



A4S CFO LEADERSHIP NETWORK

ESSENTIAL GUIDE TO
**STRATEGIC PLANNING,
BUDGETING AND FORECASTING**



NAVIGATING THIS GUIDE

WHAT IS COVERED

This guide is divided into six main sections that outline how to integrate sustainability factors into your strategic planning, budgeting and forecasting processes. It includes tools, guidance, practical examples and a maturity model. This guide begins with an introduction to the role of finance in integrating sustainability into strategic planning, budgeting and forecasting, and what the benefits and challenges are of doing so.

Click on this icon throughout the guide to follow links to further information. 

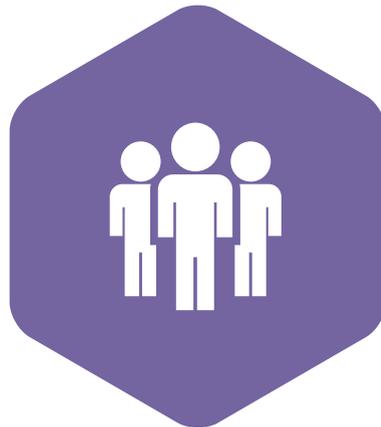
Click on this icon to return to the last viewed page. 

INTRODUCTION 	PROCESS 	GOVERNANCE 	PERFORMANCE MANAGEMENT 	TECHNOLOGY AND DATA 	MATURITY AND REFERENCES 
<p><i>What is integrated strategic planning, budgeting and forecasting?</i></p> <hr/> <ul style="list-style-type: none"> ➤ What is integrated strategic planning, budgeting and forecasting? ➤ How does it fit into the reporting cycle? ➤ How can this guide help you? ➤ Benefits and challenges ➤ Getting started 	<p><i>How to embed sustainability into strategic and financial planning processes</i></p> <hr/> <ul style="list-style-type: none"> ➤ Overview ➤ Tools and guidance <ul style="list-style-type: none"> Strategic planning Budgeting Forecasting ➤ Practical examples 	<p><i>How to ensure effective oversight and accountability</i></p> <hr/> <ul style="list-style-type: none"> ➤ Overview ➤ Tools and guidance <ul style="list-style-type: none"> Strategic management Aligning business goals Organizational structure and oversight Reporting frameworks Decision making power and process Risk management frameworks ➤ Practical examples 	<p><i>How to set an approach to monitoring</i></p> <hr/> <ul style="list-style-type: none"> ➤ Overview ➤ Tools and guidance <ul style="list-style-type: none"> Employee performance Organizational performance ➤ Practical examples 	<p><i>How to integrate sustainability into your technology and data strategy</i></p> <hr/> <ul style="list-style-type: none"> ➤ Overview ➤ Tools and guidance <ul style="list-style-type: none"> Data requirements Risks and challenges of implementing a big data approach System and functionality requirements Current systems gap analysis Common pitfalls ➤ Practical examples 	<p><i>How to assess current maturity and what to do next</i></p> <hr/> <ul style="list-style-type: none"> ➤ Maturity map ➤ Top tips ➤ Case study index ➤ References



THE PROJECT TEAM

We would like to thank all of the project team members who contributed to the A4S Strategic Planning, Budgeting and Forecasting Guide.



A4S CFO LEADERSHIP NETWORK PROJECT TEAM

Wes Daniels, Head of Finance – Asset Management, Anglian Water
Jonathan Forster, Head of Planning, Management Accounting and Analysis, Anglian Water
Dawn Jefferson, Internal Auditor, Anglian Water
Jessica Leng, Senior Director – Property Finance, Asda
Shaun Morton, Commercial Finance, Fresh Foods, Asda
Craig Wilson, Commercial Finance Manager, Asda
Malik Khan, Senior Global Accountant, Bupa
Louise Andrews, Senior Finance Manager, Marks and Spencer
Louise Rowe, Finance Director, South West Water
Kim Williams, Head of Operations Finance, South West Water
Steven Mobbs, Head of Financial Planning & Analysis, Sainsbury's
Ed Gillard, Head of Management Accounts, The Crown Estate
Christian Armitage, Group Financial Reporting Manager, Yorkshire Water

A4S TEAM

Jessica Fries	Alexa Chapman
Helen Slinger	Craig Vink
Christine Brogan	Chester Cheang
Lisa Fahey	Eirini Agallou
Elizabeth Ace	Luke McLaughlin
Jamie Stewart	



Introduction

- What is integrated strategic planning, budgeting and forecasting?
- How does it fit into the reporting cycle?
- How can this guide help you?
- Benefits and challenges
- Top tips for getting started

Process

Governance

Performance management

Technology and Data

Maturity and reference

INTRODUCTION FROM THE A4S CFO LEADERSHIP NETWORK

Successful organizations seek to thrive over the long term in a world that is volatile, uncertain and complex. Eight out of the top ten risks highlighted by the World Economic Forum¹ in 2018 are related to environmental or social issues. Risks that a decade ago weren't seen as a noteworthy threat to business, such as extreme weather events, water crises and failure of climate change mitigation and adaptation are now starting to bite. Developing a strategic response to these issues, mitigating the risks and seizing opportunities arising from an effective response, should be at the front and centre for every organization. All CFOs should ensure these issues are addressed in an integrated manner within their strategic planning, and followed through with aligned budgeting and forecasting. Integration and alignment are key to the creation of a resilient future.

The finance team plays a crucial role here. They ensure strategies are costed, financial resources are allocated, and performance is monitored. Finance teams can also prove that the strategy itself drives sustainable long term value. This is underpinned by the availability and robustness of relevant data. High quality data that is important to the strategy must be used in the formulation of the plan, not simply as a statistic in reporting.

STARTING THE CONVERSATION

If you work in finance, this guide has been designed to help you. The practical tools and insights are pragmatic and useful, so consider its content and share its ideas with your colleagues. The guide will enable you to have a conversation about what you can do in your own organization to deliver sustainable long term value.

All members of the A4S CFO Leadership Network have pledged to build sustainable business models. We pilot, refine and embed relevant integrated thinking and ideas into these models and commit to positive action. As we do this we have the opportunity to keep our financial plans, budgets and forecasts aligned to the strategies that ensure our businesses are resilient and well positioned to thrive. We hope you will want to join us.

SCOTT LONGHURST
MANAGING DIRECTOR, FINANCE
AND NON-REGULATED BUSINESS,
ANGLIAN WATER GROUP

“All CFOs should ensure these issues are addressed in an integrated manner within their strategic planning, and followed through with aligned budgeting and forecasting.”



Introduction

- What is integrated strategic planning, budgeting and forecasting?
- How does it fit into the reporting cycle?
- How can this guide help you?
- Benefits and challenges
- Top tips for getting started

Process

Governance

Performance management

Technology and Data

Maturity and reference

INTRODUCTION

THE TIME FOR TRANSFORMATIONAL CHANGE IS NOW

Scarcity of resources and the impact of climate change are just two of the current sustainability related trends of growing economic concern. Demand for energy is increasing dramatically, and climate change impacts arising from extreme weather, rising sea levels and policy changes are already being felt. Other significant trends such as the ageing population, greater inequality and rapid urbanization are also starting to have an impact.

Business is not only exposed to the risks and potential turbulence from these trends, but is also well positioned to capitalize on the many opportunities which arise. To be successful, businesses will have to take a long term strategic view of sustainability and build it into the key value creation enablers that drive returns on capital, support growth and mitigate risk.

This transformational change is only possible if sustainability factors are incorporated into strategic planning and into the allocation of capital that drives innovation, invests in new ventures and builds resilience.

Each organization's path to capturing value from sustainability will be unique, but the guidance and case studies within this A4S Essential Guide can serve as a useful starting point from which to build.

FINANCE TEAMS HAVE A ROLE TO PLAY, BUT THERE ARE CHALLENGES

The core skills of those in finance teams can be extremely valuable in integrating sustainability into business as usual processes. The use of these skills is essential when performing integrated analysis, and is vital to smooth integration of sustainability into strategic planning, budgeting and forecasting.

For many organizations, integrating sustainability into business processes represents uncharted waters. The challenge of linking sustainability drivers to business strategy is not uncommon, however neither is embedding an integrated response into finance and operations.

We set out some top tips to help overcome these challenges:

- Understand the sustainability factors that impact the business
- Ensure there is effective governance and strong commitment from leadership
- Align with the rest of the organization's performance management framework
- Prioritize the most relevant and meaningful data for incorporation into this framework

INTEGRATING SUSTAINABILITY CONSIDERATIONS INTO EXISTING STRATEGIC PLANNING, BUDGETING AND FORECASTING PROCESSES IS MOST EFFECTIVE

The integration of sustainability factors into strategic planning, budgeting, forecasting and performance management processes will enhance decision making and increase long term enterprise value.

Strategic planning should be proactive, incorporate long term factors in order to maximize opportunities and increase resilience in the ever changing operating environment. Some key considerations to integrate sustainability are:

- Risks and opportunities arising from macro sustainability trends often manifest themselves over a longer time horizon than most medium term business/ strategic plans, with uncertain timing.
- Sustainability trends can impact the operational factors that are critical to achieve strategic goals.
- Scenario analysis is a useful way to test the resilience of current and potential future strategy.
- Clear criteria will help to assess suitability of proposed initiatives, including a strategic alignment metric and a cost benefit analysis that includes social and environmental costs and benefits where appropriate.

[See key business benefits of integration](#) 



WHAT IS INTEGRATED STRATEGIC PLANNING, BUDGETING AND FORECASTING?

Organizations today must navigate an increasingly complex, interconnected, and constantly evolving world. Sustainability factors affecting society, the environment, and the wider economy are posing greater risks and opportunities to businesses than ever before. As a result, an increasing number of organizations see sustainability as an integral part of overall corporate strategy and long term value creation.

To be sustainable, an organization must achieve long term financial performance, whilst operating within environmental constraints and generating positive value for society. Strategic planning, budgeting and forecasting are core processes in managing an organization's financial and operational performance, and play a critical role in influencing and shaping the implementation of corporate strategy. Despite the importance of these processes, many organizations still have a long way to go to integrate sustainability into their activities.

COST OF INACTION

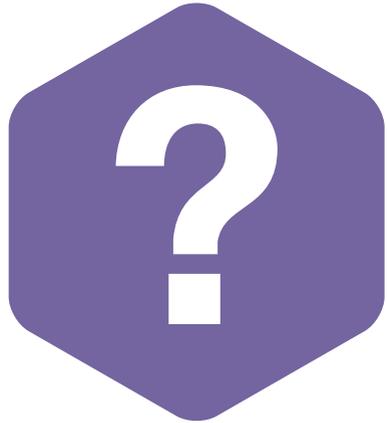
Failure to incorporate sustainability into an organization's strategy, and subsequently into the budgeting and forecasting processes, can result in missed opportunities to improve decision making and risk management, enhance innovation and stakeholder engagement, and align business performance with long term value drivers.

THE ROLE OF FINANCE

The core skills of those in finance teams can be extremely valuable in integrating sustainability into business as usual processes. In particular, the following can be applied equally to non monetary data as to the monetary data that finance teams are accustomed to working with:

- Experience of data and information analysis
- Preparation and communication of management information
- Management of information systems
- Identification of opportunities for growth
- Assessment and mitigation of risks

The use of these skills are essential when performing integrated analysis, and are vital to smooth integration of sustainability into strategic planning, budgeting and forecasting.



“Sustainability is now a corner stone of successful businesses where finance teams are providing increasing leadership within their organizations to ensure decision making fully encompasses economic, social and environmental impacts.”
Gregor Alexander, Finance Director, SSE



Introduction

- What is integrated strategic planning, budgeting and forecasting?
- How does it fit into the reporting cycle?
- How can this guide help you?
- Benefits and challenges
- Top tips for getting started

Process

Governance

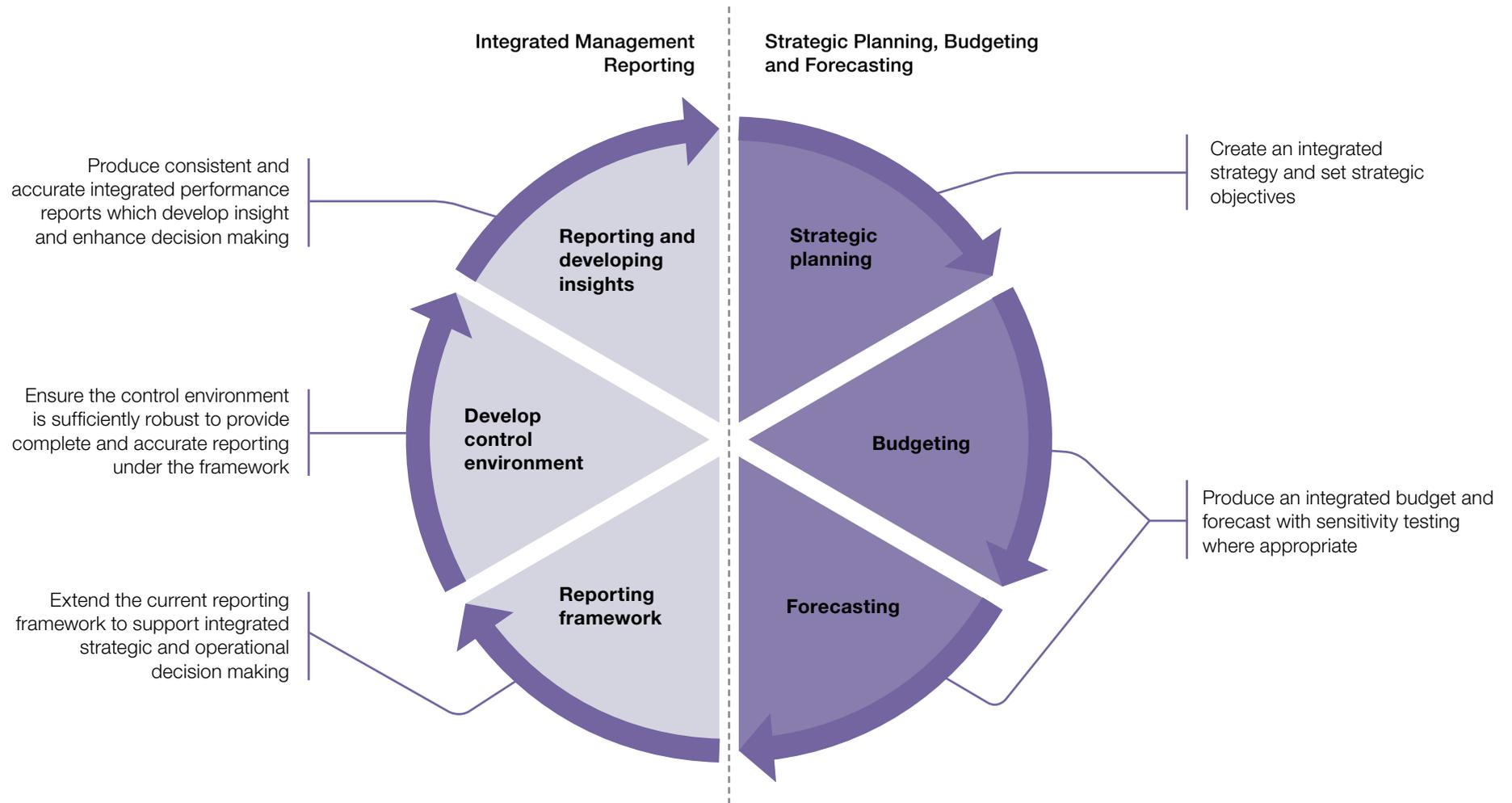
Performance management

Technology and Data

Maturity and reference

HOW DOES IT FIT INTO THE REPORTING CYCLE?

The diagram below sets out the overall process flow from strategic planning to management reporting. For further details on the left hand side section see the forthcoming A4S Essential Guide to Integrated Management Reporting.



Introduction

- What is integrated strategic planning, budgeting and forecasting?
- How does it fit into the reporting cycle?
- How can this guide help you?
- Benefits and challenges
- Top tips for getting started

Process

Governance

Performance management

Technology and Data

Maturity and reference

HOW CAN THIS GUIDE HELP YOU?

This guide aims to support organizations in enhancing the integration of social, economic, and environmental considerations into their strategic planning, budgeting and forecasting processes. It is intended for a finance audience, including Chief Financial Officers, Finance Directors, Financial Controllers, Heads of Financial Planning and Analysis, and other finance professionals.

The guide introduces current practices and the key challenges faced by organizations when factoring sustainability into planning, budgeting, and forecasting processes. It seeks to address the questions we have outlined below and to define the characteristics of good practice.

In order to inform this guide, we have asked ourselves the following questions:

PROCESS	GOVERNANCE	PERFORMANCE MANAGEMENT	TECHNOLOGY AND DATA
<ul style="list-style-type: none"> • Is there a structured way of thinking about how to integrate sustainability issues within our organization’s strategic planning, budgeting and forecasting processes? • How do we improve the finance team’s awareness of sustainability and the value that it adds to the business? • How can we ensure that we are allocating the right resources to adopting an integrated approach, given existing pressures on the finance team? • How can we ensure that sustainability is integrated into our budgeting and forecasting processes consistently and effectively across the organization? 	<ul style="list-style-type: none"> • How do we gain buy in and support for integrated planning, budgeting and forecasting from the whole leadership team? • How do we create a cross enterprise culture that is aligned with, and supportive of, integrated planning, budgeting and forecasting activities? • How should each business unit and functional team become involved in supporting the integration of sustainability within planning, budgeting and forecasting processes? 	<ul style="list-style-type: none"> • Are our planning, budgeting and forecasting processes linked to reporting, performance appraisal, and incentive mechanisms that drive the right sustainability behaviours across the organization? • How do we improve how the finance team collaborates with sustainability specialists on strategic planning, budgeting and forecasting activities? • How do we overcome short term financial pressures that prevent us from developing integrated planning, budgeting and forecasting processes? 	<ul style="list-style-type: none"> • How do we ensure we have timely access to reliable data to feed into our strategic planning process? • How do we prioritize the key performance metrics to be reflected in integrated strategic plans, budgets and forecasts, given the abundance of available data? • How should we approach enhancements to our current finance system to support integrated planning, budgeting and forecasting more effectively? • How can we go about improving the quality of data underpinning integrated planning, budgeting and forecasting processes?

The case studies in this guide have been collated from both the A4S CFO Leadership Network, and other companies, to demonstrate how organizations are starting to answer these questions.



Introduction

- What is integrated strategic planning, budgeting and forecasting?
- How does it fit into the reporting cycle?
- How can this guide help you?
- Benefits and challenges
- Top tips for getting started

Process

Governance

Performance management

Technology and Data

Maturity and reference

BENEFITS AND CHALLENGES OF AN INTEGRATED APPROACH

BENEFITS

Members of the A4S CFO Leadership Network have experienced first hand how integrating sustainability into strategic planning, budgeting, and forecasting makes clear business sense.

Business benefits include:

- Identifying sustainability **opportunities and risks**, and enabling **integrated strategies** and responses
- Driving investment to protect and enhance long term viability and success
- Aligning performance management with long term value drivers
- Reducing cost through operational efficiency
- Providing significant brand benefits
- Encouraging balanced organizational culture, and building better employee and customer engagement

The practical examples found throughout the guide highlight these business benefits

CHALLENGES

For many organizations, integrating sustainability within strategic planning, budgeting, and forecasting processes represents uncharted waters. It can be challenging to link sustainability drivers to business strategy, and to embed an integrated response into finance and operations.

To be effective, long term strategic objectives must be translated into near term budgeting and forecasting processes. Members of our Network have experienced the following challenges:

- *“Our business runs on a three year planning timeframe, so the rest of the business wouldn’t see the value in looking further ahead.”*
- *“Responsibility for sustainability is still unclear.”*
- *“Running the financial process is difficult enough, how do we include information we don’t have data for?”*
- *“We don’t have the system capability or the time to complete this manually.”*
- *“We are all rewarded on financial metrics so this is what we focus on.”*

Examples of how they have been overcome have been included in this guide:



“Our initial thinking was that we would enhance our understanding and management of important risks and opportunities, and we were right.”
Christian Armitage, Group Financial Reporting Manager, Yorkshire Water



Introduction

- What is integrated strategic planning, budgeting and forecasting?
- How does it fit into the reporting cycle?
- How can this guide help you?
- Benefits and challenges
- Top tips for getting started

Process

Governance

Performance management

Technology and Data

Maturity and reference

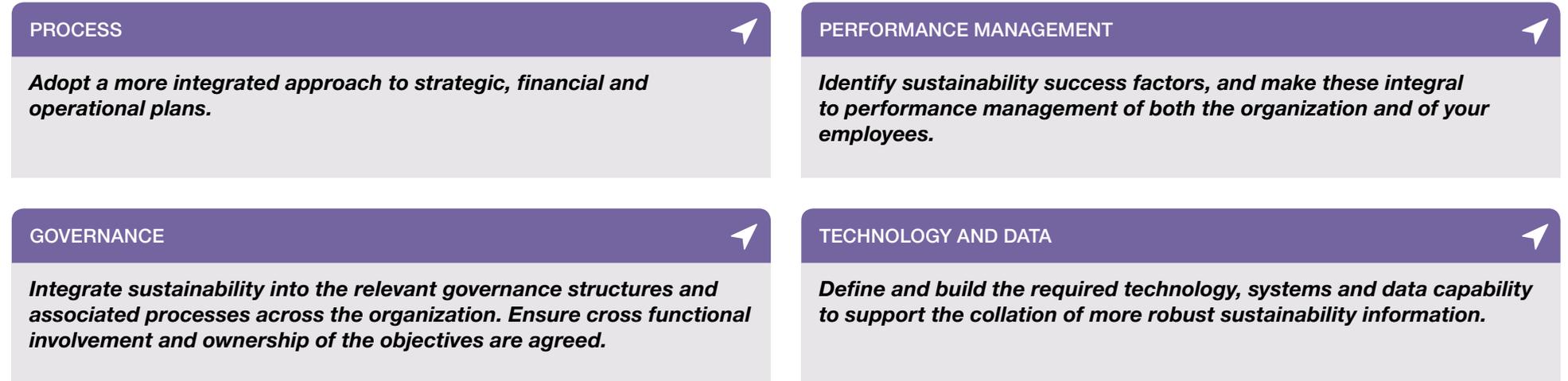
BENEFITS AND CHALLENGES OF AN INTEGRATED APPROACH

HOW TO RESPOND TO THESE CHALLENGES

To respond to these challenges, firstly consider the following:



In order to implement successfully the considerations above, we recommend focusing on the following areas of finance function activity to build capability:



This guide focuses on each of these areas in turn.



