasoned strategic advisor. He manages GPM's consulting practice, training partner network, and intellectual property partner relationships. He is a senior strategy and leadership professional with a 20+ year background in management consulting, and business and product development.

David has practice leadership experience in sustainable portfolio/project management, strategy development, and change management. He has managed engagements with both public and private sector Fortune 500 clientele in a range of industries including Oil & Gas, Health Care, Logistics, Continuing Education, IT Service Management, and Aerospace and Defense.

He has championed new products in development with multilateral organizations such as the World Bank and accelerated their growth globally.

David has delivered keynotes and presentations at numerous conferences on Sustainability and Regeneration, Benefits Management and Realization, Portfolio Management, and Organizational Change Management Capability.

Michael Young is a serial entrepreneur with a passion for project management. He has over 20 years' experience working in project, program, and portfolio management across many sectors including government, defense, engineering IT, and logistics.

Michael's voluntary contribution to project management is remarkable, having developed numerous ISO standards 258, as one of the authors of IPMA's ICB4, as a member of the IPMA research board, and through over 18 years' service in various roles with the Australian Institute of Project Management.

Michael's work has been featured in BRW, the *Australian Financial Review*, and *SmartCompany*. He has received over 25 awards, including Australian Business Awards award for project management, innovation, and sustainability. He also managed the Australian IT Project of the Year in 2006.

As a prolific author and speaker, Michael actively advocates for an evolution of project management and the delivery of sustainable change.

The following individuals were involved in developing the first and second editions of this book:

- Dr. Joel Carboni, USA
- William R. Duncan, USA
- Monica Gonzalez, Argentina
- Jeff Hodgkinson, USA
- Peter Milson, Canada
- Michael Young, Australia

Acknowledgments

We thank the following individuals for their invaluable contributions to this work. Their insights, expertise, and unwavering support have significantly enriched this book. Each of them has played a crucial role in shaping the ideas, refining the content, and ensuring that our message is both clear and impactful. This book is the result of our collective effort, and we are deeply grateful for your dedication and collaboration.

Thank you for your commitment to advancing the field of sustainable project management and for being an essential part of this journey.

- Nur Hasyimah Mohamad Afandi, Malaysia/USA
- Ewa Bednarzyk, Poland
- Karl Berard, France
- Miguel Carvalho e Melo, Portugal
- Oxana Klimenko, Russia
- Pauline Melnyk, Canada
- Winardi Sani, Indonesia

Notes

References

Aguirre, D., & Alpern, M. "10 Principles of Leading Change Management." Retrieved March 6, 2018. https://www.strategy-business.com/article/00255?gko=9d35b

Association of Change Management Professionals (2014). *ACMP Standard for Change Management*. The Association of Change Management Professionals.

Bekker, M. H., & Steyn, H. "Project governance: Definition and Framework." *Journal of Contemporary Management*, 6(1), Jan 2009, p. 214–228.

Dodgson, M., & Gann, D. (2010). *Innovation: A Very Short Introduction*. Oxford University Press.

Elkington, J. (2023). *Tickling sharks: Systems change for sustainability*. Greenleaf Publishing.

Fanning, A.L., O'Neill, D.W., Hickel, J. *et al.* The social shortfall and ecological overshoot of nations. *Nat Sustain* **5**, 26–36 (2022). https://doi.org/10.1038/s41893-021-00799-z

Ferrell, O. C., Fraedrich, J., & Ferrell, L. (2017). *Business Ethics: Ethical Decision Making & Cases*. Cengage Learning.

Fuller, S. "Life-Cycle Cost Analysis (LCCA)." Retrieved March 6, 2018. https://www.wbdg.org/resources/life-cycle-cost-analysis-lcca

Green Project Management (GPM) (2023). *The GPM P5 Standard for Sustainability in Project Management, version 3.0*. https://www.greenprojectmanagement.org/p5

Interface. (2020). *Mission Zero*. Retrieved from https://www.interface.com/US/en-US/about/mission-zero.html

International Organization for Standardization (2012). *ISO 21500:2012 - Guidance on Project Management*. ISO.

Jenner, S. (2014). *Managing Benefits*. The Stationery Office.

Kahneman, D. (2011). *Thinking, Fast and Slow*. Farrar, Strauss and Giroux.

Kellert, S. R. (2018). *Nature by Design: The Practice of Biophilic Design*. Yale University Press.

Meadows, D. H. (2008). *Thinking in systems: A primer*. Chelsea Green Publishing.

National Academy of Science. "Proceedings." Retrieved March 6, 2018. http://www.pnas.org

Office of Government Commerce (2010). *Management of Value*. The Stationery Office.

Philips. (2020). *Lighting as a Service*. Retrieved from https://www.philips.com/a-w/about/sustainability/circular-economy.html

Raworth, K. (2017). *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*. Chelsea Green Publishing.

Renault. (2019). *Closed-Loop Manufacturing*. Retrieved from https://group.renault.com/en/our-commitments/circular-economy/

Senge, P. M. (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday.

Stockholm Resilience Centre. (2023, September 13). *All planetary boundaries mapped out for the first time: Six of nine crossed*. Stockholm Resilience Centre. https://www.stockholmresilience.org/research/research-news/2023-09-13-all-planetary-boundaries-mapped-out-for-the-first-time-six-of-nine-crossed.html

Transparency International. "Corruption Perceptions Index." Retrieved March 6, 2018. https://www.transparency.org

United Nations. "Sustainable Development Goals." Retrieved August 12, 2024. http://www.un.org/sustainabledevelopment/

United Nations Global Compact. *IMPACT: Transforming Business, Changing the World*. Retrieved March 6, 2018. https://www.unglobalcompact.org/library/1331

Waters Foundation. "Habits of a Systems Thinker." Retrieved August 6, 2024. http://watersfoundation.org/systems-thinking/habits-of-a-systems-thinker/

Notes

SUSTAINABLE
PROJECT MANAGEMENT
THE GPM® PRACTICE GUIDE

Projects are the engines of change and innovation. By embedding regenerative principles into project management, professionals ensure that projects not only achieve their goals but also contribute positively to the broader ecological and social landscape. This approach aligns project outcomes with long-term environmental health and social well-being, creating value that lasts beyond the project's lifespan.

This isn't just an ethical choice—it's a practical one. Regenerative projects often lead to more resilient, adaptable outcomes, reducing risks and costs over time, while also boosting stakeholder trust through a commitment to sustainable, equitable practices.

This book champions a regenerative approach as the only path that truly addresses the urgent challenges of our time. It’s not just about avoiding harm; it’s about actively restoring and enhancing the environments and communities we touch. Here, sustainability means fostering thriving systems, building projects that leave a positive legacy, and ensuring every action contributes to the regeneration of our natural and social environments.

GPM® GLOBAL 2024

ISBN 9798350733150