Introduction

- What is integrated strategic planning, budgeting and forecasting?
- How does it fit into the reporting cycle?
- How can this guide help you?
- Benefits and challenges
- Top tips for getting started

Process

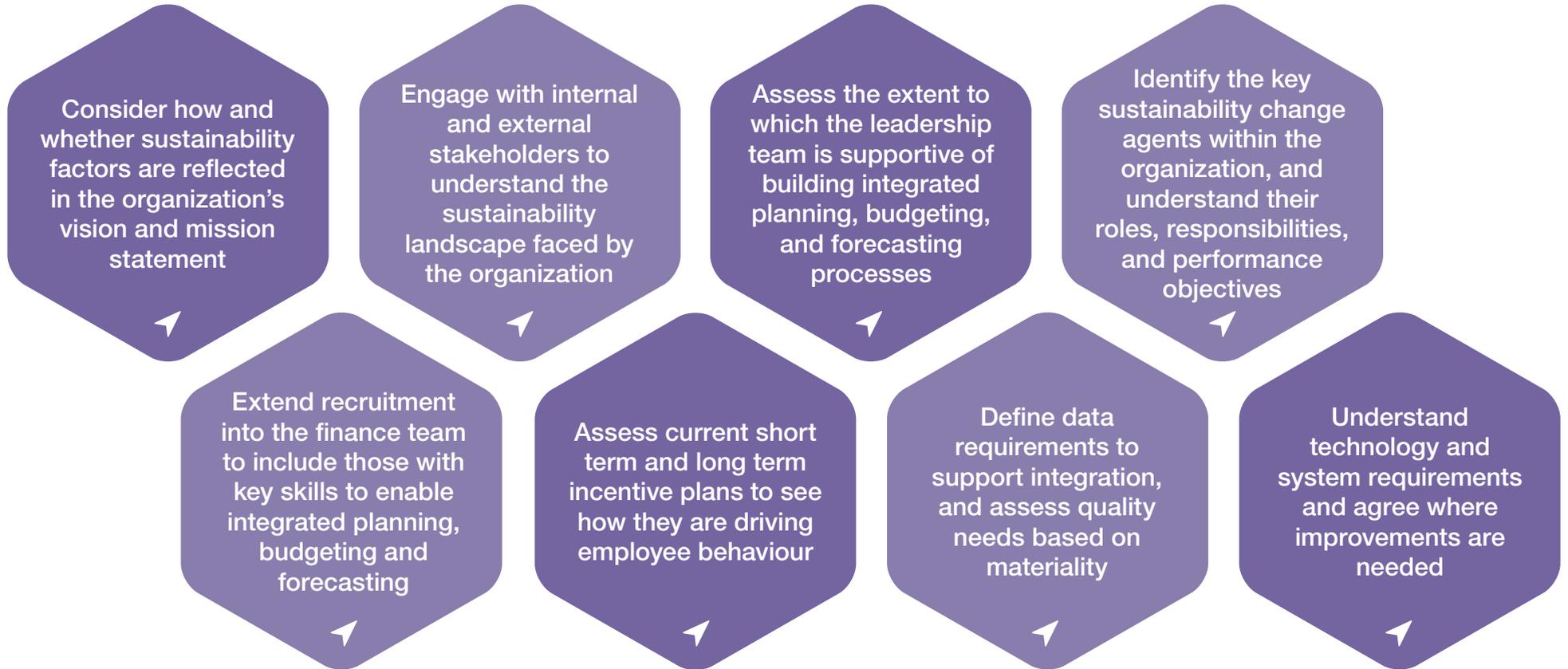
Governance

Performance management

Technology and Data

Maturity and reference

TOP TIPS FOR GETTING STARTED



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS

STRATEGIC PLANNING, BUDGETING AND FORECASTING

Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS

Strategic planning, budgeting and forecasting are established business processes, although each organization will have a slightly different approach in place. We have set out a typical strategic planning, budgeting and forecasting process. Over the following pages, suggested integration activities are set against these steps so that individual organizations can tailor the guidance to meet their individual needs and the standard strategic planning, budgeting and forecasting steps that they follow.

STRATEGIC PLANNING

1. Assess the organization's mission, vision, strategic context and environment
2. Set strategic goals, incorporating sustainability considerations
3. Determine critical success factors, barriers, risks and enablers for achievement of goals
4. Define and agree high level activities and initiatives

BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors
2. Convert the strategic plan and high level initiatives into annual activities and milestones, allocating accountable owners
3. Set and agree performance commitments and budgets for each business unit and function
4. Deliver detailed 'top down and bottom up' annual operational and financial plans

FORECASTING

1. Assess performance
2. Provide a realistic outlook based on the current business environment
3. Provide the latest view of expected underlying performance
4. Allow timely management decisions and corrective actions

What did organizations say were their key process challenges?
How will this guide help?

- Overview
- Tools and guidance
- Practical examples

PROCESS: KEY CHALLENGES

Organizations said...

“The strategic planning, budgeting and forecasting processes vary across organizations, which makes it difficult to create a standard approach for integration.”

“There is little awareness across finance teams on sustainability matters, and the value it adds to the business.”

“Our business runs on a three year planning timeframe, the rest of the business wouldn’t see the value in looking further ahead.”

“The finance team believe we have an important role to play in integrating sustainability, but progress to date is limited.”

We need...

Tips for integration which can be adapted depending on how the organization manages the process.

Knowledge sharing across the organization, and increased collaboration between the finance and sustainability teams.

Tips and tools to understand the sustainability landscape and potential impacts faced by the organization, to build the business case for longer term planning.

Increased clarity on the role of finance and the difference we can make.



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: STRATEGIC PLANNING

The need to plan strategically is generally understood by senior finance professionals. This strategic planning should be proactive in integrating sustainability and incorporate long term factors in order to maximize opportunities and increase resilience in the ever changing operating environment.

We outline a four step process, with supporting tools, to guide finance teams towards integrating sustainability into the strategic planning process.

STRATEGIC PLANNING

1. Assess the organization's mission, vision, strategic context and environment

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4. Define and agree high level activities and initiatives

BUDGETING

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PROCESS: STRATEGIC PLANNING

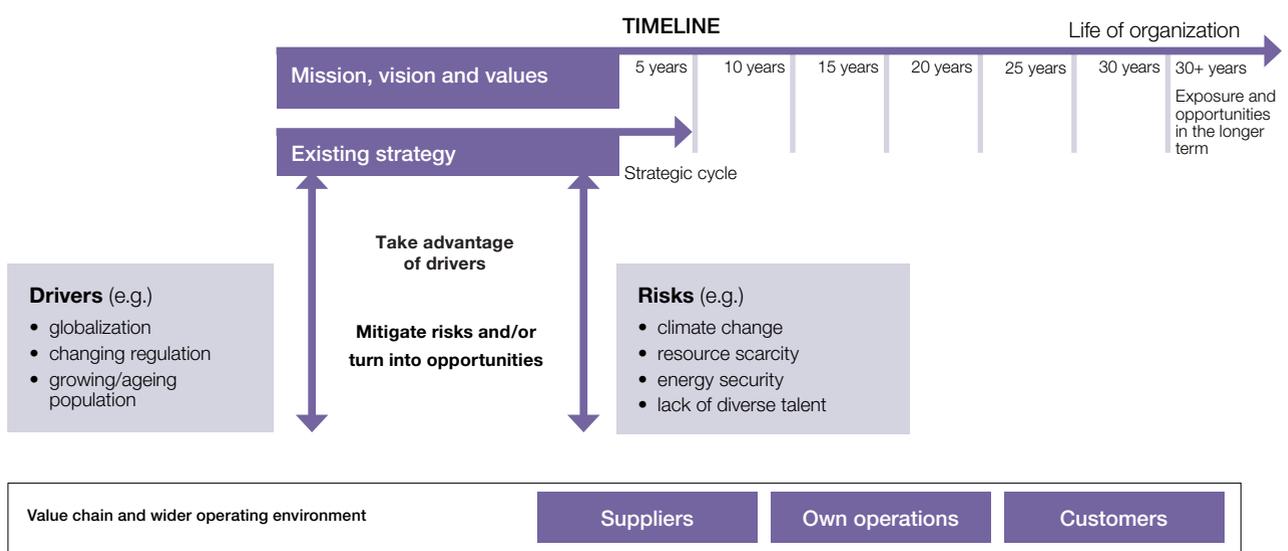
1. Assess the organization's mission, vision, strategic context and environment

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Work closely with your corporate strategy team to ensure a comprehensive integration of sustainability into corporate strategy.
- Set the context for strategic analysis by starting with the corporate mission, vision and values.
- Identify the external sustainability drivers and risks that are relevant to the organization's existing strategy, taking into account exposure along the value chain, including suppliers, own operations and customers.
- Consider if strategy needs to be revisited to address these risks, and/or to take advantage of opportunities arising.
- Assess and agree the correct timeframe for the assessment, as risks arising from macro sustainability trends often manifest themselves over a longer time horizon with uncertain timing.
- Use analytical frameworks to provide a structured approach to assessing the organization's strategic context and environment, e.g. horizon scanning, PESTEL, *BACLIAT* or *sSWOT*.

“Taking a long term view and structuring our decision making around the five capitals (financial, manufactured, natural, social and human) has led to a fundamental change in our strategy.”

Liz Barber, Group Director of Finance and Regulation, Kelda Group (Yorkshire Water)



PRACTICAL EXAMPLE

To understand fully the opportunities and risks that the business was likely to face over the next 25 years, we applied the PESTEL framework to our vision and strategy. We worked with external sustainability experts to develop evidence based forecasts of Yorkshire and the UK in 25 years time and the key stages of change in between. From this work, we aligned objectives and targets with our business plans, and set scorecards for milestone years towards longer term outcomes to 2040.

[See full case study for further information](#)





PROCESS: STRATEGIC PLANNING

1. Assess the organization's mission, vision, strategic context and environment

APPROACHES TO IDENTIFYING RISKS ARISING FROM MACRO SUSTAINABILITY TRENDS – HORIZON SCANNING

We have found that horizon scanning is the most useful approach to inform the identification of material risks arising from macro sustainability trends.

What is it?	Horizon scanning is a technique for analysing the future and considering how emerging trends and developments might affect the success of organizations through a systematic examination of potential threats and opportunities.
When is it used?	It is an important precursor to proactive risk management and business continuity. Businesses should consider an appropriate timeframe based on the nature of business activity and the timeframe over which relevant macro sustainability trends are forecast.
Time horizon	The technique explores new and unexpected issues, as well as persistent issues and trends, and can help challenge past assumptions. A solid 'scan of the horizon' can provide the background for risk management and for developing strategies to anticipate future developments. Organizations can thereby gain lead time and a competitive edge. Horizon scanning can also be a way to assess trends to feed into the scenario development process.
Challenges	Organizations should take care not to take too short term a focus as they may miss issues where adaptation or mitigation measures are needed now to prepare for future risks.

WAYS OF UNDERTAKING HORIZON SCANNING

We have found that to be effective a range of horizon scanning techniques should be used.

Desk based research

A number of universities, NGOs and consultancies publish assessments of the macro sustainability trends that may be material to your sector. Lists of sustainability issues that may be relevant provided by sustainability reporting organizations, such as the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), or the World Economic Forum (WEF) can be a useful place to start.

Surveys

Surveys can be used to supplement this research and can provide you with a broader reach, particularly where stakeholders are in different countries / regions. We have found this approach helpful to obtain input from our supply chain,

customer base, partner organizations or internal stakeholders who are difficult to reach via interviews or workshops.

Interviews and workshops

Personal interviews or workshops can help you to understand matters from research or surveys in more detail. Workshops often consist of a small group of experts and cross functional representatives, who share their perspectives and knowledge to help identify which risks are likely to be most material and how they may impact your business.

Questions to ask

Example questions to help stimulate discussion:

- What are the macro sustainability trends that are impacting our business now? How are these likely to

change over time? Are there any new risks we should consider in the future?

- How are these trends likely to impact our value chain e.g. suppliers, customers? Which other external stakeholders may be impacted?
- In what ways do these risks impact the achievement of our strategy and objectives?
- Can we turn these risks into opportunities?
- What sources of information will enable a better understanding of these risks? How can we improve our visibility of these risks and what additional internal / external data do we require?
- What is the direction of government policy and regulation? How does this vary in each of our markets?





PROCESS: STRATEGIC PLANNING

1. Assess the organization's mission, vision, strategic context and environment

APPROACHES TO IDENTIFYING RISKS ARISING FROM MACRO SUSTAINABILITY TRENDS – PESTEL, BACLIAT AND sSWOT

	PESTEL	BACLIAT vulnerability assessment ↗	sSWOT (specific sustainability SWOT) ↗
What is it?	<p>Framework for external factors which may affect activities and performance e.g.:</p> <ul style="list-style-type: none"> • Political: Increased competitiveness of emerging markets, governmental priorities/attitude to environmental and social protection • Economic: Move towards a circular or sharing economy, supply chain traceability • Social: Population growth, expanding middle class, urbanization • Technological: Digitalization, energy efficiency and renewable energy, social media • Environmental: Climate change, resource depletion, water scarcity • Legal: Green taxation, carbon trading, mandatory disclosure requirements 	<ul style="list-style-type: none"> • BACLIAT stands for The Business Areas Climate Impacts Assessment Tool • Workshop based tool to help organizations quickly consider potential impacts of future climate change risks that include: <ul style="list-style-type: none"> – Past events – Events that will continue to happen as the climate changes – Potential impacts that have not yet been experienced • Framework for considering impacts in the following business areas: markets, process, logistics, people, premises and finance 	<p>The sSWOT provides a new twist on the familiar framework which helps drive action and collaboration on sustainability challenges that create material business risks and opportunities. The sSWOT is designed to help identify connections between sustainability challenges and other trends that are creating big changes in future markets.</p> <p>Questions to ask when conducting an sSWOT:</p> <ol style="list-style-type: none"> 1. What (or who) do you want to inform? A specific person, decision or output? 2. What do you and others see changing? What are the challenges and trends? 3. Where are environmental challenges creating broad threats to future business value? 4. Where is there a potential gap in the market where we and others can create new solutions for environmental challenges? 5. What are unexpected ways we can apply our strengths to environmental challenges? Are there partners that can be leveraged? 6. Who else has similar weaknesses or faces similar risks from environmental challenges? Can we assess the risks together? 7. Which insights will influence and resonate with your CEO, CFO, directors, or other decision makers, or what keeps them up at night? 8. What can we do (together with partners) in the near term, mid term, and long term?
When is it useful?	<ul style="list-style-type: none"> • To help identify current external factors e.g. climate change as well as those that may change in the future e.g. increase in frequency of extreme weather events • The PESTEL analysis can be further expanded to STEEPLD to also consider Demographic and Ethical factors impacting the business 	<ul style="list-style-type: none"> • As a standalone tool, or as a step in a risk based framework such as the <i>UKCIP Adaptation Wizard</i> (a risk based adaptation resource) • When there is a wide range of participants from different business 	
Benefits	<ul style="list-style-type: none"> • Provides a holistic understanding of the wider business environment • Can encourage strategic thinking beyond a short term time horizon 	<ul style="list-style-type: none"> • Can draw on a range of knowledge and experience, raise awareness and generate buy in to the adaptation process • Increased awareness of the range of threats and emerging issues that climate change could bring to your business • Provides insights into how climate risks are spread across different business functions 	
Challenges	<ul style="list-style-type: none"> • It may be difficult to predict fully, future changes in the business environment as it rapidly evolves • If too much information is gathered, it may be challenging to identify material risks that are directly relevant to the business 	<ul style="list-style-type: none"> • Representatives from across the business are required • Negotiations on the trade offs between different business interests are likely 	



- Overview
- Tools and guidance
- Practical examples

PROCESS: STRATEGIC PLANNING

1. Assess the organization's mission, vision, strategic context and environment

HOW TO BUILD A COMMON UNDERSTANDING OF SUSTAINABILITY WITHIN FINANCE TEAMS

Enabling the effective integration of sustainability within strategic planning, budgeting and forecasting requires finance teams to work closely with their sustainability and operations teams to ensure shared understanding of which sustainability issues and opportunities are material to the business, and how to integrate relevant data and other considerations relating to these issues and opportunities into strategic planning, budgeting and forecasting decisions.

A common understanding of sustainability factors can be enhanced through the following strategies:



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: STRATEGIC PLANNING

2. Set strategic goals, incorporating sustainability considerations

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Disaggregate the organization's long term strategic priorities into a series of desired outcomes which reflect what success looks like in pursuing the organization's strategic vision. Ideally, desired outcomes should be mutually exclusive and collectively exhaustive in representing the organization's strategic priorities.
- Perform initial analysis to understand the potential impact of the desired outcomes on sales and cost.
- Set long term objectives that address the desired outcomes and run scenario/'what if' analyses to develop a comprehensive view of the extent, impact and the time horizon of the plan.
- Use non monetary targets alongside monetary ones, and provide insightful qualitative commentaries for completeness. Ensure that these are measurable, comparable and achievable in the long term.
- Define the key performance measures to monitor the objectives, and ensure that information on sustainability is appropriately included within the measures.

PRACTICAL EXAMPLE

Over the next 25 years, our ability to maintain the balance between water supply and demand will be challenged by macro sustainability trends such as population growth, climate change, growing environmental need and deteriorating raw water quality. Most of the risks to our ability to deliver arise from uncertainty about timing and the magnitude of the impacts from growth and climate change. To address these issues, Anglian Water is leading the Water Resources East project (WRE) which brings together multiple partners from a wide range of industries to manage these challenges, building on the region's unique opportunities for sustainable future growth and pioneering a new approach to managing water resources. Performing scenario analyses using Robust Decision Making (RDM) and Multi Criteria Strategy Optimization to identify optimized, balanced, and robust water plans to define our strategic goals.

[See full case study for further information](#) 



Over 300 scenarios were developed. Their performance was tracked using a number of different measures including total capital and operating costs, and environmental performance.



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

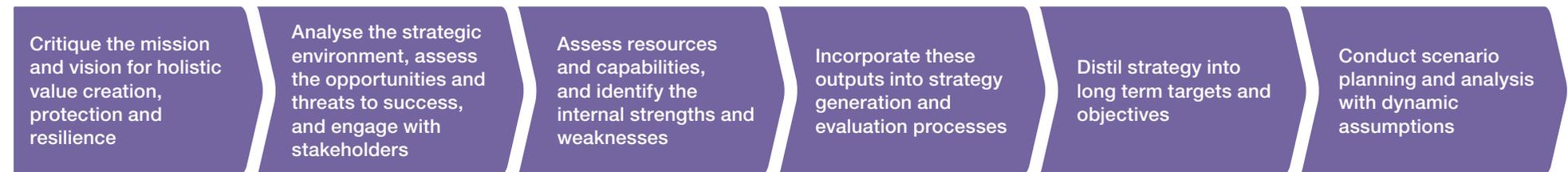
Maturity and reference

PROCESS: STRATEGIC PLANNING

2. Set strategic goals, incorporating sustainability considerations

Setting targets and objectives allows the organization to translate desired outcomes into actionable long term performance measures. While the planning period should reflect the organization's business model and industry characteristics (typically ranging from three years to 25 years), longer planning periods should be considered in order to provide a more complete view of the impacts of long term external factors, including sustainability factors, on the organization's value drivers. This will help to identify long term risks and opportunities that require near term action, e.g. for large capex projects or significant supply chain changes.

KEY STEPS FOR SETTING LONG TERM TARGETS AND OBJECTIVES



WHEN SETTING STRATEGIC TARGETS AND OBJECTIVES, CONSIDER WHETHER THEY:

- ✓ reflect and indicate performance against desired long term outcomes, beyond the ordinary strategic cycle
- ✓ are relevant to the organization's mission, vision, business operations and activities
- ✓ lead not only to financial benefits for the organization, but also to broader benefits for society and the environment, thereby minimizing or eliminating the impact of negative externalities and creating positive ones
- ✓ are measurable and quantifiable
- ✓ are appropriate given the time period
- ✓ consider the transition risks and physical risks from climate change
- ✓ account for other external factors and constraints (e.g. laws, regulations, environmental standards, resource scarcity, customer and social pressures, etc.)
- ✓ are achievable given the organization's capabilities and resources
- ✓ are linked to the organization's performance management framework (e.g. performance appraisals, incentive compensation policies, etc.)





PROCESS: STRATEGIC PLANNING

2. Set strategic goals, incorporating sustainability considerations

SCENARIO ANALYSIS

It is notoriously difficult to discern trends and determine what the future may bring. Our knowledge about business and operating markets is based on past experience and, in isolation, is increasingly inadequate to navigate the future successfully. Scenario analysis is a structured way for organizations to think about the future, as a foresight methodology used to drive better decision making. It can be used to test the resilience of a strategy in an uncertain future, and to plan how an organization wishes to position itself in terms of responsiveness, flexibility and competitive advantage in the longer term.

Scenarios are possible views of the world described in narrative form to provide context for decision making. For example, the *International Energy Agency's 2°C Scenario* lays out an energy system deployment pathway and an emissions trajectory consistent with at least a 50% chance of limiting the average global temperature increase to 2°C. In setting scenarios, it is useful to have a range of scenarios that consider the possible, plausible, probable and preferable.

What is it?	When should I use it?	Benefits	Challenges	How used in practice
<ul style="list-style-type: none"> A tool to model a range of future scenarios against which to test potential solutions or decisions 	<ul style="list-style-type: none"> In setting strategic goals, to inform how the business may need to evolve to meet the need of these future scenarios To develop appraisals of the cost and benefit of different responses To assess whether the impacts of future scenarios are going to be negative or positive To prioritize effort in further analysis or specific research 	<ul style="list-style-type: none"> Can take advantage of external perspectives and data sources Collaborative approach, requiring input from experts and key stakeholders can give useful insights on potential sales and cost impact of a given scenario Using the Delphi survey method (a collaborative approach to gathering opinions) to supplement scenario modelling, can lead to a consensus forecast on future trends, as the experts surveyed converge their opinions on a single position 	<ul style="list-style-type: none"> Development of future scenarios is based on assumptions A wide range of stakeholder views need to be incorporated to form a balanced overview Conceiving realistic scenarios requires a profound understanding of not only the macro trend, its risks and the underlying processes and factors, but also of other events that may be triggered by the trend 	<ul style="list-style-type: none"> The approach can be simplistic (e.g. through the development of optimistic, realistic and pessimistic scenarios) right through to highly complex computerized modelling tools and techniques using, for example, Monte Carlo Simulation



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: STRATEGIC PLANNING

2. Set strategic goals, incorporating sustainability considerations

SCENARIO ANALYSIS

Scenario analysis is becoming increasingly important in particular in relation to climate change as part of testing the resilience of current and potential future strategy, as well as providing stakeholders with an understanding of climate related opportunities and risks.

TRANSITION PATHWAY INITIATIVE

The Transition Pathway Initiative is an asset owner led initiative, supported by asset managers and owners, with over £2 trillion assets under management. The initiative assesses how companies are preparing for the transition to a low carbon economy. It:

- evaluates and tracks the quality of companies' management of their greenhouse gas emissions, and of opportunities and risks related to the low carbon transition;
- evaluates how companies' future carbon performance would compare to the international targets and national pledges made as part of the Paris Agreement*; and
- publishes the results of this analysis through an online tool.

The pension funds invested in the Transition Pathway Initiative have committed to using the results in a number of different ways including: informing their investment decision making; engagement with companies; dialogues with fund managers and engagement with policy makers.

[See webpage for further information](#)



TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

The Financial Stability Board established this industry led task force to help identify the information needed by investors, lenders, and insurance underwriters to assess and price climate related risks and opportunities appropriately. The Task Force developed four widely adoptable recommendations on climate related financial disclosures that are applicable to organizations across sectors and jurisdictions, and recommends that these disclosures are included in organizations' main financial filings.

The Task Force structured its recommendations around four thematic areas that represent core elements of how organizations operate:

- Governance
- Strategy
- Risk management
- Metrics and targets

Scenario analysis

One of the Task Force's key recommended actions is related to the disclosure of potential impacts of climate related opportunities and risks on an organization's business, strategies, and financial planning under different potential future states (scenarios), including a 2°C scenario. Over time, the Task Force expects to see more quantitative analyses in disclosures, including the underlying assumptions associated with the climate related scenarios used.

[See the Final Report for further information](#)



*The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C increase relative to pre-industrial levels. The use of a 2°C scenario is thus a useful way of evaluating the resilience of strategy under a 2°C scenario. It also helps investors allocate funds towards accelerating the transition to a low carbon economy and thus protects their investments and beneficiaries from the projected negative financial outcomes as the degree of warming increases..

Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: STRATEGIC PLANNING

3. Consider critical success factors, barriers, risks and enablers for achievement of goals

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Consider how sustainability trends can impact the factors that are critical to achieve strategic goals.
- Analyse these critical success factors, considering where there are barriers to the success of corporate strategy, and test the resilience of the planned strategy against sustainability risks where they have the potential to become barriers if they manifest.
- Incorporate sustainability factors relevant to the strategic goals into your corporate risk matrix, and identify where internal barriers may also prevent effective mitigation of sustainability risks.
- Determine appropriate mitigation strategies, incorporating enablers to minimize barriers to success.

PRACTICAL EXAMPLE

The Crown Estate is a specialist real estate business, with all our net surplus going to the Treasury for the benefit of the nation. Our vision at the Crown Estate is to become a truly modern, commercial business. We identified the critical success factors necessary to achieve this vision and in doing so, considered the material issues (including sustainability factors) that create risk for the organization and potential barriers to us achieving it. Using this analysis, we have implemented enablers that help us to overcome each of these material issues.

[See full case study for further information](#) 





PROCESS: STRATEGIC PLANNING

3. Consider critical success factors, barriers, risks and enablers for achievement of goals

TESTING THE RESILIENCE OF THE PLANNED STRATEGY AGAINST SUSTAINABILITY RISKS USING CRITICAL SUCCESS FACTOR ANALYSIS

Sustainability factors have been considered in setting corporate strategy. However, they should also form part of the process for determining barriers and risks to the achievement of critical success factors. For example, where the strategy involves setting up operations in a new region, factors such as flooding risk, indigenous rights over land or water extraction need to be identified and addressed.

Identifying risks and barriers in this way ensures that the necessary enablers are implemented in such a way that considers not just internal barriers, but external risk factors too.

- Consider each critical success factor in turn and assess:**
1. Whether the critical success factor could impact/be impacted by social and environmental factors
 2. The likelihood and potential magnitude of that impact
 3. To what risks or barriers to success this exposes the organization
 4. How barriers can be overcome and risks mitigated

Critical success factors

- Examples:
- Ability to source critical resources
 - Ability to respond to consumers' needs
 - Coping with rapid change
 - Attraction of capital
 - Product safety
 - Engaging with strategic partners
 - Product development and speed to market

The factors that are necessary for the business to achieve its mission, gain competitive advantage and/or deliver its strategy.

Sustainability lens

- Ethics
- Biodiversity
- Food scarcity
- Rising poverty
- Energy security
- Social inequality
- Responsible production
- Health, safety and wellbeing
- Responsible consumption
- Gender inequality
- Finite resources
- Climate change
- Human rights
- Reputation
- Regulation
- Pollution

Viewing critical success factors through a sustainability lens focuses attention on risks that have the potential to act as barriers to success.

Barriers and risks

- Risks***
- Climate change
 - New/changing regulation
 - Access to finance
 - Rising energy costs
 - Resource and water scarcity
 - Supply chain instability
- Barriers**
- Inhibitive structures, culture, systems, silos and/or incentives
 - Employee dissatisfaction

* Risks can become barriers if they manifest. Internal barriers may also prevent effective mitigation of sustainability risks.

Enablers

- Finance and risk**
- Long term financial plan
 - Financial resources
 - Risk and capital management
- Operations**
- Organizational restructure
 - Principles, policies and guidance
 - Alliances and partnerships
 - Innovation
- Information and technology**
- Improvements in technology
 - Integrated systems and processes
 - Data and data analytics
- People and change**
- Tone from the top
 - Values and culture
 - Change management
 - Development of skills and capability
 - Performance management linked to long term value drivers

Ways to remove barriers and create conditions that empower people to deliver on the critical success factors, strategy and/or necessary change.



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: STRATEGIC PLANNING

4. Define and agree high level activities and initiatives

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Disaggregate the organization's long term strategic goals, establishing a structured, consistent and standardized procedure to identify all strategic initiatives and encourage focus on sustainability issues. Adjust the assessment timeframe accordingly based on the nature of the goals.
- Enable filtering and cross business unit validation of all strategic initiatives based on established criteria that include sustainability factors.
- Set up working groups with specialists from the relevant areas of the business at an early stage to assess the impact and dependencies of the initiatives, and to ensure that the level of governance is appropriate.

PRACTICAL EXAMPLE

Scottish and Southern Electricity Networks, part of the SSE Group, provide power to homes and businesses across 59 Scottish islands through submarine electricity cables. To ensure a reliable supply of power, the cables are proactively replaced before they reach the end of their operational life. Changes to Scotland's National Marine Plan meant that existing engineering practises within the marine environment were challenged and the cost of the works could increase dramatically. Working with an external partner to develop a tool to model the relative social, environmental and economic impacts of different engineering solutions; and with a variety of stakeholders to estimate the magnitude of the impact, we have developed an evidence and risk based assessment which has been accepted by our regulators.

[See full case study for further information](#) ↗



.....
Introduction
.....

Process

- Overview
- Tools and guidance
- Practical examples

.....
Governance
.....

Performance management
.....

Technology and Data
.....

Maturity and reference
.....

PROCESS: STRATEGIC PLANNING

4. Define and agree high level activities and initiatives

WHO TO INVOLVE

Leadership: Strategic initiatives should be approved by the Board, a delegated committee, or designed within strategic parameters set by the Board. Board level competency around sustainability is essential.

Project team: A cross functional team (with representatives from across the business, and potentially from supplier organizations) can broaden skillsets and increase innovation. This should include sustainability specialists.

Investment Committee: Consider involving the Board Investment Committee and report to them.

Specialists: Depending on the type, scope and complexity of the initiative, it may be appropriate to include external specialists in the project team, particularly at the design phase.

Stakeholders: Including stakeholders external to your organization can help increase support for the initiatives and offer additional perspectives, particularly on socio economic and environmental factors.

WHAT TO CONSIDER

Suitability: Clear criteria should be set to assess suitability of proposed initiatives. These should include a strategic alignment metric and a cost benefit analysis that includes social and environmental costs and benefits where appropriate.

Timeframe: The length of the initiatives should be appropriate in the context of the long term strategic goals, but also short enough to maintain momentum.

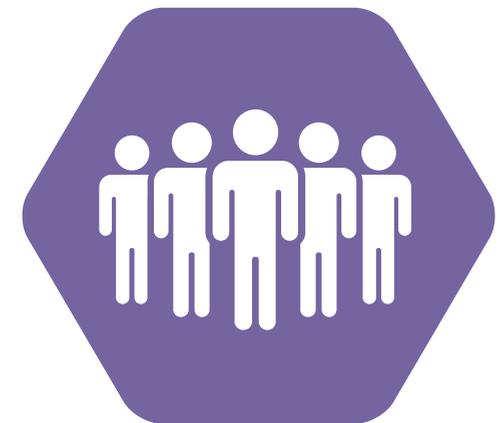
Integration: Ensure the initiatives are designed and performance managed in an integrated way.

Portfolio coverage: Ensure that the portfolio of initiatives collectively covers each key aspect of the long term strategic goals. Consider how gaps can be filled and whether overlaps will aid achievement or create inefficiency.

Critical success factors: Identify the factors that are necessary for successful delivery of the initiatives and achievement of the long term strategic goals, and whether there are any significant barriers to these. Ensure social and environmental, short term and long term issues are considered.

Opportunities and risks: Examine the external environment for opportunities and risks. Initiatives can be designed to mitigate risks, or to capitalize on opportunities to create competitive advantage. Factors external to the initiative can change significantly over its life. Consider how social, economic, political and environmental landscapes and stakeholders' perceptions might change, and how this may affect success.

Mitigations and enablers: Establish whether risk can be mitigated or managed to an acceptably low level, and enablers identified to overcome perceived barriers. For sustainability risks, this can often involve working with the value chain to identify innovative solutions.



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: BUDGETING

Once the strategic goals and supporting high level activities have been agreed, capital needs to be allocated effectively by aligning budgets to the desired strategic outcomes.

We outline a four step process, with supporting tools, to guide finance teams towards integrating sustainability into the budgeting process.

STRATEGIC PLANNING

1. Assess the organization's mission, vision, strategic context and environment

2. Set strategic goals, incorporating sustainability considerations

3. Determine critical success factors, barriers, risks and enablers for achievement of goals

4. Define and agree high level activities and initiatives

BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

2. Convert the strategic plan and high level initiatives into annual activities and milestones, allocating accountable owners

3. Set and agree performance commitments and budgets for each business unit and function

4. Deliver detailed 'top down and bottom up' annual operational and financial plans

FORECASTING

1. Assess performance

2. Provide a realistic outlook based on the current business environment

3. Provide the latest view of expected underlying performance

4. Allow timely management decisions and corrective actions



- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Provide clear guidelines for the budgeting process that address sustainability considerations and their link to business growth and implementation of business plans.
- Use the budget process as an opportunity to integrate sustainability into other activities.
- Ensure that budget guidelines set out steps to consider the sustainability implications of activities as part of the budgeting process.
- Ensure that the guidelines incorporate all key financial, social and environmental assumptions.
- Formalize a standard approach on integrating cost savings and incremental revenues arising from sustainability initiatives directly into budgets.

PRACTICAL EXAMPLE

A wide range of initiatives have been embedded into the Crossrail budgeting structure which put long term benefits at the centre of how the whole project is designed and delivered. This means that the budget priorities, rather than focusing on the construction cost, include minimizing whole of life costs of the project as well as negative social and environmental impact, and provide wider economic benefit across the country. The budgeting approach includes ring fencing £1m for safety training that sets new standards for the industry and geographical supply chain ring fencing.

[See full case study for further information](#)



PRACTICAL EXAMPLE

At Microsoft, we have implemented a carbon fee model that puts an incremental fee on the carbon emissions associated with our company's operations. The price on carbon is determined by the total cost of the carbon fee fund investment strategy, which is set to meet the organizational carbon reduction policy objectives. The fees that we collect through the carbon fee model go into a central fund used to subsidize investments that enable Microsoft to reduce emissions and be net carbon neutral.

[See full case study for further information](#)





PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

EMERGING APPROACHES TO BUDGETING FOR SUSTAINABILITY FACTORS

Budgets are historically a purely financial domain, with a focus on factors that have a direct, short term financial impact. However, there is merit in considering non monetary factors which have a significant impact on the budgeting process. These impacts may be financial, environmental and/or social in nature, and budgeting methods to account for these vary from simple to sophisticated. Companies operate in a budget constrained environment, so integrated budgeting is about how to maximize and prioritize the resources you do have, to best effect.

Determining the right approach will depend on a number of factors such as overriding strategic goals and the required pace and nature of change. The key attributes of each approach will help with this decision. The diagram opposite summarizes potential ways to prepare an integrated budget. Each method is discussed in more detail on the following pages.

BUDGETS AS DISTINCT FROM TARGETS

Many organizations set sustainability related targets, some of which are set to be attainable, some of which are aspirational. They may be over the short, medium or long term. What turns a target into a budget could be considered just a matter of terminology, but it can be argued that a budget is more restrictive, more emotive, and requires a greater level of commitment. A budget is similar to a quota in that it is finite, there is a set limit or quantity that can be used e.g. a financial budget, carbon budget, or fishing quota. A budget is generally shorter term e.g. an annual budget, though is not only about short term delivery but also investment in longer term sustainable performance. A target is typically something to aim for, rather than necessarily something that must be met.

STRATEGIC GOALS

A) Ring fencing

The simplest approach available, which involves setting aside monetary budgets for the cost associated with sustainability related initiatives ([see the next page for further guidance](#)).

Key attributes:

- Simple
- Widely understood
- Easily monitored
- Only considers monetary factors
- Enables sustainable outcomes to be prioritized

B) Allocation

Requires splitting budget out across different budget owners or operating units to meet relative needs. Allocation may, for example, be based on size of operation, or opportunity for improvement ([see page 33 for further guidance](#)).

Key attributes:

- Relatively straightforward
- Widely understood
- Can facilitate matching of positive and negative cost impacts in relation to a specific budget line, asset or business unit
- Can encourage financial efficiency, where cost savings from one project can 'unlock' budget for another

C) Capitals budgeting

Covers several different approaches which can be used to set budgets in non monetary terms either separately or combined with monetary budgets and the associated interdependencies. For example, a water budget may be set ([see page 36 for further guidance](#)).

Key attributes:

- Adaptable to level of simplicity/sophistication needed
- Different approaches to choose from, depending on needs
- Can account for interdependencies between monetary and non monetary capitals
- Can be focused on particular functions, e.g. procurement

D) Shadow pricing

Involves assigning a tangible value to an intangible item for which there is no current market value. Most commonly used as a way of reducing greenhouse gases by setting a carbon price ([see page 39 for further guidance](#)).

Key attributes:

- Adaptable to level of simplicity/sophistication needed
- Can drive cultural change
- Efficient way to achieve objectives
- Supports transparency, accountability and risk management
- The choice of shadow price can be highly subjective



- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

A) RING FENCING

Where an organization has set strategic goals that have societal and/or environmental impacts, then often a financial budget will need to be ring fenced to allow for the cost associated with meeting those goals.

Examples of human capital factors that may merit a ring fenced financial budget

Human health/ wellbeing	<ul style="list-style-type: none"> • Health and safety team, training and equipment • Wellbeing initiative(s)
Job creation/skills development	<ul style="list-style-type: none"> • Apprenticeships • Staff development and training
Working conditions/ practices	<ul style="list-style-type: none"> • Subsidized staff canteen • Team building away days

This approach can also apply to environmental and social factors.



PRACTICAL EXAMPLE

At Asda, we set monetary budgets in line with strategic sustainability objectives.



[See full case study for further information](#)

PRACTICAL EXAMPLE

At Bupa, we ring fenced funding for low carbon and renewable energy projects through establishment of our £50m Energy Saver Fund.



[See full case study for further information](#)

PRACTICAL EXAMPLE

At SSE, we developed a community investment fund package for the communities around our onshore wind farms. The methodology for determining the size of this fund is standardized and fully transparent. For the last three years we have published an overview of the sustainable impacts of these funds including a focus on economic, environmental and social projects.

[See full case study for further information](#)



PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

A) RING FENCING

Many organizations have policies or targets to source locally. However, often this is aspirational rather than aligning processes and procedures to meet them. One way to make these targets more achievable is to use a ring fenced budget approach. The illustrative example below for a fictitious organization based in Bremen, Germany shows a potential framework for a local sourcing budget:

- A maximum of 20% of procurement spend can come from outside Bremen and Lower Saxony.
- A minimum of 80% in Bremen and Lower Saxony of which at least 30% is in Bremen and adjacent districts.

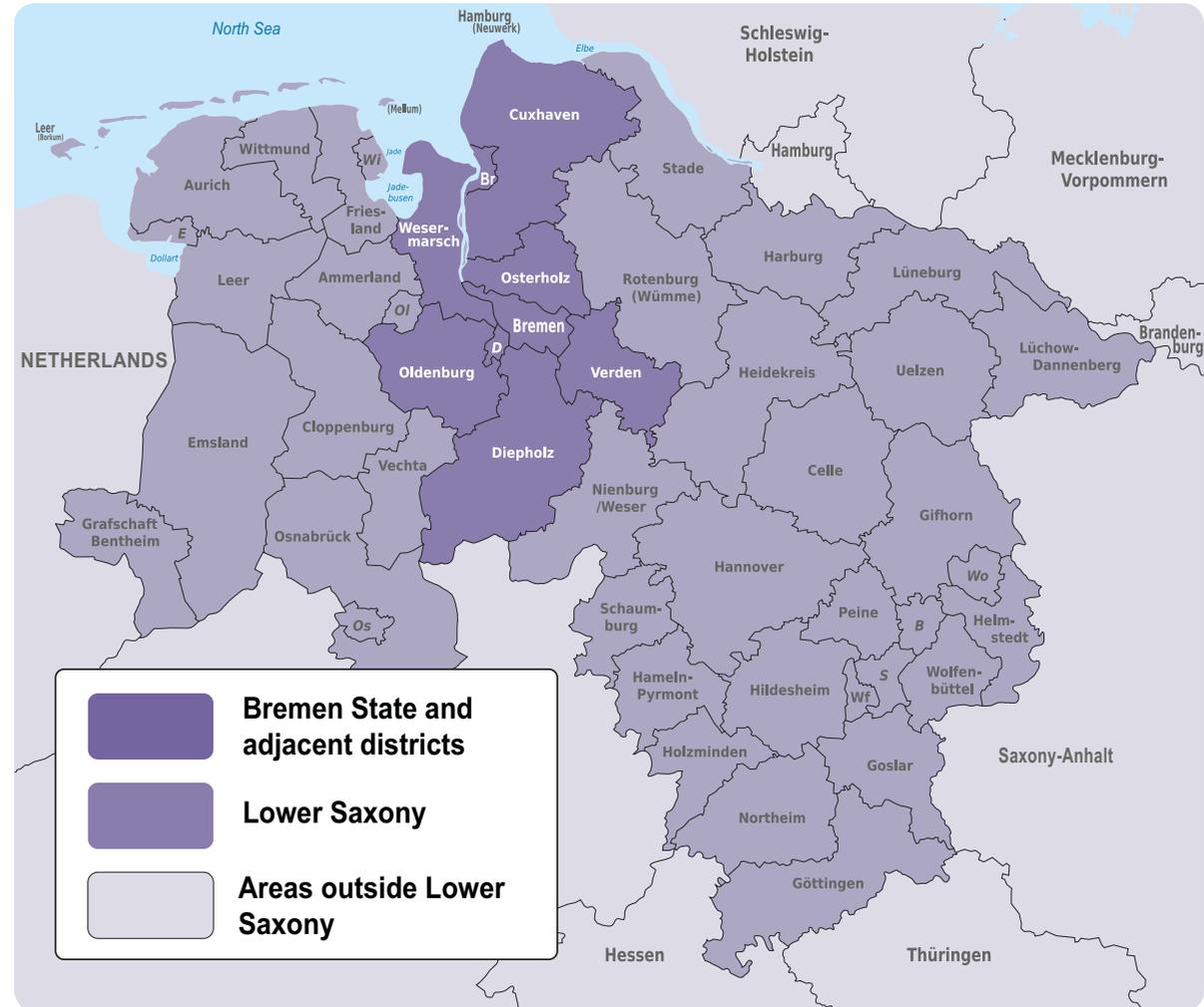
These non local budgets should be finite, or at least require senior management sign off to extend them in the same way as all other budgets. Once a local sourcing budget has been set, the case study below demonstrates how local suppliers can be engaged.

PRACTICAL EXAMPLE

At SSE, we set up an Open4Business portal in the Highlands and Islands to create a strong local supply chain.



[See full case study for further information](#)



Setting budgets in this way can drive behaviour to:

- build community relationships and engage with local suppliers to help grow the local economy and create socio economic benefit in the area; and
- help build skills and capabilities to increase the value of the local human capital pool and ensure local businesses continue to grow and bring sustainable, long term, local benefits.



- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

B) ALLOCATION

In setting strategic goals, and determining a path towards achieving them, organizations will need to consider the costs associated with those goals in the short, medium and long term, and allocate budgets accordingly.

There are different approaches to allocating budget to the different budget owners, or operating units, depending on the specific circumstances. Budgets may be allocated top down, on application, or resolved through a more iterative approach. Depending on the allocation approach, it may assist organizations in matching negative and positive cost impacts which offset each other.

Allocation by

Examples

Asset	<ul style="list-style-type: none"> • Budget can be allocated on a totex basis, i.e. capex plus opex. This effectively permits increased capex spend (perhaps to include energy, carbon or water saving measures) to be later offset by a reduced opex requirement.
Opportunity or exposure	<ul style="list-style-type: none"> • Allocating budget to each site to manage their risk of flooding. Some sites will be higher risk than others, and budget can be allocated based on this risk exposure, as well as size and criticality of each site. • An organization has significant cost saving opportunities from energy saving technologies. Sites can be allocated budget to install measures such as LED or motion sensor lighting, and allocation can depend on the relative energy saving opportunity particular to each site.
Outcome	<ul style="list-style-type: none"> • The desired outcome is a reduction in greenhouse gas emissions. Budget can be allocated based on the marginal cost per tonne of greenhouse gases saved of the most cost effective option. These savings are then used to invest in the next most cost effective option, and so on, enabling investment options to be prioritized in the most cost effective way, ensuring efficient use of finite budgets and allowing the “freeing up” of cash for subsequent implementation of more expensive options at a later date (<i>see the next page for interdependencies and cost curves</i>). • The desired outcome is for a more sustainable product. The redesign of the product means that less wood is required as a raw material in the product manufacture, and the money saved from the reduction in quantity of raw material can be used to increase the proportion of sustainable timber procured.

- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

B) ALLOCATION

Interdependencies and cost curves

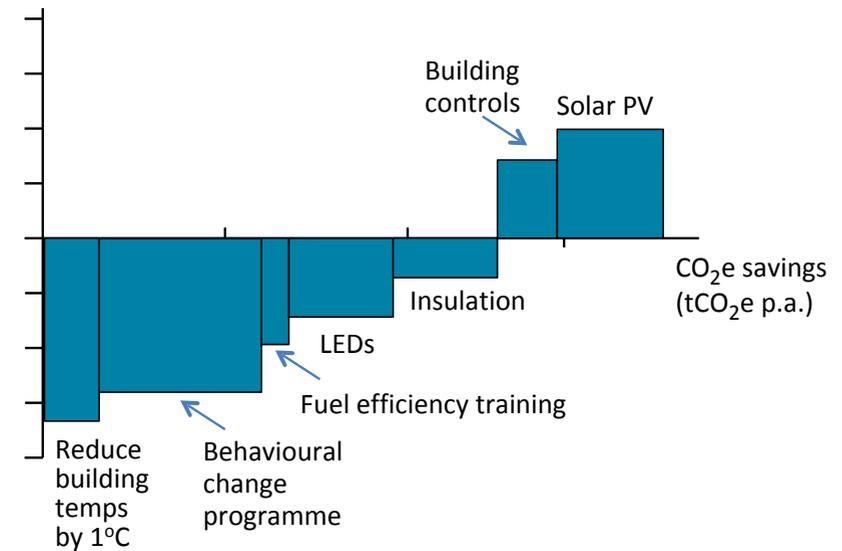
Interdependencies between budgets need to be understood and opportunities for cost neutrality identified.

One recognized way of doing this is to use a cost curve, with a Marginal Abatement Cost Curve being a common way of unlocking financial budget for greenhouse gas emission reduction initiatives. By plotting the marginal cost associated with a number of carbon reduction options against the carbon reductions each method can be expected to achieve, the options can be ranked in order of implementation priority. This allows carbon to be saved in the most cost effective way, freeing up cash for implementation of more expensive options at a later date.

ILLUSTRATIVE MARGINAL ABATEMENT COST CURVE

Carbon

Marginal abatement cost per tonne of CO₂e (£)



PRACTICAL EXAMPLE

At City, University of London, we used a marginal abatement model to budget for emissions reduction options.



[See full case study for further information](#)

Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

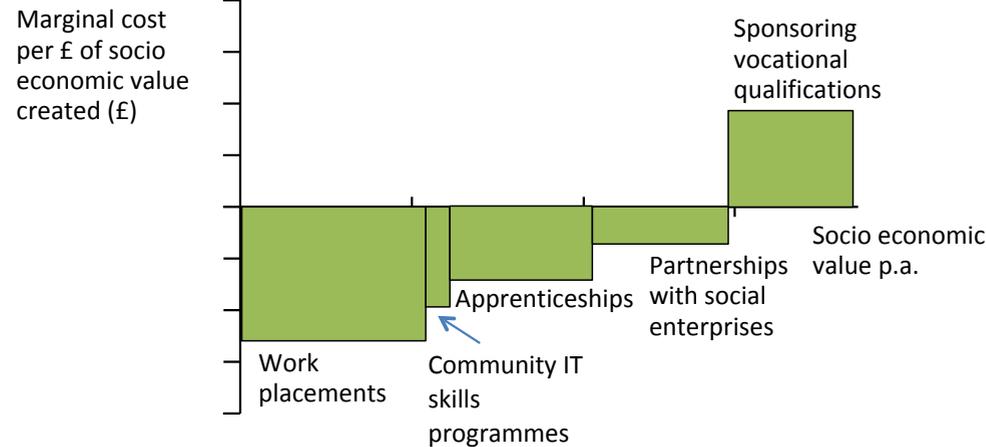
PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

B) ALLOCATION

There are some potential wider applications of this approach.

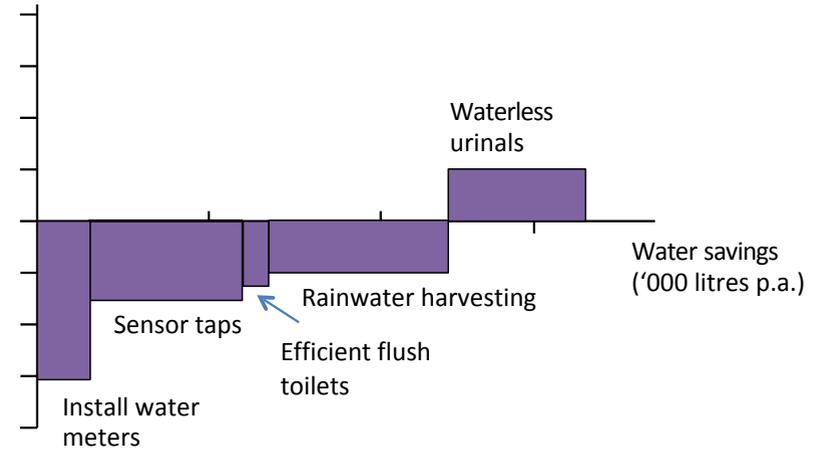
Job creation and employability



See the A4S Essential Guide to Social and Human Capital Accounting for tools, guidance and links to job creation and employability measurement methodologies

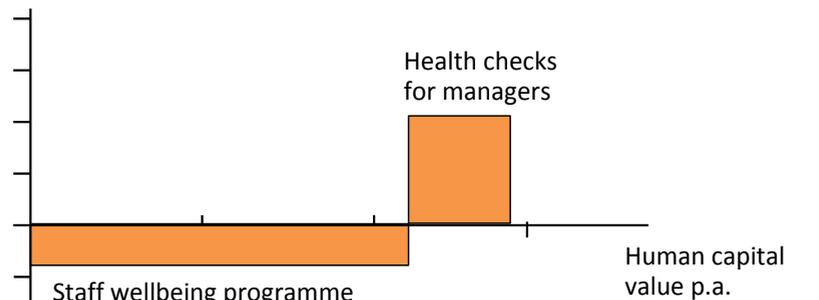
Water

Marginal reduction cost per '000 litres of water saved (£)



Wellbeing

Marginal cost per £ of human capital value created (£)



Cost savings arising from increased productivity, lower absenteeism and decreased staff turnover.

- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

C) CAPITALS BUDGETING

Capitals budgeting is a collective term for setting budgets for natural, human and social capitals in non monetary terms. These can be set either separately or combined with monetary budgets, for example an energy budget of €X with a carbon budget of Y tonnes. There are a variety of different approaches, of varying uses and complexities which lend themselves to a range of different situations and purposes.

The simplest approach is to set a budget for the amount of a "capital" which can be used in the period. The examples below show how this can be applied to natural capital.

EXAMPLES OF ENVIRONMENTAL FACTORS FOR WHICH A BUDGET COULD BE SET

Carbon	<ul style="list-style-type: none"> • Maximum GHGs to be emitted • Maximum embodied carbon (i.e. GHGs emitted in the extraction, manufacture and transport of raw materials, together with end of life emissions)
Waste and pollution	<ul style="list-style-type: none"> • Maximum waste to be produced/sent to landfill • Maximum number of pollution incidents/amount of pollutants released
Water use	<ul style="list-style-type: none"> • Maximum water to be used • Maximum water to be abstracted
Biodiversity	<ul style="list-style-type: none"> • Maximum green belt disturbed, e.g. for construction • Maximum use of pesticides, e.g. in agriculture
Resource use	<ul style="list-style-type: none"> • Maximum quota of non certified materials, e.g. wood, fish, palm oil • Maximum use of non recycled materials

PRACTICAL EXAMPLE

At Anglian Water, we set an embodied carbon budget for 2030. The budget restricts embodied carbon in new assets built to 30% of 2010 embodied carbon levels.



[See full case study for further information](#)

PRACTICAL EXAMPLE

At Sainsbury's, we set zero carbon, waste and water budgets for new stores.



[See full case study for further information](#)

- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

C) CAPITALS BUDGETING

Setting a carbon budget

Carbon budgets are an important tool for realizing emissions reductions either operationally and/or, through capex. They set the overall level of ambition for reductions, and the areas of the business where effort should be focused. The analysis used to develop carbon budgets can inform the types of operating policies that may be appropriate to unlock emissions reduction potential. Once set, carbon budgets provide a mechanism for monitoring emissions reduction performance, and for shaping any response should targets be missed. Monitoring of progress against carbon budgets should form part of strategic integrated management reporting.

A number of key decisions need to be made about the budgets e.g.:

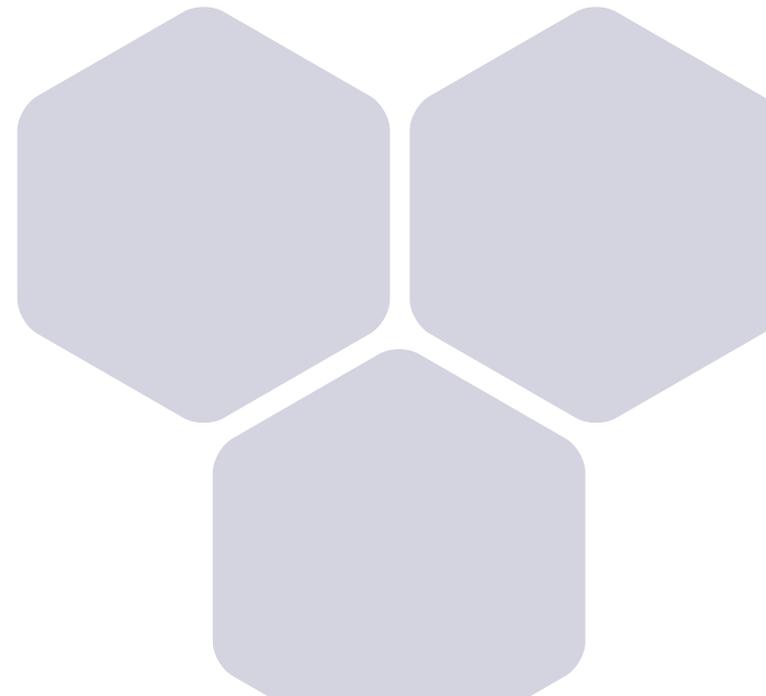
- The baseline year, the timescale of each budgetary period and the long term target
- How changes in the structure of the organization over time should be accounted for (ordinarily with an adjustment to the baseline)
- Whether to use a location based or market based methodology for *scope 2 emissions*
- Which *scope 3 emissions* to include

See further information on decision making 

Organizational emissions reduction targets have historically often been set without due consideration of the necessary scientifically backed reductions needed to keep climate change within “tolerable” limits, the technical feasibility of available emission reduction technologies, and/or the level of financial investment needed to achieve reduction targets.

Consequently, targets are frequently of inconsequential impact (too small), failing to drive real innovation to unlock potential savings; or lack the commercial rigour needed to support the business case for investment required to achieve them. The approach presented here incorporates these factors with a view to determining an ambitious, but demonstrably achievable, carbon and financial budget programme.

For most organizations, meeting a budget such as this could be expected to include significant energy efficiency improvements in buildings and industrial processes, fuel efficiency improvements in road vehicles, and a significant shift towards renewables in electricity, heating and cooling. Some of the required emissions reduction can be achieved at negative cost and would therefore save money, unlocking financial budget for implementation of more expensive reduction options. Carbon budgets have a role to play in *Shadow Pricing* and *Marginal Abatement Cost Curves*.

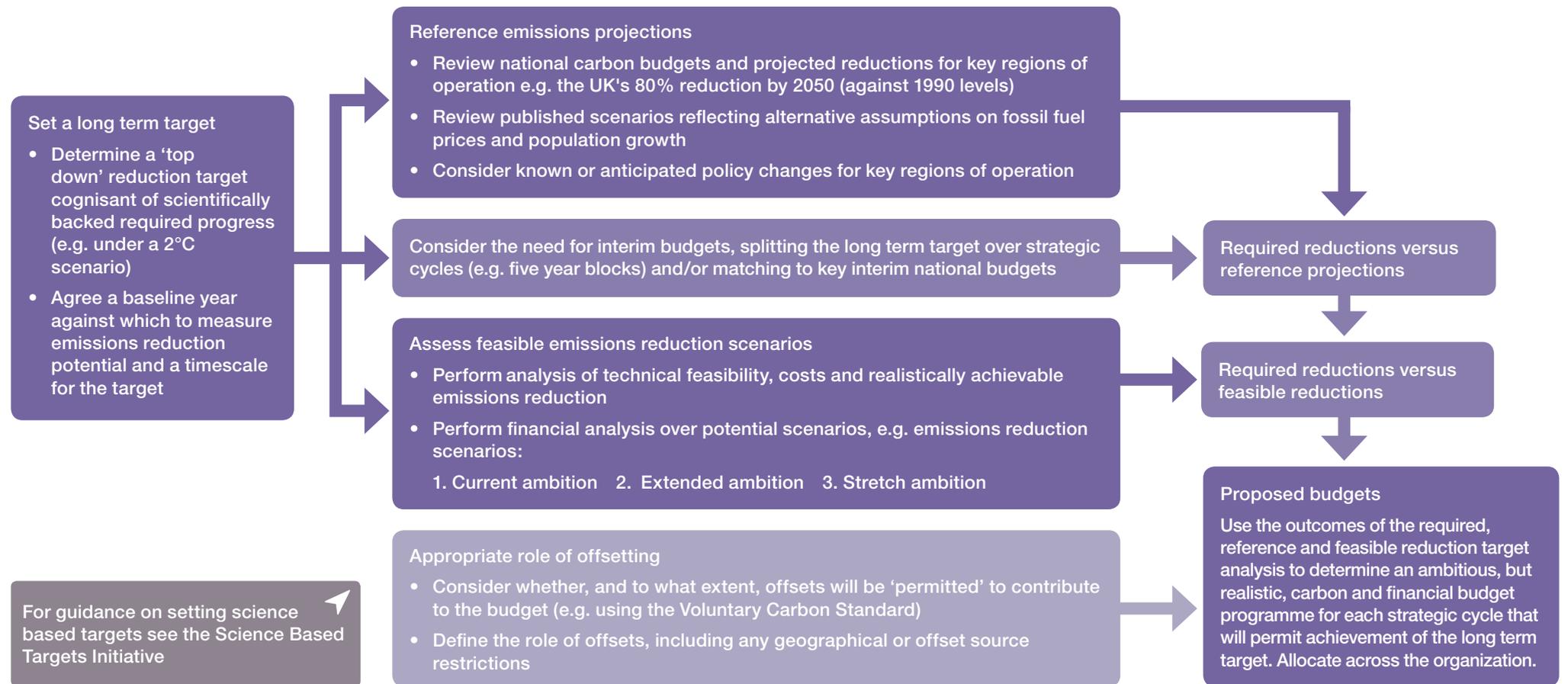


- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

AN APPROACH TO SETTING A CORPORATE CARBON BUDGET



- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

D) SHADOW PRICING

Shadow pricing provides a framework for an organization notionally to 'cost' an item into their business operations where it does not have a current, defined market price, or where current prices are deemed too low to factor in future risks or societal impacts. This is increasingly being used by organizations for carbon emissions, however it can also be used for other resources such as water.

Putting an internal cost on carbon provides a useful risk mitigation to the future regulation of carbon.

A shadow carbon price can be used in different ways, for example:

- Simply incorporating into project or investment budgets (monetizing the carbon impact) and thus creating the business case to invest in lower carbon options
- Using the shadow price to drive an internal carbon market

The same concept can also be used for other items such as water, waste or pollutants, where a shadow cost can be developed to represent potential higher future cost per unit or potential changes in compliance thresholds.

PRACTICAL EXAMPLE

At Danone, we incorporated carbon pricing into our capital investment appraisal process.

[See full case study for further information](#)



PRACTICAL EXAMPLE

At Coca-Cola Hellenic Bottling Company, we introduced a science backed carbon reduction target, driven by an internal carbon price.

[See full case study for further information](#)



PRACTICAL EXAMPLE

At Royal DSM, we have set a shadow carbon price in the valuations of large investment projects. We set the carbon price at €50/t CO₂e so it is high enough to materially affect investment decisions to drive down greenhouse gas emissions.

[See full case study for further information](#)



- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

USING SHADOW PRICING TO DRIVE AN INTERNAL CARBON MARKET

An internal carbon market provides a mechanism for reducing emissions across the organization, whilst also pooling budget to invest further in lower carbon opportunities. A potential approach to this could be:

1. Consider the organization's total carbon inventory, and the relative intensity of this across the business, and determine the level of reduction aspiration in the short, medium and long term.
2. Set a shadow price on emissions to be charged to each business unit profit and loss account, relative to their respective emissions, and taking into account any planned, major capex projects.
3. Engage with the Board/management of each business unit to communicate the approach, allocate accountability and autonomy, and agree the process for charges and bids for efficiency improvements, where appropriate.
4. Centrally pool the amounts charged to each business unit and reallocate based on priority efficiency improvements, either pre determined at a strategic level and/or in response to successful efficiency bids submitted by the business units.
5. Revisit the carbon price annually, raising incrementally and transparently over time..

Determining a carbon price

There are several recognized ways to price carbon:

- **Traded cost of carbon**
The traded cost of carbon is the current value of traded emission rights within a recognized carbon market.
- **Non traded cost of carbon**
A non traded value of carbon may be explicitly estimated by a national government or regulator (with reference to national carbon targets) to guide abatement activity for sectors not captured within a recognized carbon market.
- **Social cost of carbon**
The social cost of carbon reflects the socio economic cost of emissions, incorporating impacts such as spread of disease, decreased food production, coastal destruction etc.
- **Marginal abatement cost**
The marginal abatement cost reflects the cost of reducing emissions.
- **Bespoke carbon price**
Set at a level that will drive change in line with the organization's specific circumstances and ambition.

POTENTIAL WAYS TO COLLECT FUNDS

- Charge a fee based on relative, previous or current emission levels
- Charge a fee based on the organization wide reduction target, allocated across business units by emission levels or productivity output
- Apply a fee to emissions exceeding a predetermined level

POTENTIAL WAYS TO REDISTRIBUTE FUNDS

- Prioritize investment based on the effectiveness of projects submitted by business units (i.e. by carbon reduction and financial pay back)
- Prioritize investment based on scalability, investing in business units where behavioural reductions are greatest

It is good practice to increase the carbon price incrementally every year to drive further reductions.

- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

2. Convert the strategic plan and high level initiatives into annual activities and milestones, allocating accountable owners

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Disaggregate the long term targets set in strategic planning into medium and short term milestones.
- Set specific, time bound activities that are aligned to the budgeting cycle timeframe, are measurable and are clearly linked to the corporate strategy. These activities should be mapped to where financial, social and/or environmental budgets will be required. Agree who will be accountable for measurement and monitoring of the activities.
- Ensure key risks and opportunities identified by assessing the strategic context and environment are reflected in the short and medium term activities and budgets.

PRACTICAL EXAMPLE

In order to achieve a common thread from a long and short term perspective, we incorporated the strategic aims of our 25 year plan, which have a high profile position of sustainability, into our five year plan commitments. The commitments were used to develop an Outcome Delivery Incentive (“ODI”) framework, which attributes financial reward or penalty to financial and other performance outcomes. ODIs are then divided into annual performance targets for internal planning and driving delivery. Each function then prepares detailed budgets and delivery plans based on their targets.

[See full case study for further information](#) 



- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

2. Convert the strategic plan and high level initiatives into annual activities and milestones, allocating accountable owners

DEVELOP AND CASCADE THE ANNUAL TARGETS ACROSS THE BUSINESS

Develop annual targets across business units and functions by disaggregating long term targets into short term measures (annual, quarterly, monthly, etc.) and developing operating plans that incorporate sustainability actions.

LONG TERM STRATEGIC OBJECTIVES (E.G. 25 YEAR PLAN)

Objectives incorporating aspirations for example around: growth, profitability, product development, transition to a low carbon economy, preservation of natural capital, and investment in social and human capital.

1. Enablers

- Identify significant enablers required to achieve long term objectives.
- Identify and assess risks which may impact achievement of long term targets.

2. Pace of change

- Determine necessary pace of change, including key step changes across a long term time frame (e.g. 25 years).
- Perform sensitivity analysis, accounting for potential manifestation of major risks. Consider whether specialist input is required to establish time frame e.g. for climate change impacts and/or resource scarcity risks.

3. Targets

- Map out targets in medium term increments (e.g. five years) and short term increments (e.g. every year for first five years).

4. Investment

- Determine investment needed in short term to meet short term targets.
- Forecast likely investment for medium and long term targets, for enhanced visibility.

5. Budgets

- Consider savings likely to be generated by sustainability projects, for example, through reduced energy and waste costs and a more secure supply chain.
- Define integrated budgeting approach (e.g. ring fencing, allocation, capitals budgeting and/or shadow pricing) and set the short term budgets necessary for required progress towards long term strategic goals and targets.



- Overview
- [Tools and guidance](#)
- [Practical examples](#)

PROCESS: BUDGETING

3. Set and agree performance commitments and budgets for each business unit and function

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Ensure that each business unit and function sets and agrees specific integrated objectives and targets, in line with their financial and operational capability and capacity.
- Link the established commitments to the annual and long term integrated targets that are set in the strategic planning phase.
- Ensure that budget targets are based on performance measures that allow the organization to gauge success or progress towards achieving the organization's long term objectives, and that the underlying data used to calculate performance measures is reliable.
- Consider the extent to which flexibility is required within performance commitments and budgets, such that funds can be reallocated during the course of the budget cycle should operating circumstances change.

PRACTICAL EXAMPLE

In a desire to create a more flexible approach, we have taken a radical step and moved away from a traditional annual budgeting cycle. Under the new model we have a flexible quarterly spending plan supported by a five quarter rolling forecast, which facilitates quick and responsive reallocation of non fixed resources to where they add most value at a point in time. For us, the concept of adding value is broad and not just financially based. Performance commitments are set in terms of goals, with devolved responsibility to business unit level. The role of our finance people in this is very important.

[See full case study for further information](#) 



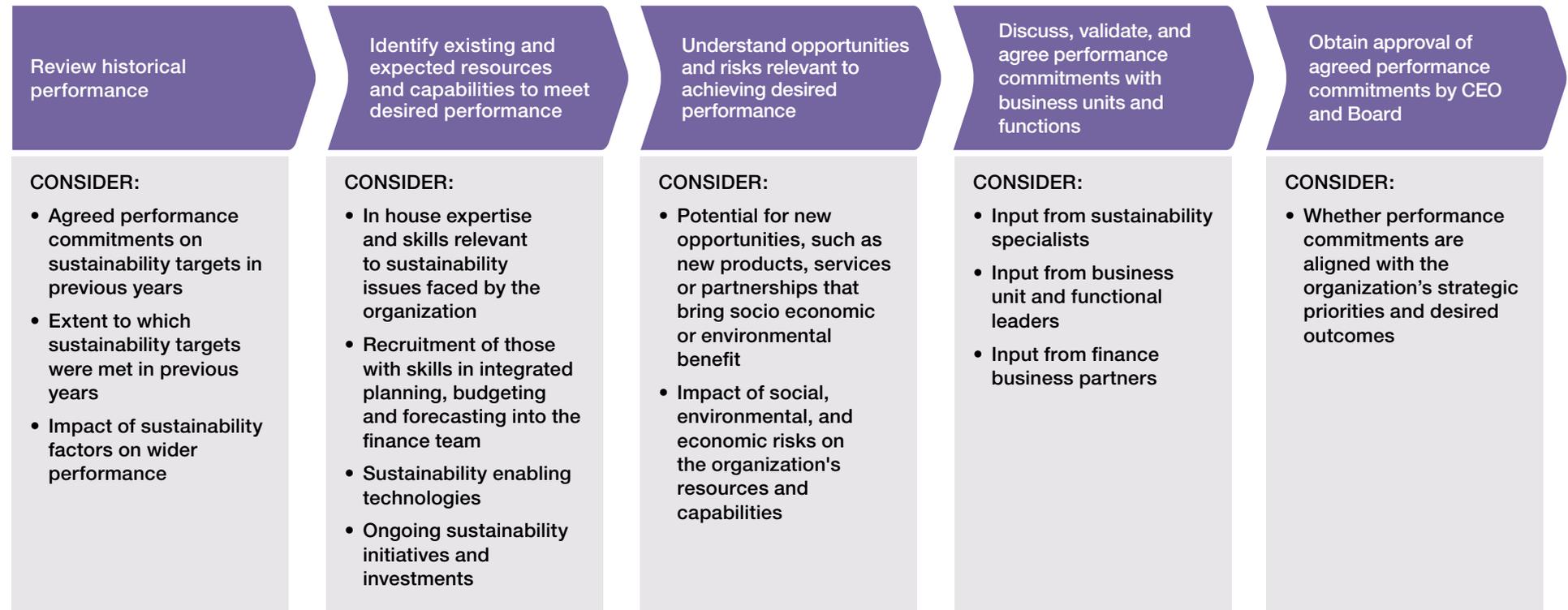
- Overview
- Tools and guidance
- Practical examples

PROCESS: BUDGETING

3. Set and agree performance commitments and budgets for each business unit and function

KEY STEPS TO AGREE PERFORMANCE COMMITMENTS

Setting and agreeing performance commitments with business units and functions enables ownership, validation, and buy in to the organization's short term and long term goals and objectives.



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: BUDGETING

4. Deliver detailed ‘top down and bottom up’ annual operational and financial plans

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Ensure that budgets are developed ‘top down and bottom up’ with cross unit validation and the direct involvement of the finance teams and the relevant sustainability specialists where applicable.
- Incorporate incremental project costs and benefits into the business as usual budget and ensure that there is a clear link to the business case and the identified impact tied to the overall strategy.
- Use all available results to track progress against budgeted annual targets, and the contribution of sustainability factors in driving growth and mitigating risks.

PRACTICAL EXAMPLE

To allocate our financial resources, our annual planning and budgeting cycle is prepared using a ‘top down and bottom up’ approach. Our five year plan commitments are converted through our Outcome Delivery Incentive (“ODI”) framework into annual performance targets for internal planning and driving delivery. Each function then prepares detailed budgets and delivery plans based on their targets. An ODI Board, made up of executive and senior managers, then approves the ODI delivery strategies and the delivery tracking methods proposed.

[See full case study for further information](#) 





PROCESS: BUDGETING

4. Deliver detailed 'top down and bottom up' annual operational and financial plans

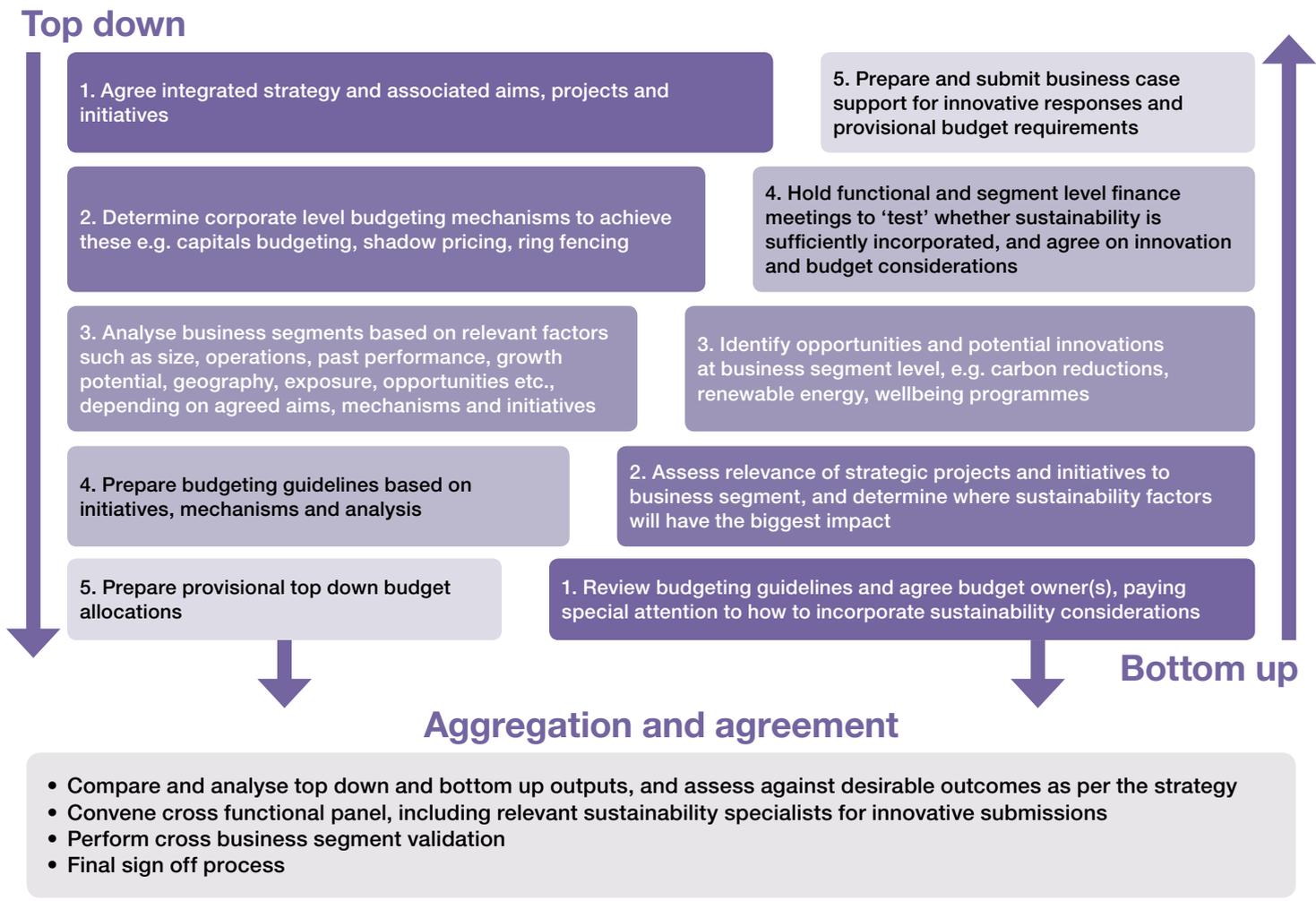
This diagram shows the different steps that can be followed in parallel in a 'top down and bottom up' approach. Sustainability considerations should be integrated throughout – some examples have been included within the diagram.

DRIVING SUSTAINABLE OUTCOMES

This two way process helps to bring together the different perspectives of those in the business:

- Top down: ensuring strategic objectives from management are filtered down into the organization's operations
- Bottom up: incorporating behavioural factors and innovation that can only be identified by those in operational roles

When combined, these perspectives should give the organization a much clearer view on what activities are viable within each sustainability initiative, and the likely cost of these activities.



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: FORECASTING

The forecasting process also needs to incorporate sustainability, ensuring relevant factors within the current and future environment are taken into consideration.

STRATEGIC PLANNING

1. Assess the organization's mission, vision, strategic context and environment

2. Set strategic goals, incorporating sustainability considerations

3. Determine critical success factors, barriers, risks and enablers for achievement of goals

4. Define and agree high level activities and initiatives

BUDGETING

1. Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

2. Convert the strategic plan and high level initiatives into annual activities and milestones, allocating accountable owners

3. Set and agree performance commitments and budgets for each business unit and function

4. Deliver detailed 'top down and bottom up' annual operational and financial plans

FORECASTING

1. Assess performance

2. Provide a realistic outlook based on the current business environment

3. Provide the latest view of expected underlying performance

4. Allow timely management decisions and corrective actions

Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: FORECASTING

1. Assess performance

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Produce and review reports (e.g. month to date, year to date, etc.) containing information on the organization's actual performance against monetary and non monetary budgets and targets set for the previous period.
- Assess the key performance measures set previously and evaluate the level of performance attributed to sustainability considerations. Calculate variances in actual performance relative to the previous budget and/ or the latest forecast.
- Determine the reasons for any significant variances from budget and identify the implications for the new forecast. If required, engage with sustainability specialists and business unit team members to understand significant variances relating to sustainability factors.
- Consider the value of performing long term forward projection to facilitate analysis of where sustainability factors could have implications for future delivery.

PRACTICAL EXAMPLE

Reducing operational emissions (from pumping and treating water and waste water) is essential to Yorkshire Water, as a lower carbon footprint goes hand in hand with efficiency, innovation and cost reduction. Integrating carbon forecasting into operational and financial forecasts has allowed us to support major investments in renewables and energy efficiency, ensure regulatory and legal compliance, and enhance colleague engagement and our external brand.

[See full case study for further information](#) ↗



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

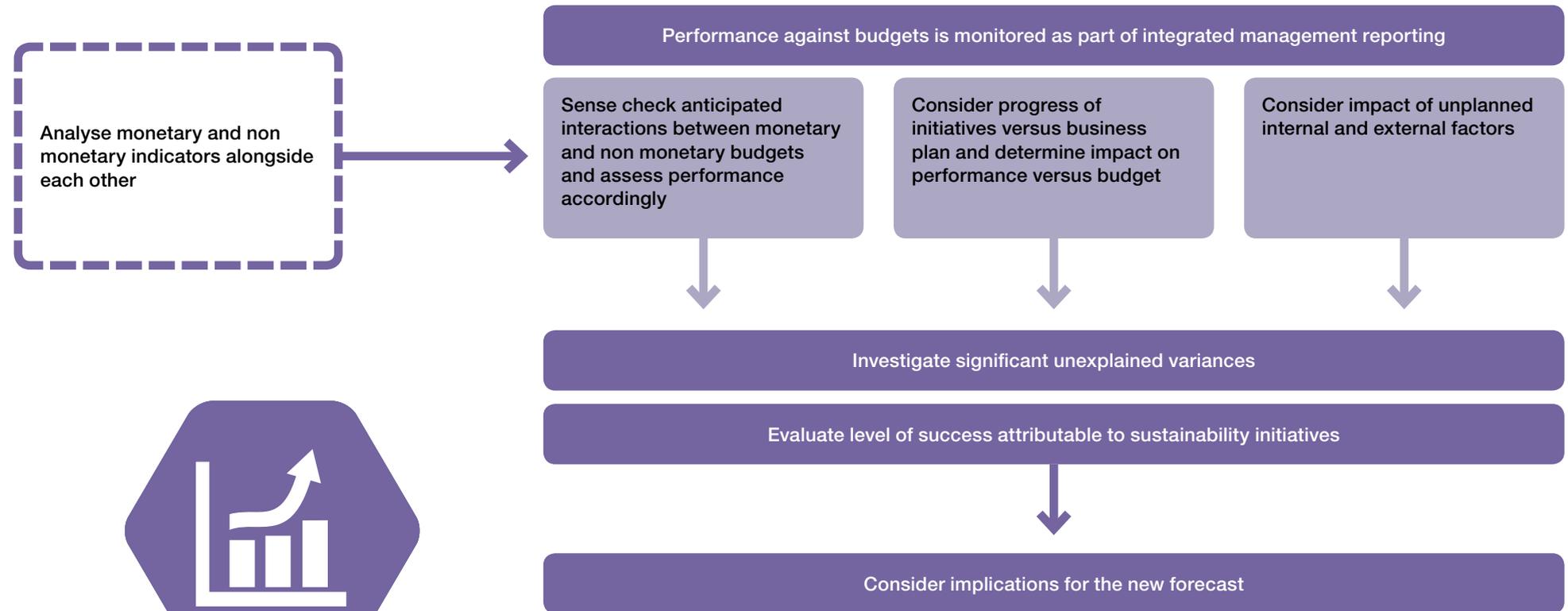
Technology and Data

Maturity and reference

PROCESS: FORECASTING

1. Assess performance

Understanding the performance to date and the reasons for fluctuations from budget is vital for effective monitoring of the business. When success is measurable in terms of both monetary and non monetary factors, then interactions between different measures need to be considered and understood. The diagram below presents some factors to consider when assessing performance against budget in preparation for reforecasting.



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: FORECASTING

2. Provide a realistic outlook based on the current business environment

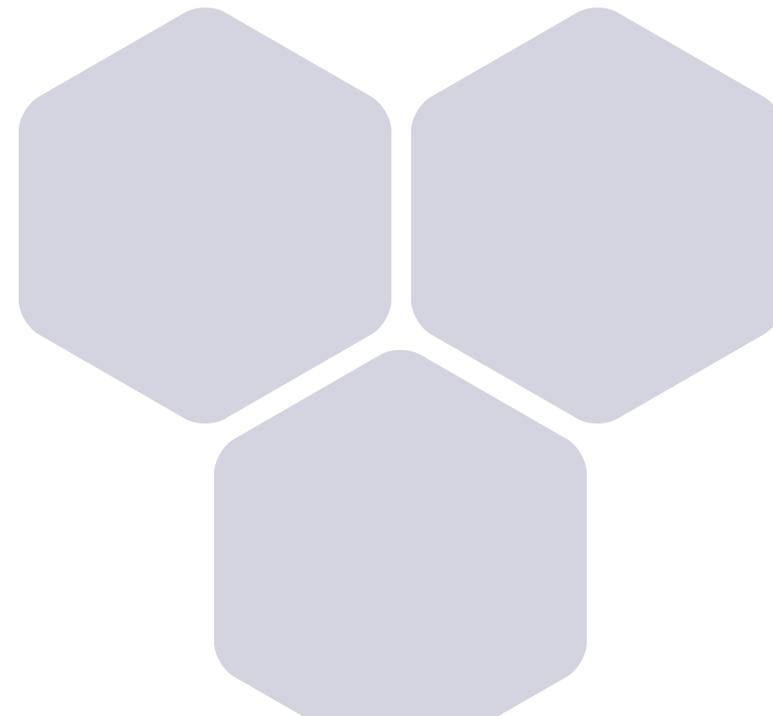
ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Use external research reports and analysis to understand potential market issues that will affect the organization's value drivers over the forecast period, utilizing statistical techniques, spreadsheet tools, and professional judgment to determine the expected impact. For example, look at the latest scientific information on the future impact of climate change and consider how this will affect operations, supply chain, natural capital and markets.
- Use scenario and sensitivity analyses to assess the variability in business performance given hypothetical changes in material external issues, determining how a hypothetical 'best case' scenario and 'worst case' scenario would impact future business performance and develop risk mitigation plans accordingly.

PRACTICAL EXAMPLE

In integrating carbon forecasting into operational and financial forecasts, Yorkshire Water has followed a four step process. To provide a realistic outlook, previous years' data is used to determine the underlying performance, then a forecast is prepared taking into account known changes that are projected to occur and updates to emissions factors that are determined nationally.

[See full case study for further information](#) ↗



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

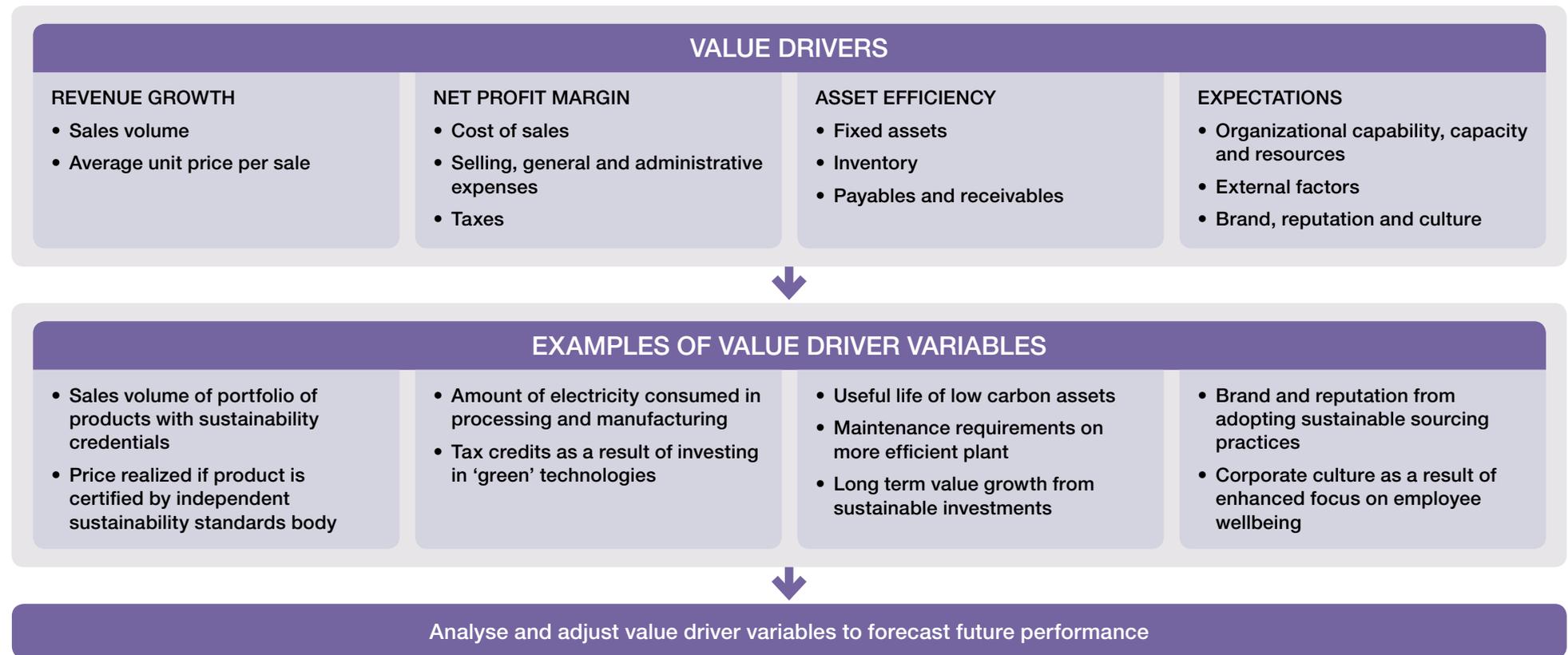
PROCESS: FORECASTING

2. Provide a realistic outlook based on the current business environment

In developing a realistic outlook:

- understand the internal and external variables that have had an impact on the organization's value drivers; and
- determine how the value creation model contributes to the development of a meaningful view of the organization's expected performance.

The following diagram shows how an organization's value drivers can be analysed and considered in developing a view of forecasted performance.



- Overview
- Tools and guidance
- Practical examples

PROCESS: FORECASTING

3. Provide the latest view of expected underlying performance

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Where possible, adapt the forecasting process to include rolling forecasts for all sustainability factors that underpin the organization's goals and targets.
- Incorporate incremental revenues, costs and capital expenditures from budgeted projects (including sustainability initiatives) into the forecast.
- Provide the latest view of the expected underlying performance, including performance on sustainability outcomes, based on the outlook and the targets set during the budgeting process.

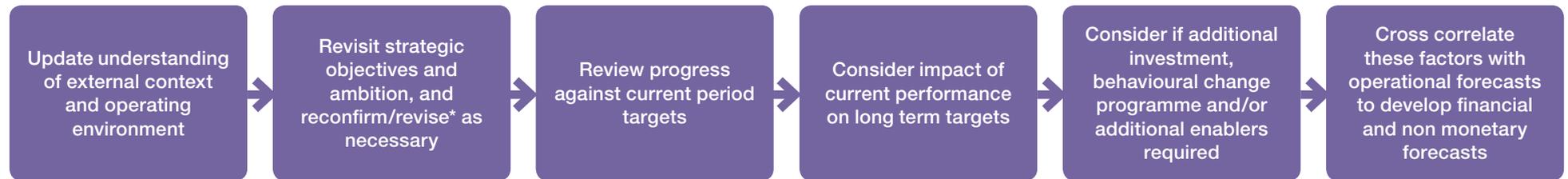
PRACTICAL EXAMPLE

City, University of London, is working to improve the organization's energy efficiency and use of resources by integrating sustainability into strategy and operational procedures. We developed a carbon management plan which prioritized the different initiatives to reduce emissions cost effectively. We then prepared a forecast which incorporated the predicted implementation cost of the key schemes and savings, both financially and in terms of tonnes of carbon, based on the budgeted capital expenditure.

[See full case study for further information](#) ↗



THE FOLLOWING STEPS CAN BE APPLIED TO BOTH MONETARY AND NON MONETARY BUDGETS



*Strategic objectives would ordinarily only be revised at this stage in exceptional circumstances

Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: FORECASTING

4. Allow timely management decisions and corrective actions

ACTIVITIES/INITIATIVES TO SUPPORT INTEGRATION

- Communicate the financial and operational results, highlighting elements related to sustainability factors that underpin the organization's long term strategic goals, and seek cross functional communication and validation.
- Allow management to make timely decisions and interventions to the planned actions of any sustainability initiatives in the same way as for all other objectives, based on a comprehensive view of current conditions, short term performance and target gaps/lags.
- Revisit the budget on an iterative basis, where necessary.

PRACTICAL EXAMPLE

A significant sustainability initiative of Siemens is our Environmental Portfolio within which products, systems, solutions and services must meet specific environmental criteria. The Environmental Portfolio, representing almost 50 per cent of 2016 revenue, is anchored in the company's strategic planning, budgeting and forecasting process. Prior to inclusion in the Environmental Portfolio, potential new elements have to undergo a multilevel evaluation and validation process. The process is monitored by two key KPIs: revenue and customers' CO₂ emissions reductions. These KPIs allow management to make timely decisions and interventions on the progress of the initiative.

[See full case study for further information](#) 

SIEMENS



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference

PROCESS: PRACTICAL EXAMPLES

STRATEGIC PLANNING

Yorkshire Water: Identifying long term risks and opportunities

Anglian Water: Water resource scenario planning

Anglian Water: Introducing sustainability factors into strategic planning, budgeting and forecasting

BHP: Climate change scenario planning

The Crown Estate: A strategic approach to success and future proofing our business

SSE: Assessing total impact to benefit strategic planning decisions

BUDGETING

Crossrail: Developing a budgeting structure which puts long term benefits at the centre

Microsoft: Implementing an organization wide carbon fee model

Asda: Setting monetary budgets in line with strategic sustainability objectives

Bupa: Ring fencing funding for low carbon and renewable energy projects

SSE: Standardized and transparent community fund

SSE: Local supplier portal

City, University of London: Using a marginal abatement model to budget for emissions reduction options

Anglian Water: Setting an embodied carbon budget for 2030

Sainsbury's: Delivering financial and sustainability benefits hand in hand

Danone: Combining financial and carbon savings

Coca-Cola Hellenic: Introducing science backed carbon reduction targets and water usage efficiency

Royal DSM: Setting a shadow carbon price

South West Water: Integrating sustainability throughout strategic planning, budgeting and forecasting processes

Danone: Moving away from a traditional annual budgeting cycle

FORECASTING

Yorkshire Water: Integrating carbon forecasting into operational and financial forecasts

City, University of London: Forecasting carbon emissions savings

Siemens: Anchoring our Environmental Portfolio into strategic planning, budgeting and forecasting processes

- Overview
- Tools and guidance
- [Practical examples](#)



PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

Assess the organization's mission, vision, strategic context and environment

Yorkshire Water: Identifying long term risks and opportunities

WHY DID YOU UNDERTAKE THIS EXERCISE?

We wanted to understand fully the risks and opportunities the business was likely to face over the next 25 years, the necessary strategic responses and how they aligned to our vision and six Strategic Business Objectives. The approach taken can be illustrated through the three step process.

Step 1: What approach did you take in identifying key risks and opportunities?

We formed an internal cross business steering group (sponsored at Board level) to determine the key sustainability risks and opportunities using the PESTEL framework.

PESTEL in practice – identifying long term risks and opportunities

Why did you use PESTEL?	It is a useful structure to explore fully our 'risk universe' over varying timescales. It ensures the Executive Team have visibility of risks from different perspectives and stakeholder views, and hence covers a whole range of issues and risk origins.
What were the challenges with using PESTEL as the approach?	Those involved have to be prepared to put in the time and effort to go through the structure in a disciplined manner. Often, debate covers more than one PESTEL area at the same time – it is not always easy to allocate risks to just one area so this can sometimes disrupt the flow of the workshop and make note taking difficult!
What were the benefits of using PESTEL?	The structured approach ensures all areas are covered, generates debate, allows the process to move on naturally through each area, and provides a starter for open discussion. It is an easy format to use in a workshop style with an Executive Team, quick, straightforward and generates information to explore in more detail.
What was the outcome of the exercise and what is next?	We produced a view of all the risks and opportunities likely to impact our strategic business objectives over longer time horizons including those from external sources (rather than internally driven). This then allowed us to explore likely scenarios and develop appropriate annual and five yearly goals. The output is a sustainability plan to respond to these risks and opportunities (all logged within our risk register) which is wholly integrated into our corporate strategy.





PROCESS: STRATEGIC PLANNING PRACTICAL EXAMPLES

Yorkshire Water: Identifying long term risks and opportunities

WHY DID YOU CHOOSE A 25 YEAR TIMESCALE?

A 25 year timescale was chosen because it allows the short term business planning to be set in the context of a long term direction (not constrained by, for example, the current regulatory framework or customer base). We wanted to understand, for example, what our customers might expect from us in 10 years' time, what skills there might be in the talent pool in Yorkshire, and how raw material costs might affect our business in the future.

Step 2: How did you further understand how these risks and opportunities are likely to impact your business?

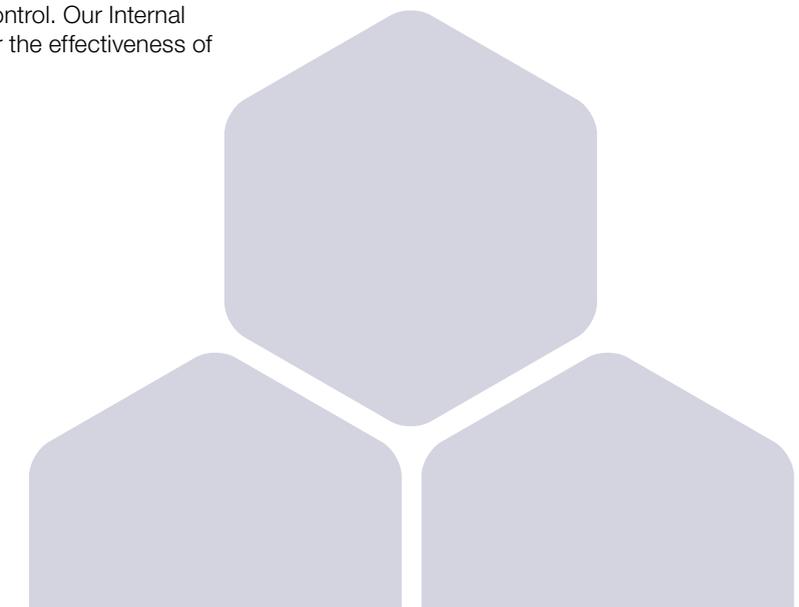
We aligned the risks and opportunities to our strategic risk register and considered appropriate mitigation. The approach identified that further information was needed regarding the uncertainty associated with some of the risks and opportunities that the business would face over the next 25 years. We worked with external sustainability experts to develop evidence based forecasts of what the world (specifically Yorkshire and the UK) could look like in 25 years and the key stages of change between then and now.

Risks and opportunities that are more shorter term and known are included within our risk register and are assessed, both qualitatively and quantitatively, within a scoring matrix. This establishes whether the risk or opportunity is material (against risk appetite determined by our Executive Team) and the level of control. Our Internal Audit function provides assurance over the effectiveness of the controls.

Step 3: How did this approach inform your business decisions?

Forecasting key risks and opportunities provided an insight to the changing nature of the water sector over the next 25 years. On the back of this work, objectives and targets that are aligned with our business plans, and scorecards were set for milestone years towards longer term outcomes to 2040.

Our objectives and targets are a mix of short to medium term through to the aspirational, where the way in which they will be achieved is yet unknown. An example of an aspirational objective is our ambition for 'global safe water' which has led to a partnership with WaterAid in Ethiopia.





PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

Yorkshire Water: Identifying long term risks and opportunities

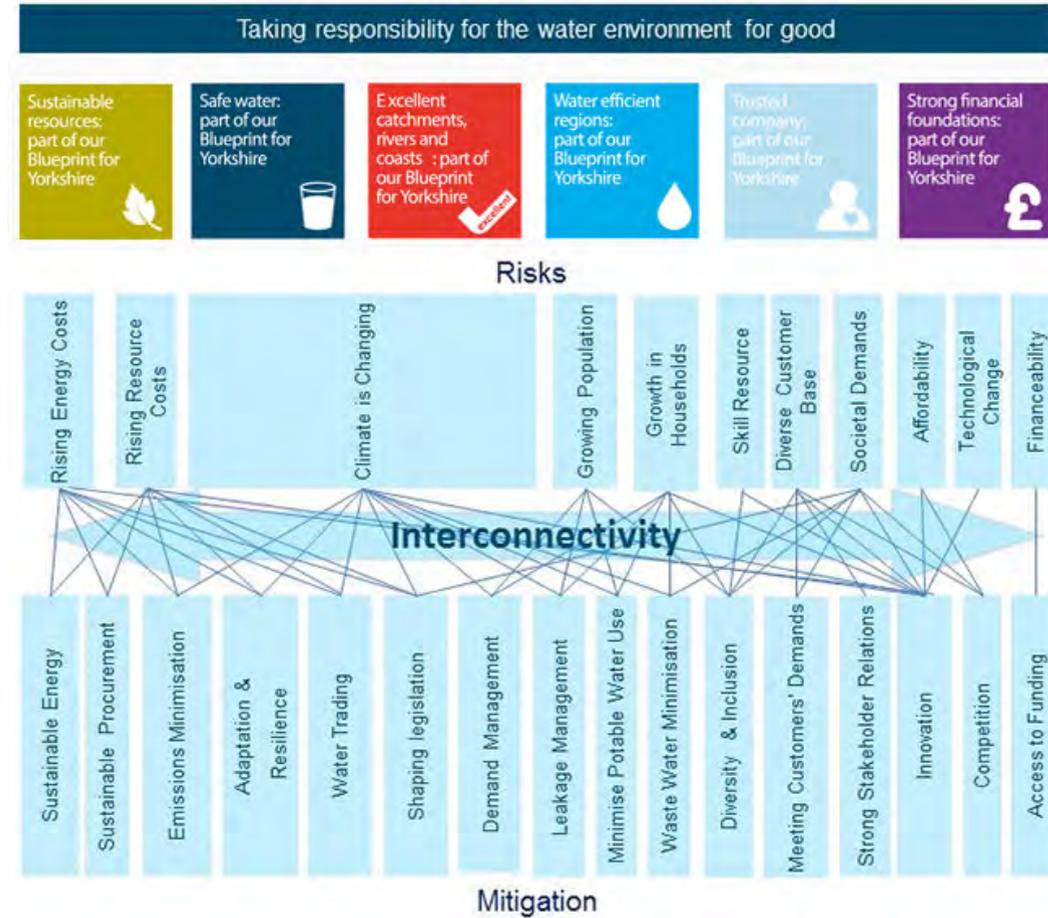
WHAT CHALLENGES DID YOU FACE?

The key challenge was to ensure that the sustainability strategy didn't exist as a separate piece of work but was integrated into the company strategy. This required Board level buy-in to the concept, the work, objectives and targets that the company was signing up to, especially where these were outside of our regulatory contract.

WHAT IS NEXT FOR YOUR ORGANIZATION?

We periodically update our long term analysis to ensure our evolving strategy is always based on latest available evidence. In our latest assessment we found the same trends shaping our business, but with some critical changes to the expected rate of change, for example with even quicker developments in technology than previously forecast.

Ensuring the long term focus remains embedded at the heart of our strategy and business model is an ongoing process. As a part of mitigating long term risk, we manage a programme of activity to help us prepare for the identified opportunities and threats. We discuss regularly with our Board and Executive Team our strategy and progress against this programme of mitigation activity, and we openly report on our strategy, business model and risk management through our integrated Annual Report and Financial Statements.





PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

Anglian Water: Water resource scenario planning

WHY DID YOU UNDERTAKE THIS PROJECT?

We provide water and recycled water services to approximately six million people in the East of England. Over the next 25 years, our ability to maintain the balance between supply and demand will be challenged by macro sustainability trends such as population growth, climate change, growing environmental need and deteriorating raw water quality.

To maintain current levels of service we need to develop new reliable, affordable and sustainable systems of supply as well as reduce demand. To select the schemes that deliver this, we need to make trade offs between various factors including social and environmental costs and environmental performance. Most of the risks arise from uncertainty about timing and the magnitude of the impacts from growth and climate change.

We want to understand the supply and demand scenarios that are considered most appropriate and cost effective for water resource planning. We also want to understand the trade offs between customers' willingness to pay and reduced levels of service, and whether we should consider other criteria than cost effectiveness. This helps us to define our strategic goals.



To address these issues, we are piloting the Water Resources East project (WRE). The WRE is developing a long term water resource strategy for the Anglian region in collaboration with other water companies, the agriculture sector, the Environment Agency, Natural England and other water users.

WHAT APPROACH DID YOU TAKE IN IDENTIFYING SCENARIOS FOR WATER RESOURCE PLANNING?

The WRE is evaluating new scenario based approaches to long term water resource planning which is based on application of Robust Decision Making (RDM) and multicriteria Strategy Optimization.

Strategy Optimization uses an automated search algorithm to test different strategies against multiple performance criteria and finds those plans that perform best across all modelled future scenarios, and in respect of all performance criteria. In an RDM analysis, the performance of a small number of different options or strategies is tested using a wide variety of plausible future scenarios. The uncertainties which make the plan vulnerable are identified. Using statistical cluster analysis, the options or strategies are updated and then tested again.

Set strategic goals, incorporating sustainability considerations

WHAT CHALLENGES DID YOU FACE?

While RDM allows for rigorous testing of a small number of strategies or plans and can be used to explore the order in which the selected schemes are delivered, it does not suggest which combination of schemes should be included in the plans in the first place. We therefore used Strategy Optimization followed by RDM.





PROCESS: STRATEGIC PLANNING PRACTICAL EXAMPLES

Anglian Water: Water resource scenario planning

WHAT WERE THE BENEFITS OF THE APPROACHES USED?

By using 1) Strategy Optimization followed by 2) RDM it is possible to identify optimized, balanced and robust water plans. By presenting optimized plans as performance measure trade off curves (step 1: Strategy Optimization), stakeholders and decision makers can debate and select an appropriate balance of system performance criteria.

Trade off curves allow the identification of which portfolios of new supply and demand management schemes can reach the set objectives. Once one or a few preferred plans are chosen, they can be further refined through iterative testing with a wider selection of future scenarios leading to flexible and adaptive plans (step 2: RDM). This stakeholder led approach allows for more effective, robust and transparent decision making and is an improvement on the current least cost planning methods.

HOW DID THE APPROACHES INFORM YOUR BUSINESS ACTIVITIES?

Over 300 scenarios were developed. In each scenario, the performance of each option or strategy was tracked using a number of different measures, including total capital and operating costs, and environmental performance.

To explore the robustness of a strategy based on combinations of all different options planned for Asset Management Programme 6 (2015-20), a vulnerability analysis was performed. This involved finding future conditions in which the strategy performs relatively poorly. The analysis identified two such scenarios that accounted for 96% of the simulated futures in which the strategy was vulnerable to failure. Iterative amendments can then be made to improve performance, allowing a more robust strategy to be developed.

WHAT WILL SUCCESS LOOK LIKE?

The plans will allow us to perform robustly in most plausible future scenarios. Success for the WRE is a flexible and adaptive plan for delivering a reliable, affordable and sustainable system of supply, which also needs to be resilient to the effects of population growth and climate change.

WHAT HAS HAPPENED SINCE THE PROJECT?

The project has been extended into Asset Management Plan 6 and used to inform our next Water Resources Management Plan and Business Plan.

The project has also been enlarged to the WRE involving more water companies, and more water users, in the East.

Over 300 scenarios were developed. Their performance was tracked using a number of different measures including total capital and operating costs, and environmental performance.



- Overview
- Tools and guidance
- [Practical examples](#)



PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

Anglian Water: Introducing sustainability factors into strategic planning, budgeting and forecasting

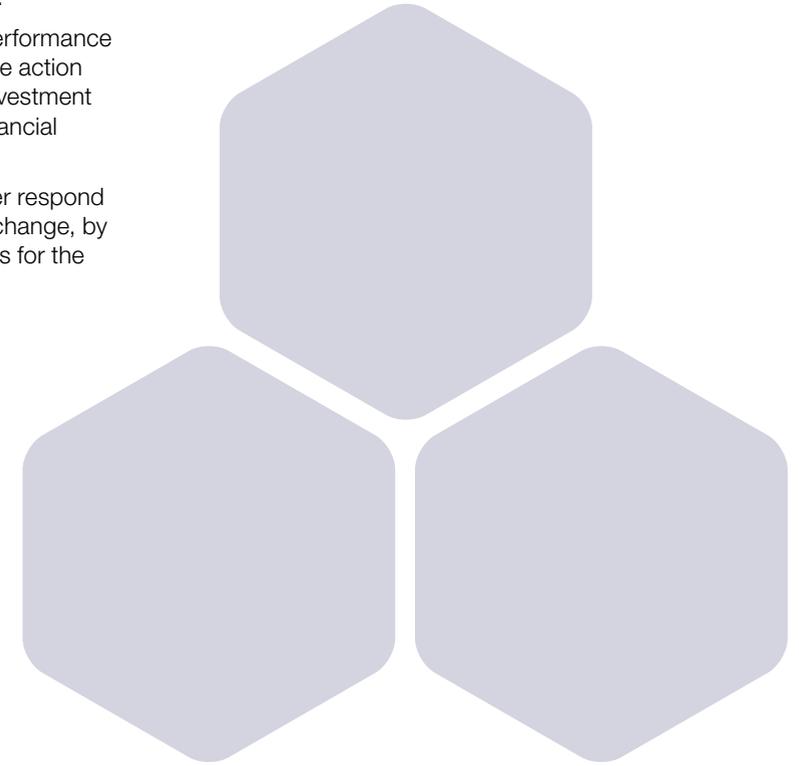
Set strategic goals, incorporating sustainability considerations

WHAT

- Leveraged our integrated 25 year strategic plan to set six strategic business priorities which reflect our overall commercial aims and associated sustainability ambitions. These six priorities form the key sections of our strategic plan based on our Strategic Direction Statement, Water Resources Management Plan and the Risk Registers used in day to day operations.
- Concluded on ten outcomes that clearly included particular sustainability considerations, all of which were agreed with customers.
- Aligned our business goals and cultural values to these outcomes, resulting in greater customer brand engagement and more effective delivery.
- Developed appropriate metrics to allow us to monitor whether the desired outcomes were being achieved, which were then incorporated into our budget and forecasting processes.
- Focused on delivering outcome measures that reflect our broader performance and help us meet customer and regulatory expectations.

WHY

- Has resulted in improved customer outcomes whilst retaining focus on efficiency and cost savings.
- An integrated plan allows us to monitor our performance in a more holistic way, highlighting areas where action is needed, or equally where we can reduce investment yet still achieve the same financial and non financial outcome.
- Increased business resilience as we can better respond to threats, such as water stress from climate change, by targeting outcomes that drive the right benefits for the business, its customers and shareholders.





PROCESS: STRATEGIC PLANNING PRACTICAL EXAMPLES

Anglian Water: Introducing sustainability factors into strategic planning, budgeting and forecasting

HOW

- As sustainability factors are part of our strategic plan, the focus on outcome based measures meant that social and environmental performance had to be reflected in our budgets, targets and forecasts.
- We modified each element of the plan, with budgeted costs linked to delivery of outcomes, and performed a risk review to identify areas where we could reprioritize investment to deliver improved performance across all outcomes.

- Our Strategic Priorities Board reviewed options and decided which to progress, where additional expenditure was required, and where funding would come from to keep the overall plan in balance.
- Having financial or reputational 'rewards' or 'penalties' for non financial metrics focused the attention of the business on non financial goals.

- Aspirational long term goals helped to change mindsets and deliver change quickly.
- The finance team collaborated with the wider business in the development process facilitating high level buy in from the whole organization.

Introduction

Process

- Overview
- Tools and guidance
- Practical examples

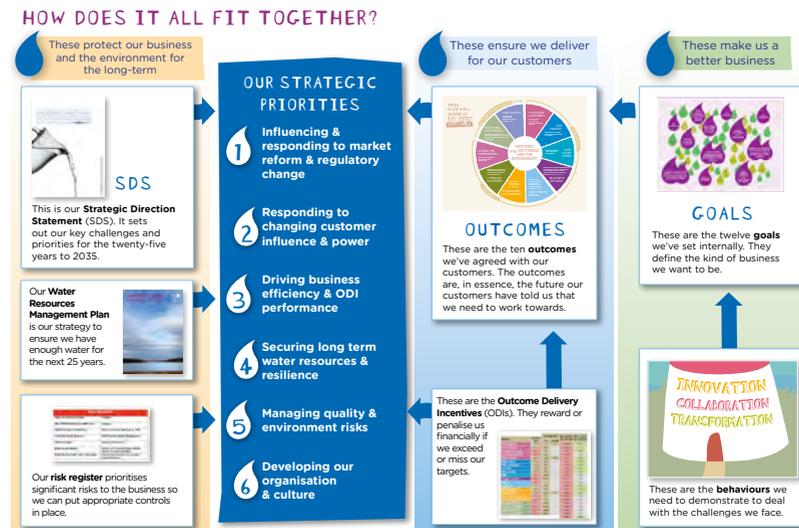
Governance

Performance management

Technology and Data

Maturity and reference

How does everything fit together?





PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

BHP: Climate change scenario planning

Set strategic goals, incorporating sustainability considerations

WHAT

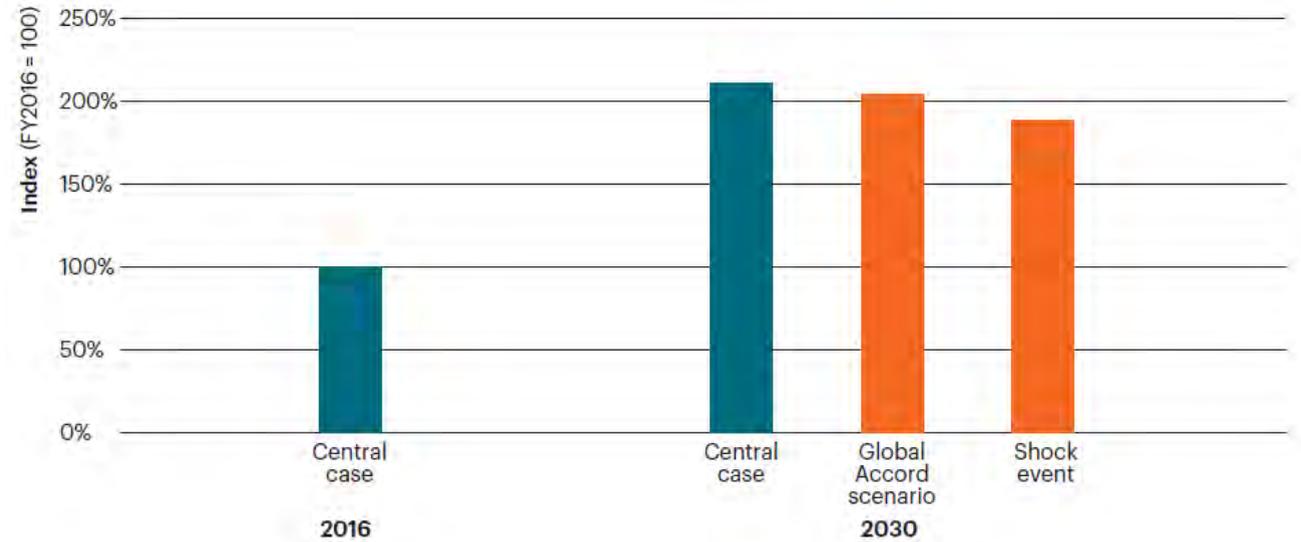
At BHP, our 20 year plan is prepared based on input from our businesses' long term plans, and is then tested under both long term scenarios and 'shock' events. While we optimize the 20 year plan based on the central case, we use long term scenarios and shock events to test the resilience of the portfolio across a range of possible futures. Designed to interpret external factors, including technical, economic, political, environmental, social and governance trends facing the global resources industry, the scenarios offer a means by which to explore potential portfolio discontinuities and opportunities, as well as to test the robustness of decisions.

The difference between how we expect the portfolio to perform in the central case, and how we forecast it could perform in a scenario, helps us to understand the opportunities and risks and what we might do differently if the world were to move towards a particular scenario.

Analysis undertaken in 2015 showed that the portfolio is resilient due to long term demand, high quality resources, low production costs and rapid payback periods of growth

projects. Under a 2°C scenario, we believe there is a likelihood of upside for uranium, high quality metallurgical coal and iron ore.

Depending on the speed of transition and the energy choices made, we believe we will have opportunities to mitigate the impacts on the value of our portfolio through selectively investing in the commodities that will benefit from structural market changes.



See full Climate Change Portfolio Analysis Report 2015 for further information





PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

BHP: Climate change scenario planning

WHY

We believe the world is facing two critical challenges. As the global population steadily grows, the continued development of emerging economies depends on access to affordable energy. At the same time, limiting climate change requires the global average temperature increase to remain below 2°C relative to pre industrial levels. Successfully addressing these challenges will result in substantial changes to the global economy. Companies in all sectors will have new market opportunities and face new competitors. All will need to find new ways of working.

The opportunities and risks associated with climate change cannot be expected to be spread evenly between businesses. More disclosure will inform investors, policy makers and regulators and support the companies that manage change most effectively. With the publishing of this scenario analysis, we are providing more information than ever before about how we are addressing climate change, and how climate risk might affect the portfolio.

HOW

Our approach to scenario planning starts with our annual corporate planning process and the construction of a 'central case', a forecast built through an in depth, bottom up analysis using rigorous processes and benchmarked with external views. The current central case assumes: the US economy continues to recover and strengthen; progressive development of China and India; integration of emerging economies into a multi polar economic environment; and action on climate change centred on national policies. In the central case, our estimates show the world heading towards 3°C warming relative to pre industrial levels.

The four scenarios used, shown overleaf, do not constitute preferred outcomes for BHP, but represent a range of possible long term future states. While these are possible futures, there are inherent limitations with scenario planning and it is difficult to predict which, if any, of the scenarios might eventuate. They are designed to be divergent, but also plausible, spanning unique potential future business environments. The scenarios use a consistent set of assumptions which are applied across the range of commodities. Every scenario includes an assumption that climate change occurs, what varies between them is the extent of the global response.



BHP



Introduction

Process

- Overview
- Tools and guidance
- **Practical examples**

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: STRATEGIC PLANNING PRACTICAL EXAMPLES

BHP: Climate change scenario planning

Tracking of signposts (trends) and triggers (events) across scenarios is integral to the planning process. These signposts and triggers provide an indication of which scenarios are becoming more or less dominant through time, offering us a powerful decision making tool that would enable us to act early. For example, a potential trigger event would be a breakthrough in low cost carbon capture and storage (CCS) for power generation.

While we test the resilience of the BHP portfolio across all four scenarios, we have a specific focus on providing further insight into the impacts of a transition to a 2°C world. The analysis includes a price on carbon, which represents the marginal inducement cost of the emissions reductions required to meet government targets. In the central case, we have a long term carbon price forecast of US\$24/tCO₂e by 2030. In Global Accord, we expect the global average carbon price to reach US\$50/tCO₂e by 2030. This reflects key global economies such as China, the United States and the European Union going beyond their current climate commitments and significantly

increasing demand for long term emissions reductions. The higher ambitions are matched by stronger policy support to help deliver emissions reduction potential.

Along with scenario analysis, we test the portfolio against shock events. These are unlikely and extreme events, which are typically short term, but may have associated longer term impacts. We developed a shock event based on Global Accord that describes a much more rapid shift to a 2°C world where emissions align with the levels indicated by the IPCC by 2030, driven by very aggressive policy measures and technology developments. In this scenario, the carbon price rises up to US\$80/tCO₂e by 2030, driven by very ambitious government targets.

BHP

The key characteristics of the four scenarios are summarised below:

 <p>A New Gear Innovation delivers step-change growth in developed economies</p>	<p>High, sustainable economic growth unlocked by productivity gains in advanced economies. Reform success in India achieves high transformative growth. Restricted resource access in some areas. Rapid production rates for some commodities deplete basins with costly reserve replacement. Technology development focuses on highly differentiated products. Less technology transfer from major economies to emerging economies. Developed economies rely primarily on regulation to enforce reduction in emissions. Globally, the initial focus is on reactive adaptation, with some proactive investment followed by a longer-term shift towards mitigation.</p>
 <p>Closed Doors National self-interest drives economic policy leading to low growth</p>	<p>A future state enmeshed in economic decline and protectionism. Nationalism drives economic policy rather than reform. Security of supply drives resources investment policy. Limited global cooperation. Research and development dwindles with low private sector capacity and government support. Food and water supply shortages provoke instability in some economies. Climate change commitments are abandoned in favour of adaptation.</p>
 <p>Global Accord Unified focus on limiting climate change</p>	<p>Robust global economic growth sustains strong impetus to develop and implement cleaner, more energy efficient solutions that support growth. Unified societal action to address climate change leads to high cooperation and commitment to limit emissions. Technology plays a pivotal role with breakthroughs in new, next generation clean energy technologies. Higher-cost options are often deployed to meet lower emissions targets. There is an orderly transition to a 2°C world.</p>
 <p>Two Giants US and China-led hubs drive technology-enabled growth</p>	<p>Strong global growth led by China and US regional centres that enable greater liberalised trade. Reform success in Latin America underpinned by high intra-regional trade integration. Coordinated policy response and agricultural productivity gains ease water and food constraints. Significant investment in research and development and rapid transfer of technology within the two centres. Focus on stronger mitigation and proactive adaptation to climate change.</p>



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference



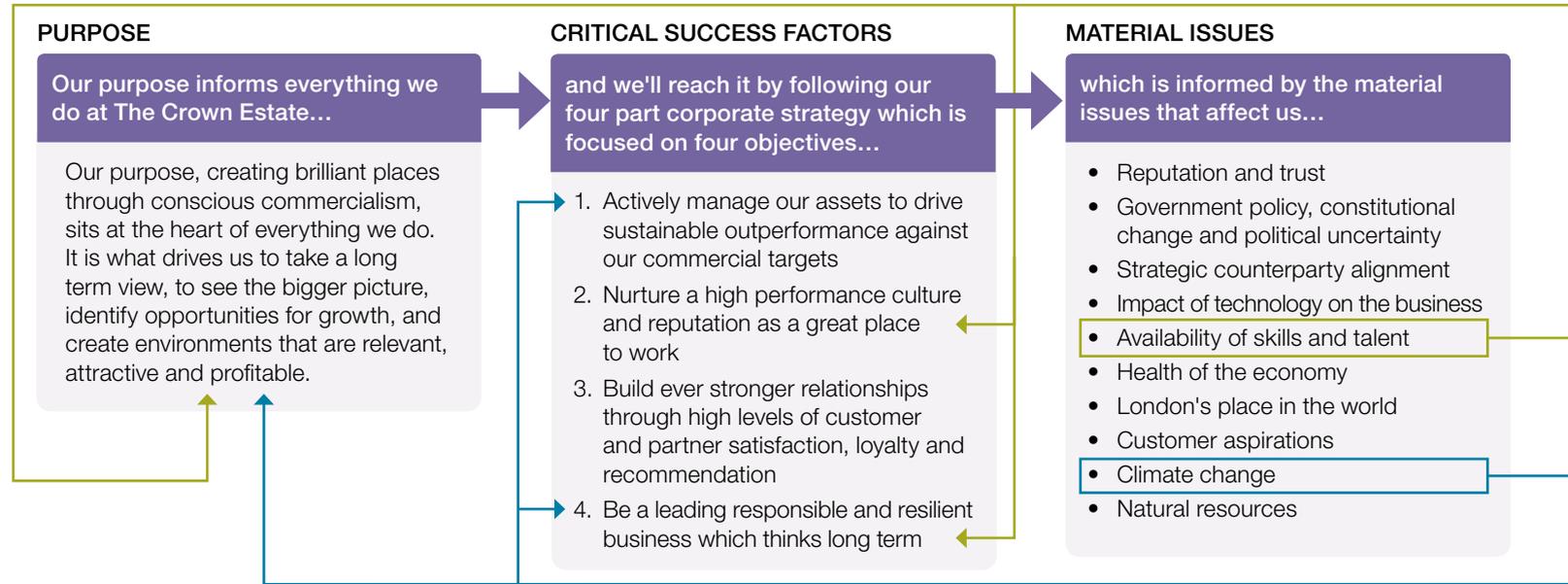
PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

Consider critical success factors, barriers, risks and enablers for achievement of goals

The Crown Estate: A strategic approach to success and future proofing our business

Everything we do is informed by our purpose: creating brilliant places through conscious commercialism. To help us achieve our purpose we consider the material issues which are central to our business, we address them through our business model which, in turn, informs our corporate strategy. We measure our progress against our KPIs, which is delivered through a well organized business underpinned by strong governance and leadership.



- ENABLERS**
1. Recruiting for talent, but also seeking to develop our employees through learning and development plans
 2. Offering competitive reward packages aligned to performance
 3. Focusing on succession planning, inclusion and diversity and coaching
 4. Facilitating the wellbeing of our staff through initiatives such as health and wellbeing information events, access to health screenings, health insurance

- ENABLERS**
1. Actively pursuing mitigation measures across our portfolio
 2. Developing science based targets
 3. Developing climate change adaption plans across the portfolio
 4. Helping to achieve a low carbon economy through work on derisking the offshore wind consenting process and attracting inward investment



'Climate change' and 'Availability of skills and talent' are two of these material issues

We have implemented four enablers in response to each of these issues – four ways to create conditions that empower our people to embed sustainability within the business to help us to:

- Actively manage our assets to drive sustainable outperformance against our commercial targets
- Nurture a high performance culture and reputation as a great place to work
- Be a leading responsible and resilient business which thinks long term



Introduction

Process

- Overview
- Tools and guidance
- [Practical examples](#)

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: STRATEGIC PLANNING

PRACTICAL EXAMPLES

Define and agree high level activities and initiatives

SSE: Assessing total impact to benefit strategic planning decisions

Scottish and Southern Electricity Networks (SSEN), part of SSE Plc's electricity networks business, is making sure we account for social, environmental and economic factors when planning future capex projects.

Between 2015 and 2023 SSEN plans to replace approximately 100km (22%) of its network of submarine electricity cables. Based on current projections this could cost up to £300m or six times the expected budget as a result of changes in the National Marine planning process. This cost will ultimately be paid for by electricity customers in the north of Scotland and thus their views on the process were fundamental as this would substantially effect the strategic planning and forecasting of how and when the works are carried out. The current model for quantifying the benefits and costs is the next evolution of the impact assessment process that SHE Transmission developed to support its capital expenditure programme.

The table opposite shows the key impacts that are quantified in the submarine electricity cables cost benefit analysis methodology.

Link to the initial project which led to the development of this methodology, the Beaully-Denny transmission project which was driven by the finance team.



Table 1: Key impacts quantified in the submarine electricity cables cost benefit analysis methodology

Category	No	Type	Detail of impact
Health and safety impacts	1	Benefit	Decreased health and safety risk to marine vessel operators from cable snagging
	2	Net benefit/cost	Change in health and safety risk to cable laying vessel operators Note, this is based on trade-off between: (i) lower fault rates leading to less time at sea; and (ii) longer installation, repair, and decommissioning time requiring longer time at sea
Socio-economic impacts	3	Benefit	Decreased damage costs to marine vessel operators from cable snagging
	4	Benefit	Decreased risk of energy outages for island communities due to lower fault rates
	5	Cost	Increased distribution costs leading to lower renewable generation on islands and lower Gross Value Added (GVA)
	6	Cost	Increased cost of fuel poverty eradication programme due to higher fuel bills
	7	Cost	Increased cost to fishing operators due to loss of access to fishing grounds during cable installation
	8 NEW	Benefit	Decreased risk of energy outages for renewable generators due to lower fault rates
Environmental impacts	9	Cost	Increased distribution costs leading to lower renewable generation on islands and higher greenhouse gas emissions
	10	Net benefit/cost	Change in greenhouse gas emissions from use of backup diesel generators. Note, this is based on trade-off between: (i) lower fault rates resulting in a reduction in diesel usage; and (ii) longer repair time resulting in an increase in diesel usage
Wider economic and engineering	11	Cost	Increased installation costs associated with protection
	12	Net benefit/cost	Impacts due to change in repair costs Note this is based on trade-off between: (i) lower fault rates resulting in fewer repairs; and (ii) longer repair time because cables are protected
	13	Cost	Increased cost of decommissioning associated with protection
	14 NEW	Benefit	Decreased risk of outage charges due to lower fault rates
	15	Cost	Increased cost of maintenance surveys associated with protection
	16 NEW	Net benefit/cost	Change in use costs of using backup diesel generators Note this is based on trade-off between: (i) lower fault rates resulting in a reduction in diesel usage; and (ii) longer repair time resulting in an increase in diesel usage



Introduction

Process

- Overview
- Tools and guidance
- [Practical examples](#)

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: STRATEGIC PLANNING PRACTICAL EXAMPLES

SSE: Assessing total impact to benefit strategic planning decisions

THE TOTAL IMPACT ANALYSIS

In a project overseen by our Finance Director, SSE wanted to understand better the impacts that capital investment projects have on society and to measure them using a consistent metric. In looking at the Beaulieu-Denny transmission line this assessment focused on a number of sustainability impacts that were assessed to be most material to the project, including:

- Total economic footprint of the construction expenditure
- Cultural heritage
- Traffic management
- Carbon footprint
- Building waste
- Visual amenity

With support from sustainability consultants, SHE Transmission developed a Sustainable Commercial Model (SCM) framework, bringing together over a dozen

methodologies, to quantify and monetize the above environmental, social and economic impacts i.e., the total impact of the Beaulieu-Denny transmission line. The impact can be identified, measured and financially quantified in a globally recognized currency: '£', where previously expected impacts were assessed using qualitative data. Using this consistent monetary value enables all stakeholders of transmission projects, and the wider community, to review the impacts and value created in a transparent and accountable format against an established baseline value. In particular it provides visibility around the relative positive and negative impacts of different options and decisions, helping us to maximize the total value created.



FINANCE FUNCTION LEADERSHIP

The finance function was instrumental in the development of the SCM. SSE's Finance Director chaired the working groups and set the direction, while the Group Sustainability Accountant provided the knowledge and coordinated activities. We found that the critical success factors are to have the knowledge, the right culture and an engaged, supportive finance team.

The finance function:

1. Embedded a significant level of rigour into the analysis, with an audit trail of information, which provides evidence that a robust process was followed. This ensured that key decisions and assumptions were documented and substantiated, creating transparency of results for both internal and external parties.
2. Facilitated the linkage of finance with the wider sustainability community, both internally and externally. This led to greater collaboration.
3. Illustrated to senior management, both within the finance function and in other areas, that a financially sound project can also have the best sustainability outcomes. The Finance Director of the transmission division of the business is now an advocate for the commercial potential for using this approach on new line developments.



- Overview
- Tools and guidance
- Practical examples



PROCESS: BUDGETING PRACTICAL EXAMPLES

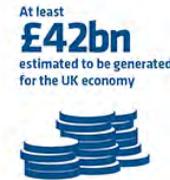
Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

Crossrail: Developing a budgeting structure which puts long term benefits at the centre

WHAT

Crossrail Limited is the company that has been set up to build the new railway that will become known as the Elizabeth Line when it opens through central London in 2018. The budgeting guidelines are designed to minimize the whole of life costs of the project (rather than just the construction cost), and to incorporate a whole range of sustainability initiatives into the project to deliver both short and long term benefits. A total funding package of £14.8 billion is available for the project, with anticipated benefits including those shown in the infographic.

ECONOMIC



Estimated **55,000 jobs** being supported by Crossrail across the UK



ENVIRONMENT



SOCIAL



Introduction

Process

- Overview
- Tools and guidance
- **Practical examples**

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: BUDGETING PRACTICAL EXAMPLES

Crossrail: Developing a budgeting structure which puts long term benefits at the centre

WHY

We are investing public money in a world class railway so we have a broad obligation to spend it in the right way. Sustainability for Crossrail is therefore built on the ethos of contributing to a strong, stable economy that will help provide prosperity and opportunities for all. As Europe's largest infrastructure project, Crossrail presents an excellent opportunity to lead in delivering a sustainable railway, fit for the future. Sustainability has been at the heart of the project from day one, and decision makers for the project want it to have a long lasting impact on how people travel through the capital and South East, and leave a lasting learning legacy for future projects and the wider industry.

HOW

Finance teams have been at the heart of the whole project. Finance Leadership team representatives are linked into all of the governance functions, including a sustainability committee. The committee is chaired by the CEO and attended by all Executive and top level management and is focused on delivering environmental, social and economic benefits.

Budgeting and allocation of funds has been based on the net long term benefit, whole of life costs approach. The budgeting guidelines incorporated this ethos, for example:

- A supply chain budget was structured so that economic benefit focused on regions outside London and on SMEs. Over 1,700 businesses have secured work on Crossrail with 62% from outside London and 58% from SMEs.
- We decided to use titanium rails for the Elizabeth Line, which are more expensive in the short term than conventional rails, but require less maintenance as the trains that run on these rails are lighter. This increases the life of the rails, reduces the maintenance and replacement costs, as well as the energy required to run the railway. A traditional construction cost based budgeting approach would have ruled out titanium rails on the grounds of purchase cost.

- A £1m budget was ring fenced for a lorry driver training course that set new safety standards for the industry. This was in response to the increase in heavy goods vehicles from the project, and the fact that 50% of cyclist accidents in London are due to collisions with heavy goods vehicles.

This long term benefit approach has required extensive financial modelling, taking account of environmental and social considerations, led by the finance team. Consequently, the finance team has had a decisive influence over budget allocation, investment and change decisions. The finance teams have a role in ensuring money flows down the supply chain, in helping project management teams make smarter decisions, and in supporting function heads with both monetary and non monetary analysis.

[See Crossrail website for further information](#) 



“Demonstrating long term sustainability has been at the forefront of Crossrail priorities since the earliest days of the project. As a finance team, we have worked hard to demonstrate and monitor the wider benefits of the project both internally, and to the wider stakeholder audience. Reporting on costs alone is simply not a justifiable position for a project of this scale and importance.”

Matthew Duncan, Finance Director, Crossrail





PROCESS: BUDGETING PRACTICAL EXAMPLES

Microsoft: Implementing an organization wide carbon fee model

WHAT

The carbon fee model that we implemented at Microsoft is a financial model that puts an incremental fee on the carbon emissions associated with our company's operations. There are three primary components to our carbon fee model:

1. Organizational carbon reduction policy
2. Price on carbon
3. Carbon fee fund investment strategy

The price on carbon is determined by the total cost of the carbon fee fund investment strategy, which is set to meet the organizational carbon reduction policy objectives.

A carbon fee internalizes the external cost of carbon pollution into the financial structure of an organization. The associated fee is charged to those groups responsible for the resource consumption. There is no "grandfathering" (that is, a pre specified level of "free" emissions) as you might get with a cap and trade scheme.

Business groups face an immediate cost for every unit of carbon they produce. In other words, the carbon fee makes environmental impact a line item in the business group managers' budgets across our organization based on the levels of resource consumption associated with generating carbon emissions.

By doing so, the fee helps educate the business groups on carbon emissions and elevate efficiency and innovation within our business.

The three primary components of our carbon free model



Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

By using a model in which groups are charged a fee based on their actual total usage (rather than putting a cap on usage or applying the fee to usage exceeding a pre-determined level), we keep the model simple to administer and make the cost of emissions overt.

The fees that we collect through the carbon fee model go into a central fund used to subsidize investments that enable Microsoft to reduce emissions and be net carbon neutral.

Our carbon fee model



Introduction

Process

- Overview
- Tools and guidance
- [Practical examples](#)

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: BUDGETING PRACTICAL EXAMPLES

Microsoft: Implementing an organization wide carbon fee model

WHY

The three primary benefits supporting the decision to implement an internal carbon fee were the opportunity to drive efficiency, demonstrate responsibility and show leadership.

1. Efficiency

A carbon fee can help drive behaviour change to increase efficiency and reduce an organization's costs and carbon footprint. Quantifying carbon provides a standard measure, or a "level playing field", across otherwise disparate groups to drive operational excellence.

2. Responsibility

The carbon fee model drives responsible business decisions that help mitigate potential risks associated with an organization's environmental footprint. For Microsoft, the fee helps us address risks related to the rising costs of energy.

[See full Microsoft guide for further information](#) 

3. Leadership

While we believe we have a responsibility to minimize our company's impact on the environment, we also have an opportunity to contribute to the greater good. A carbon fee model helps provide leadership in mitigating climate change, and (with the subsequent investment of the carbon

fee funds) demonstrates how environmental considerations can be integrated into financial frameworks to evolve how carbon markets function. The model can ultimately support the development of a low carbon economy, jobs, education, healthcare, and address other societal challenges.

Benefits of the carbon free model to drive culture change



“A carbon fee model is an excellent way to provide both the financial framework and the formal discipline to drive efficiency projects. By applying a financial cost to the carbon impact of operational practices, it provides justification to prioritize efficiency – and therefore cost reductions – across the organization.”
Lee Mills, Senior Finance Manager, Microsoft Corporation

Introduction

Process

- Overview
- Tools and guidance
- [Practical examples](#)

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: BUDGETING PRACTICAL EXAMPLES

Microsoft: Implementing an organization wide carbon fee model

HOW

Step 1: Calculate your carbon impact

- A foundational building block of a carbon emissions inventory is the development and on going maintenance of an inventory management plan (IMP), the purpose of which is to institutionalize a process for collecting, calculating, and maintaining carbon data.
- Technology plays a vital role in improving visibility into emission levels. Access to up to date data makes it easier to integrate environmental footprint management into the business. It also provides greater transparency to the executives and business leaders responsible for making business decisions.

Step 2: Establish a carbon reduction policy and develop an investment strategy

- The success of your model will depend on gaining the cooperation and buy in of key stakeholders. You will need to have the right people engaged to form a carbon reduction policy with visibility across the organization. At a minimum, the model will need the approval and participation of the finance officer of the organization.

- A carbon reduction policy outlines what commitment the organization is making to reduce carbon (such as pledging carbon neutrality). Carbon reduction targets help ensure that the design and administration of your carbon fee align with organizational goals.
- By defining your carbon fee emissions boundary in alignment with existing organizational boundaries or groups, you will help simplify administration of the fee and minimize resistance from internal audiences.
- Your carbon fee fund investment strategy will form the basis for your environmental initiatives portfolio. Your strategy will guide selection decisions by prioritizing criteria that will have an impact on the cost of your investments and therefore on your internal carbon price.

Step 3: Determine your internal carbon price

- In simple terms, you can calculate your carbon price by dividing the total cost of your environmental initiatives portfolio by the emissions within your carbon fee emissions boundary. Alternatively, you could base the price on existing or future traded values, or an estimate of the social cost of carbon.
- By allocating the carbon fee to the groups that consume the resources (and are therefore responsible for the emissions), you can help drive education, awareness, and accountability.

step 1 Calculate your carbon impact	A. Complete a carbon emissions inventory B. Improve transparency using emission - and energy - tracking software
step 2 Establish a carbon reduction policy and develop an investment strategy	A. Identify your accountable stakeholders B. Establish an internal carbon reduction policy C. Define your carbon fee emissions boundary and allocation structure D. Develop your carbon fee fund investment strategy
step 3 Determine your internal carbon price	A. Set your carbon price B. Calculate projected costs by group
step 4 Gain approval and establish governance and feedback loops	A. Gain approval for your model B. Establish an internal cross - organizational committee to provide ongoing input and guidance
step 5 Administer the fee ,communicate results, and evolve to increase impact	A. Allocate the carbon fee B. True up to actuals C. Communicate progress internally D. Report on your emissions performance externally E. Plan for the future



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: BUDGETING PRACTICAL EXAMPLES

Microsoft: Implementing an organization wide carbon fee model

Step 4: Gain approval and establish governance and feedback loops

- The key to gaining the approval of leadership is to have the support of key stakeholders from the parts of the organization where the carbon fee will have the most impact.
- A cross organizational committee chartered with governance across the organization can help ensure that you maximize impact over time.

Step 5: Administer the fee, communicate results, and evolve to increase impact

- When you allocate the fee, you will need to determine the appropriate cycle to charge the organizational divisions for the projected emissions. For maximum transparency, include the carbon fee charge as an extra line item on each group and include the projected amount in the budget targeting process.
- Having a monthly or quarterly status update to true up actual emissions and costs with the projections being used as the basis for the carbon fee charges provides an opportunity to make calibrations where necessary.
- By communicating your progress with the carbon fee and investments internally, you can make sure your stakeholders know that the money they are putting in is having an impact.

- Reporting on your emissions performance externally introduces additional scrutiny to keep you committed.
- You now have an opportunity to refine and evolve your approach for maximum value for your organization.





PROCESS: BUDGETING PRACTICAL EXAMPLES

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

Asda: Setting monetary budgets in line with strategic sustainability objectives

Strategic business planning is aligned to core sustainability objectives

WHAT

Continuous improvement programmes are integrated with sustainability targets to enable Asda to reduce its cost base, which can then be invested into lowering prices.

To achieve optimal benefit, financial plans are intrinsically linked sustainability objectives.

This link runs through the strategic planning, budgeting and forecasting phases, which allows:

- A meaningful plan to be set with top level support
- Tangible, quantifiable and measurable budgets aligned to these plans
- Execution of the plans and tracking of benefit realisation
- Learnings embedded back into the next cycle of the process

WHY

The core purpose of Asda is to save the customer money everyday. Our approach to sustainability is based on the belief that protecting the environment, helping communities thrive and saving people money go hand in hand.

Asda is part of the Walmart family, the largest retailer in the world, and therefore has a corporate social responsibility to reduce our environmental impact. We have clear aims targeted around our operations, the goods and services we sell, and the suppliers that make them. These areas are:

- To be supplied by 100% renewable energy.
- To create zero waste.
- To sell products that sustain people and the environment.

Our success is about customer trust and with the level of transparency we now have across the retail world, the customer doesn't just want low prices, great service and quality products, they also care about how foods are sourced, how we manage our waste and ultimately our contribution to the sustainability agenda.



	Strategic	Budgeting	Forecasting
Sustainability Objectives	<ul style="list-style-type: none"> • Long Term Goals • Reduction on Environment • Zero Waste 	<ul style="list-style-type: none"> • Specific projects identified • Benefits calculated • Sponsorship & governance 	<ul style="list-style-type: none"> • Monthly Steering Groups • Control Office • New initiatives identified
Financial Objectives	<ul style="list-style-type: none"> • Minimize cost base • Leveraging costs to invest in price 	<ul style="list-style-type: none"> • Benefits embedded into P&L plans • Capital funding • Profitability enhancing 	<ul style="list-style-type: none"> • Benefits tracked • Risks & Opportunities identified





PROCESS: BUDGETING PRACTICAL EXAMPLES

Asda: Setting monetary budgets in line with strategic sustainability objectives

Budgeting and forecasting processes embed these aligned objectives

HOW

Strategic planning process

- Long term financial modelling is aligned to Asda's strategic targets, including sustainability targets.
- A key building block is LCOM (Lowest Cost Operating Model) which aims to encourage the business owners to work more effectively / efficiently.
- Vision and measurable targets communicated to the business.

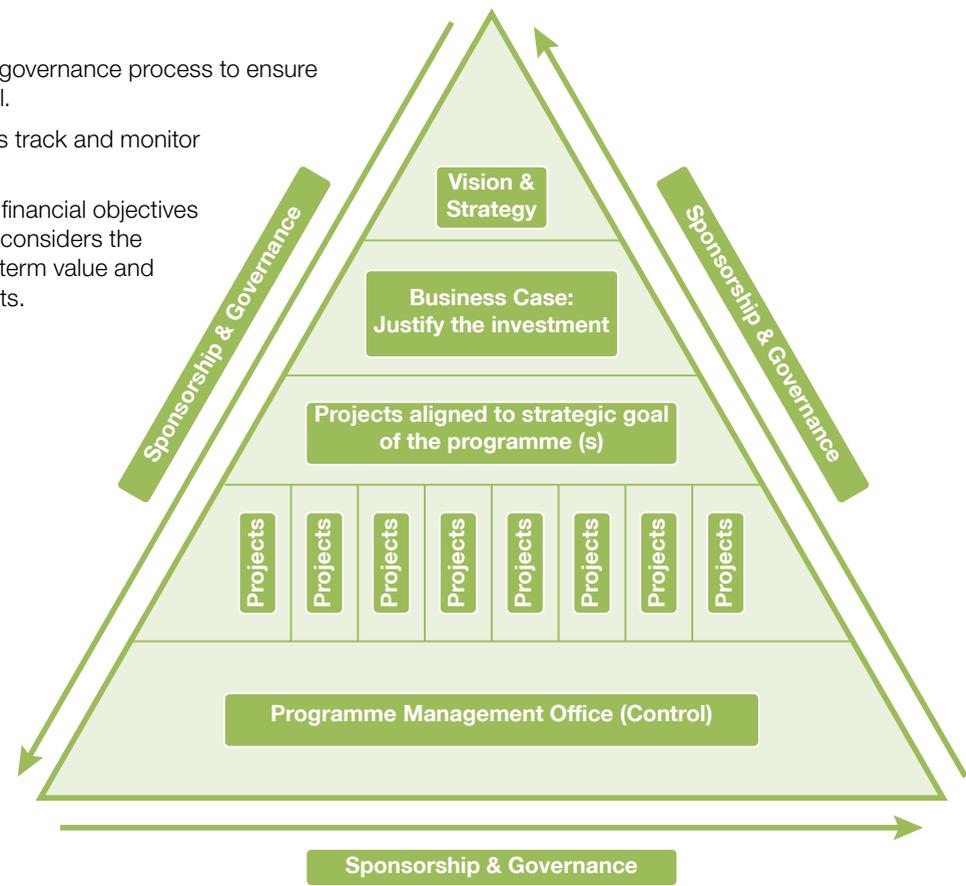
Budgeting process

- LCOM projects are identified by business owners and financial and sustainability benefits agreed and measured with business partners.
- Business cases incorporate the financial and non financial benefits and are assessed against payback targets and strategic objectives.
- Initiatives are approved through a clear governance process, sponsored and supported by senior management.
- These benefits are then embedded into cost line plans for each area, and broader functional objectives, ensuring clear accountability.

Forecasting process

- This is underpinned by governance process to ensure consistency and control.
- Monthly steering groups track and monitor performance.

Aligning sustainability and financial objectives ensures that the business considers the balance of short and long term value and delivers sustainable benefits.



- Overview
- Tools and guidance
- Practical examples



PROCESS: BUDGETING PRACTICAL EXAMPLES

Asda: Setting monetary budgets in line with strategic sustainability objectives

Practical Example: Energy usage

Strategic	<ul style="list-style-type: none"> • Asda’s sustainability target is to reduce its energy usage by 20% in 10 years to 2020 to reduce our environmental footprint. • Industry forecasts indicated energy prices were set to rise, causing a significant longer term financial headwind.
Budgeting	<ul style="list-style-type: none"> • With headwinds from increasing cost growth, the budgeting process identified efficiencies to offset through our LCOM programme. • Investigations revealed that over 75% of emissions are driven by electricity usage, with a significant proportion controllable internally. • Initiatives were identified within our stores and supply chain and commitments built into their budgets: <ul style="list-style-type: none"> • Stores: targets to ensure store managers are responsibly managing usage. • Maintenance: improve efficiency by reducing leakage from refrigeration. • Capital projects: install LED lighting, solar panels and optimizing systems to control usage remotely across stores.
Forecasting	<ul style="list-style-type: none"> • With targets embedded into plans, these projects are tracked to ensure that they delivered both financial benefits and sustainability objectives: <ul style="list-style-type: none"> • Stores: energy usage in our existing stores have reduced by over 33% since 2005. • Maintenance: reduced our leakage rate from 20% in 2007 to below 8% by 2015. • Capital Projects: substantial investment to trial and develop renewable energy at optimal returns. • Sustainability objectives are tracked alongside financial results. • Resulting Energy P&L impact reducing over the past five years despite inflation in energy prices. • Improving the business economics has allowed further investment into price and other areas of the business.



"If we buy more sustainably, operate more sustainably, sell more sustainably – we can grow our business more sustainably. Integrated planning, budgeting and forecasting drives optimal opportunity."

Jessica Leng, Senior Director,
Property Finance

"We've already made great strides in terms of our own environmental performance that have directly helped us to lower our operating costs and, in turn, provide lower prices for our customers."

Chris Brown, Senior Director,
Sustainability



- Overview
- Tools and guidance
- Practical examples



PROCESS: BUDGETING PRACTICAL EXAMPLES

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

Bupa: Ring fencing funding for low carbon and renewable energy projects

In 2010 Bupa committed to reducing carbon emissions by 20% by 2015 on a 2009 baseline, making this the company's only externally published target. Progress was initially slow, so recognizing this, we held a companywide workshop in November 2013 to discuss energy saving options. It was here that the CEO at the time helped turn the concept of a central funding mechanism for direct, on site carbon reduction projects into a reality, leading to the announcement of the Bupa Energy Saver Fund (ESF) the following month. To meet our goal and to accelerate projects that could reduce energy use, we established the Energy Saver Fund to invest £50m in low carbon and renewable energy projects in 2014 and 2015 across many of our properties globally.

The ESF was identified internally by the finance and sustainability community and the structure was established centrally. To apply for funding, the business unit Finance

Directors and Property/Sustainability Leads had to submit a briefing note to the CFO, Financial Controller and Director of Sustainability covering the following:

ESF FUNDING ASSESSMENT CRITERIA

- Total amount requested from the ESF
- Overview of the expected energy and cost savings
- Description of the capability and capacity available to ensure efficient investment and successful implementation of projects

Funding requests were assessed centrally based on certain approval criteria, such as:

1. The investment opportunity has a high environmental impact and commercial return.
2. The investment programme is commercially viable; it will deliver at least a 5% IRR and has a five year financial payback overall.
3. Investment requests are subject to local review and investment appraisal as all other projects.
4. All submissions are approved by Central Finance and Central Sustainability.

The outcomes achieved include:

- Becoming the largest private operator of rooftop solar in Australia
- Using 99% renewable energy in Spain and 100% in London
- Building environmental management systems in more than 320 office and care homes
- 23% reduction in carbon emissions
- Saving £5m a year on energy bills

These were achieved whilst tripling customers, growing revenue by 40% and increasing the workforce by 30,000 people.



“Long term growth can't be separated from economic, social, health and environmental issues. As well as being the right thing to do for the planet and health, the Bupa Energy Saver Fund also makes business sense: we can cut costs and enhance efficiency, mitigate risk, open up new competitive and revenue opportunities, drive innovation and develop our employees. It really is a win all round.”

Evelyn Bourke, CEO, Bupa



Introduction

Process

- Overview
- Tools and guidance
- **Practical examples**

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: BUDGETING PRACTICAL EXAMPLES

SSE: Standardized and transparent community fund

WHAT

For over ten years we have established funds to enable communities to develop sustainably by funding charitable and community initiatives. Communities can access funds which we make available near each of our renewable energy developments.

In Great Britain, since 2002, we have supported over 1,000 community projects with grants totalling over £13 million.

We set up local and regional community funds for each new onshore wind farm we build. For our local funds, panels made up of community members review applications and decide which projects to support, and we work closely with the panel and applicants to ensure opportunities are maximized for the benefit of the community.

In January 2012, we launched what we believe to be the most generous community investment fund package of any of the major developers operating in Scotland. To make sure everyone is treated equally, this package is offered, without exception, for every future onshore wind farm we are developing in Scotland.

WHY

SSE has been building and operating wind farms in Scotland since 2002. Combined with our hydroelectric schemes, many of which have been in operation for over 50 years, our wind farms make us the largest generator of renewable energy across Great Britain and Ireland.

When the majority of our hydroelectric stations were built in the middle of the last century, we never even considered the idea of setting aside funds for local groups to invest in projects that would benefit their communities. At the time, 'community benefit' was only considered in terms of the electrification of the Highlands and of the resulting prosperity the project brought to the area through the creation of jobs, local business opportunities and improvements to local roads and other infrastructure.

But times change, and today we recognize that the development of new renewable energy projects should also bring more direct financial benefits to the communities that host them. We believe that the local community is best placed to decide what they should invest their fund in. We want them to have control over how the money is spent because they know what is important to their communities – not us!

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

HOW

Every onshore wind farm is different, so the size of the fund will vary from site to site, but the basis of the calculation remains exactly the same, so an onshore wind farm that is twice as big as another will have exactly double the amount of community investment compared with the smaller onshore wind farm.

We measure the size of our onshore wind farms in terms of the 'installed capacity'. This is the maximum theoretical output of the wind farm, measured in 'megawatts' (MW).

The value of the community investment funds we set aside for onshore wind farms in Scotland is currently £5,000 per MW every year for up to 25 years.

An example of how we calculate the value of a community fund

Taking a 50MW wind farm, the community investment fund would be calculated as shown below:

- Installed capacity = 50MW
- Community investment fund = £5,000 per MW
- Annual value of community investment fund (50x£5,000) = £250,000
- 50% ring fenced for local community = £125,000 per annum
- 50% set aside for the regional community = £125,000 per annum
- Total lifetime value of the community investment fund (£250,000 x 25 years) = £6,250,000



- Overview
- Tools and guidance
- Practical examples



PROCESS: BUDGETING PRACTICAL EXAMPLES

SSE: Local supplier portal

Once a local sourcing budget has been set, the case study below demonstrates how local suppliers can be engaged.

WHAT

To contribute to the economic wellbeing of the Highlands and Islands community, SSE has developed the SSE Open4Business Highlands and Islands web portal. This site facilitates trade and engagement between SSE and local suppliers and service providers. It provides a platform for SSE to promote opportunities originating in the region, and allows local suppliers to have visibility of SSE opportunities, register as a supplier and respond to notices free of charge. Users of the site can then also advertise their own opportunities such as sub contracting work for SSE projects. They can also use the portal to advertise their own opportunities to the local supplier base.

The site connects to other networks and supply chain initiatives in the Highlands and Islands which SSE supports such as through Energy North, Highland Council's Highland Opportunities, Highlands and Island Enterprise, Chamber of Commerce and Scottish Council for Development and Industry.



A4S Essential Guide to Strategic Planning, Budgeting and Forecasting

WHY

SSE has a long history of working in partnership with, and in, communities in the Highlands and Islands. We want to continue that tradition and be:

- the most 'Open for Business' company in the Highlands and Islands;
- best at engaging and collaborating with the local and SME communities in the Highlands and Islands;
- a valuable contributor to the Highlands and Islands economy and communities; and
- working in partnership with our public sector allies and our extended supply chain to maximize community benefits and local SME opportunities.

SSE recognizes that it has a significant role to play in contributing to the economic wellbeing and sustainable development of the communities it operates within. SSE is therefore committed to demonstrating exemplar levels of engagement with local suppliers. Quite simply, SSE wants to become the best in the Highlands and Islands at engaging with the local and SME communities and be the most 'Open for Business' company in the region.

THE BENEFITS

Facilitating economic development in the Highlands and Islands:

- Improved communications within the supplier / buyer communities
- Local and SME suppliers provided with visibility of business opportunities

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

HOW THE PORTAL WORKS

The SSE Open4Business Highlands and Islands web portal allows buyers to find qualifying suppliers for a shortlist prior to entering into their standard tendering process, which happens outside the portal. If you are a potential supplier, SSE Open4Business Highlands and Islands enables you to respond to an opportunity by answering a simple questionnaire created by the buyer and in some cases providing a Supplier Statement. Answers to the questionnaire are scored automatically by the SSE Open4Business Highlands and Islands portal using a scoring plan defined by the buyer.

After the response deadline for the opportunity, the buyer carries out a shortlisting process on SSE Open4Business Highlands and Islands using the automatically calculated scores and other information from each supplier's response. If you are successful in reaching the shortlist, the buyer will invite you to participate in their tendering process, which will usually involve submitting further details and documents outside SSE Open4Business Highlands and Islands.

- Registered local suppliers can be alerted when relevant local opportunities arise
- Leveraging the wider SSE supply chain to provide opportunities with SSE supply partners and with their supply chain partners
- Maximizing local opportunities
- Local businesses and SMEs can register for free – no charges to advertise or respond to opportunities





PROCESS: BUDGETING PRACTICAL EXAMPLES

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

City, University of London: Using a marginal abatement model to budget for emissions reduction options

City, University of London, is systematically working to improve the organization's energy efficiency and use of resources by integrating principles of sustainability into corporate strategies and operational procedures, and by raising the awareness of environmental issues amongst our staff, students and the wider community.

As part of this programme, we have developed a carbon management plan to reduce emissions systematically through energy efficiency, low carbon technologies (such as Combined Heat and Power and renewable energy systems), low energy buildings, more sustainable travel arrangements and improved management systems. These measures form part of a coherent strategy to reduce emissions over time, from an established baseline to an agreed target level.

marginal abatement costs (MAC) for the top ten emissions reduction projects. The costs for each project have been plotted against the CO₂ saving. The marginal abatement cost of each project or cost/tonne of CO₂ is shown by the position of each project above or below the zero cost line. This gives a clear view of which projects should be implemented at different abatement costs.

We were selected to take part in the Higher Education Carbon Management programme, which was designed to assist universities like City, University of London in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their CO₂ emissions.

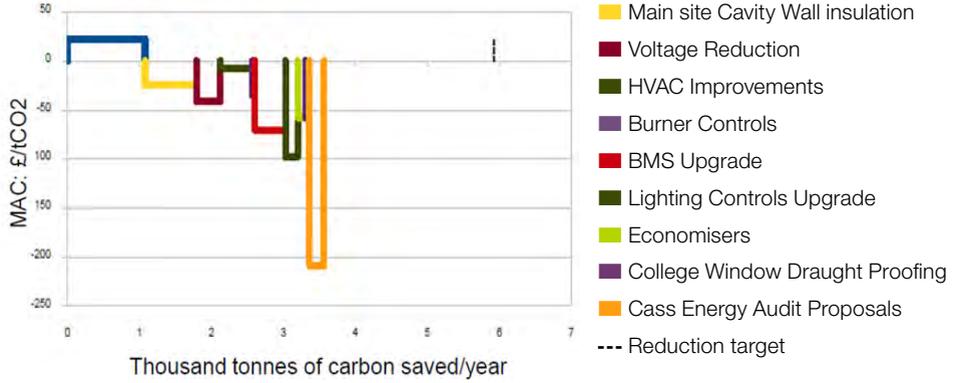
Within the carbon management plan, we considered the marginal abatement costs of the key carbon reduction options available to us, and used these to inform our carbon and financial budgets. The table and graphs below show the

The analysis was a key informant for the carbon management plan, with most of the projects planned for feasibility studies, full evaluation or implementation over a five year period, alongside some behavioural initiatives and water saving measures. The analysis also led to a budget of £78,000 per annum being put in place for energy conservation projects. This is mainly to allow low cost/fast payback projects to proceed in the first instance.

Marginal abatement project cost

Project name	Capital cost (£)	Annual benefit (£)	Annual average CO ₂ savings for project (tonnes per year)	Project life (years)
Cass energy audit improvements	20,000	85,000	200	15
Lighting controls	25,856	31,204	170	10
Business management systems (BMS)	100,000	66,682	419	12
Voltage reduction	60,000	59,102	374	25
College window draft proofing	46,565	11,166	55	15
Economisers	47,593	22,858	232	25
Barrier Controls	20,000	5,833	38	25
Heating, ventilation and air conditioning (HVAC)	1,016,813	121,706	447	25
Main site cavity wall insulation	400,000	98,082	713	30
Combined cooling, heat and power (CCHP) at main site	4,970,000	480,000	1,080	25

Marginal abatement cost curve



- Overview
- Tools and guidance
- Practical examples



PROCESS: BUDGETING PRACTICAL EXAMPLES

Anglian Water: Setting an embodied carbon budget for 2030

WHAT

As part of our “Love Every Drop” campaign, we set a “Drop CO₂” budget for 2030. The budget restricts embodied carbon in new assets, and is driving us to reduce embodied carbon levels by 70% on our 2010 baseline.

WHY

Our region is one of the driest in the UK, which means it is particularly vulnerable to the impacts of climate change.

We want to lead the way in raising awareness about the value of water and are campaigning to change fundamentally how we all engage with it and use this precious resource.

But each drop of water – abstracted, cleaned and pumped to homes before being cleaned again, and pumped back into the environment – comes with plenty of carbon dioxide attached, and because CO₂ is contributing to climate change, we’re stepping up our work to cut it out across the business, in every single way we can.

HOW

We challenged our design engineers and capital delivery partners across the supply chain to deliver more sustainable assets, reducing carbon and the use of finite raw materials and cost. The success of this approach means that in five years embodied carbon emissions have reduced by 54% against our 2010 baseline.

Governance over the carbon budget forms part of our overall financial and project governance process, ensuring there is an appropriate mechanism to facilitate delivery of both our financial and our carbon budgets and targets.

Through the period 2015–2020, we will have invested over £2 billion in maintaining and improving our infrastructure. This investment will result in a forecast 360 ktCO₂e of capital carbon in the materials we use to build and replace assets. With a continued focus on energy management, innovation in design and optimizing renewable generation assets, we have again set a challenging objective of mitigating against future potential increases in operational carbon emissions and reducing capital carbon in assets we design and build. The budget is now set at a level to reduce capital carbon emissions by 60% by 2020 from a 2010 baseline.

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

Measure, manage and reduce

Our plan is to cut carbon when we build new treatment facilities or upgrade our older ones. We've developed carbon modelling software to estimate the carbon in each project – and then to help us and our contractors cut it out.

Walk in step

To understand the people you work with, it's wise to walk a mile in their shoes. That's why we're creating joint carbon plans with our top 100 contractors and suppliers and getting them around the table to come up with the best ideas in sustainable design and building. We're all determined to reduce embodied carbon at every link of the chain.

We set an embodied carbon budget for 2030. The budget restricts embodied carbon in new assets we build to 30% of embodied carbon levels in 2010.



“Because I love water I want to wake the world up to the importance of the link between carbon and water to make a fundamental difference to climate change.”

Peter Simpson, Managing Director, Anglian Water





PROCESS: BUDGETING PRACTICAL EXAMPLES

Sainsbury's: Delivering financial and sustainability benefits hand in hand

Sainsbury's have ambitious goals in our 20x20 Sustainability Plan to accelerate progress towards our aim to become the UK's greenest grocer. So, for us, stepping up our sustainability investments in retail stores makes strategic sense.

The Triple Zero challenge: We had demonstrated the technical feasibility of cutting carbon consumption by 30% by 2020 through a series of sustainable technology projects. Post investment review showed that these projects were achieving better than expected financial results and accelerated cash payback periods by one year. Bolstered by confidence in the financial business case, our executive leadership set our property team a genuine challenge: to showcase Sainsbury's sustainability innovation at scale in two of our largest new stores, Weymouth and Leicester. The aim was for these to be the most sustainable stores yet – “off the grid” for energy, water neutral and, like all Sainsbury's stores, disposing of zero waste to landfill.

Sustainable, but financially viable: The project team knew that the Triple Zero stores would be approved only if they could be shown to be commercially viable and repeatable. These eco investments were not subject to any special conditions – they were evaluated against the same financial hurdles, using the same measures and models (including cash payback, NPV, NPV / gross investment, ROCE and IRR) as any other investment opportunity within Sainsbury's. They were also funded from existing capital funds, financed via existing cash inflows and debt facilities. So a robust business case was needed.

Finance as a key player: A dedicated finance team was assigned to support the project team in:

- identifying and navigating the government incentives such as the renewable heat incentive (RHI) and feed in tariffs (FIT), both of which were factored into the project economics;
- determining the cost savings associated with the carbon, water and waste reductions;
- conducting financial appraisals, using standard financial appraisal techniques;
- arranging capital allocations; and
- conducting post implementation reviews.

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

Sainsbury's also sought input from experts at Imperial College London, who provided technological insight on the pre evaluation assessment of the proposed sustainable technologies.

Achieving results: The Triple Zero stores in Weymouth and Leicester opened in 2013. In addition to a range of proven sustainable technologies (including rainwater harvesting, photovoltaic solar panels, CO₂ refrigeration, efficient LED lighting and a bee hotel), the stores featured solutions new to Sainsbury's, such as electricity and heating from gas fired combined heat and power (CHP) generators, a biogas offset scheme and partnerships with community water saving projects to offset water use. These have enabled Sainsbury's to eliminate the stores' operational carbon footprint (without offsetting) and achieve water neutrality within our communities. The stores continue to achieve good financial returns on investment (22% ROCE) with costs in line with expectation.



- Overview
- Tools and guidance
- [Practical examples](#)



PROCESS: BUDGETING PRACTICAL EXAMPLES

Danone: Combining financial and carbon savings

Danone's beverage company in China, Danone Waters China (DWC), is enjoying a high and growing demand for a successful isotonic beverage called Mizone. As a result we have invested in a new facility in west China to locate production closer to the consumer, satisfy demand and grow market share.

Recognizing carbon savings from the outset: We recognized early on that the commercial advantages of the chosen location also offered significant opportunities to reduce the project's carbon footprint. For example, a west China production facility with good access to transport routes would reduce delivery distances to market by an average of 300km compared with DWC's existing central China facilities. Shorter transport distances would mean lower fuel costs, reduced carbon emissions and also allow us to reduce the plastic packaging in our bottles.

Carbon savings led to improved NPV and payback: Danone used traditional appraisal techniques – NPV, payback and IRR – to assess the financial feasibility of the investment. The project was approved using standard,

corporate wide targets and thresholds. To assess the carbon savings for the proposed plant, we consulted one of our 140 trained and certified employees known as Carbon Masters. Carbon Masters advise Danone's business units on environmental topics and how to influence business decisions to improve our carbon footprint. Carbon savings were calculated and translated into monetary terms at €20 per tonne carbon saved. The resulting financial savings were incorporated into the project's discounted cash flow model. Both the project's NPV and payback period improved when the carbon savings were taken into account. So including the monetized carbon saving in the financial evaluation bolstered what might have otherwise been a marginal investment decision.

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors





PROCESS: BUDGETING PRACTICAL EXAMPLES

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

Coca-Cola Hellenic: Integrating environmental and social factors into the capital expenditure evaluation process

The company is a leading bottler of The Coca-Cola Company brands. Water is the main resource of a beverage business, and energy is a major input. While cost savings are a key consideration, the company believes the greatest benefit from monetizing our broader impact will come from the mid to long term strategic impact of being more efficient in natural resource and energy use, while maintaining our licence to operate and stakeholder trust.

Our commitments

Minimizing our environmental impact across the whole value chain is a core target for us. Our areas of focus are water stewardship, energy and climate change, packaging and recycling, and sustainable agriculture. Our emission reduction goals are aligned with the latest climate models to ensure that our activities help to realize the decarbonization pathway to limit average global temperature increases to 2°C. We have committed ourselves to reducing direct carbon emission intensity by 50 percent by 2020, and to reduce total value chain emissions by 25 percent per litre of produced drink against our 2010 baseline. And that's only the beginning; we have also developed internal challenges by setting internal carbon prices high enough to affect investment decisions to drive down greenhouse gas emissions materially. In 2016 our operational carbon emissions (from production and transport) decreased by 7.5 percent vs. 2015.



50%
our 2020 target for reducing direct carbon intensity against our 2010 baseline

25%
our 2020 target for reducing total value chain emissions against our 2010 baseline

30%
our 2020 target for internal water usage reduction

Our approach

To change the capital expenditure evaluation process, a new methodology was developed to incorporate environmental and social impacts with factors such as water and carbon being monetized. Better informed decision making is now possible by requiring people to think about and prioritize investment, leading to reduced environmental impacts and improved social outcomes.

Our project was to embed sustainability factors into our capital expenditure appraisal process. First we assembled a cross functional team of internal and external experts, then we studied the *A4S Essential Guide to Capex*. The company began to require all 28 countries we operate in to incorporate environmental and social impacts in business plans with water and carbon being monetized. The finance function brought together all of the different departments to build a simple model that the whole field could apply, and the finance function set up and led cross functional teams of experts to create the methodology.

This meant that our people thought about and prioritized investment. The key challenge was that carbon reduction can easily become very technical and we tried to bring this across to a finance and business audience. The benefits of the process were that it allowed us to make more sensible and informed decisions and better support the efforts in that area, and the 'before' and 'after' figures bear this out. Under the old system, the 2016 water savings capital expenditure projects would have had a financial payback of 5.3 years. Under the new system, a financial payback of 0.5 years was expected. As finance, we control capital expenditure and we really worked on the process so that investment in sustainability can be processed very quickly and efficiently. A collaboration approval was also key. It was important to combine the sustainability assessment with the traditional finance assessment and then, together, that allows us to get a holistic view on our overall capital expenditure strategy in the sustainability area.

Key lessons learned: to keep processes practical, grow step by step, don't become theoretical, link well across the business and continually improve these processes further.

“For the first time we were able to monetize these impacts in the carbon and water area and it allowed us to make more sensible and informed decisions.”
Gerhard Seidl, Group Supply Chain Finance Director, Coca-Cola Hellenic Bottling Company



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: BUDGETING PRACTICAL EXAMPLES

Royal DSM: Setting a shadow carbon price

WHAT

We include the financial impact of GHG emissions (scope 1 and 2) through internal carbon pricing in the valuations of large investment projects.

WHY

The internal carbon price serves as a useful model for redirecting and scaling up investments towards low carbon technologies, driving operational efficiencies, especially in markets with a carbon price or in regions where a carbon price is expected to emerge. It can help to spot energy and cost saving opportunities at an early stage and better anticipate and understand future implications of the general trend of increased carbon pricing around the world. At the same time this enhances environmental awareness inside DSM.

We are members of the Carbon Pricing Leadership Coalition where we work to advocate for carbon pricing, set an internal carbon price and report on our progress as part of our Annual Report.

HOW

For each large investment proposal at DSM, two business cases have to be presented – one with and one without an internal carbon price of €50/t CO₂e. We set the carbon price at €50/t CO₂e so it is high enough to affect investment decisions to drive down greenhouse gas emissions.

For example, by embedding the internal carbon price in the template request for quote (RFQ) for industrial gases, we make our sites more aware of the financial impact of industrial gas supply. The carbon price for two cases in Switzerland and the Netherlands had an impact of 2-4% and 17% on the total cost of ownership, respectively. In Switzerland, this confirmed that our chosen supplier was the correct business decision. In the Netherlands, the difference between the best solutions was not significant enough to influence the decision making although it showed a significant improvement over the existing situation. Business managers agreed that the inclusion of the carbon price had an added value for the RFQ process.

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors



“The longer we take to move to a low fossil carbon economy, the higher the costs for future generations and for those already at risk today. Effective and inclusive carbon pricing can facilitate and speed up this transition. At DSM, we apply an internal price of €50 per tonne CO₂e. I am pleased to see that a rapidly growing movement of organizations, including thousands of companies, also sees climate action as both an inevitable opportunity and a moral responsibility”.

Feike Sijbesma, Chief Executive Officer, Royal DSM



- Overview
- Tools and guidance
- **Practical examples**



PROCESS: BUDGETING PRACTICAL EXAMPLES

South West Water: Integrating sustainability throughout strategic planning, budgeting and forecasting processes

BACKGROUND

For South West Water, sustainability is a common thread through long term strategic planning, to five year business planning and annual budgeting.

We have made sustainability commitments at Board level, as well as publicly, through our published 25 year vision. These commitments ensure that sustainability remains a key priority through planning and delivery.

Key actions within this have been:

Integrating sustainability into our 25 year vision

Including key sustainability outcomes linked to specific KPIs as part of our five year business plan

Linking delivery of sustainability objectives into the governance and drive of overall business performance

Reporting performance against committed performance levels

Publishing the 25 year vision, commitments and performance on our website, to be transparent with stakeholders

Develop guidelines for opex and capex budgeting processes that include short and long term sustainability factors

Convert the strategic plan and high level initiatives into annual activities and milestones. Allocate accountable owners.

Deliver detailed 'top down and bottom up' annual operational and financial plans

25 YEAR VISION

In December 2012 we published our 25 year vision, "Waterfuture – What's in the pipeline 2015 – 2040". It outlined our long term objectives and was informed by extensive research carried out to determine our customers' and stakeholders' priorities for the future of water and wastewater services in our region.

Our approach to customer engagement covered two key areas:

- Understanding customers' priorities
- Presenting options and allowing customers to choose

Understanding customer priorities

Our customer research and engagement work for the 25 year vision included customer and stakeholder focus groups to understand priorities around our region, willingness to pay surveys with over 1,200 household and 600 non household customers, and the launch of a dedicated website with our first in the industry online investment 'e-tool'.



- Overview
- Tools and guidance
- **Practical examples**



PROCESS: BUDGETING PRACTICAL EXAMPLES

South West Water: Integrating sustainability throughout strategic planning, budgeting, forecasting processes

The feedback we received helped us develop our 25 year 'WaterFuture' vision which outlined the key customer priorities for services during 2015 – 2040. This identified our key long term aims to deliver:

- reliable supplies of safe, clean drinking water that not only meet the highest water quality standards but also looks and tastes great;
- responsive, innovative and cost effective services that meet our customers' needs;
- sustainable actions and initiatives that protect the environment; and
- resilient business decisions and investments that deliver the most value for our customers whilst keeping our costs and bills as low as possible.

Presenting options and allowing customers to choose

Our second round of research retested our customers' and stakeholders' priorities for investment and also asked for their feedback on the timing and scale of those investments.

A range of potential impacts on the average household customer bill for 2019/20 were presented. This gave a range of average bill values depending on the timing of initiatives and investments.

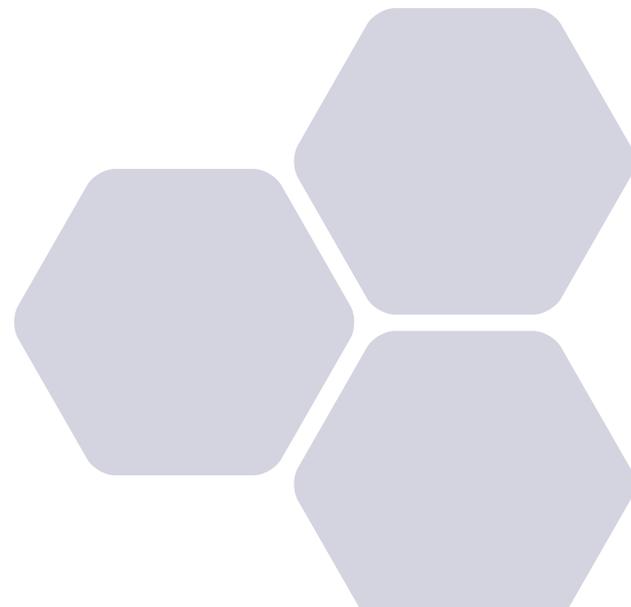
Our final phase of research and engagement was to confirm that the refined proposals from our customer consultation delivered an economic level of service whilst being affordable and acceptable.

The challenge was to find the business plan which balanced the needs of all customers and stakeholders.

Initial results from the first stage of the survey (600 customers) showed that 63% of our customers found our plans to be either acceptable or very acceptable. The main reason why the plan was not acceptable to some customers was the overarching concern about the level of the bill rather than a lack of support for the proposals.

In response to this feedback, the South West Water Board challenged itself to deliver further efficiency savings over and above those already planned. These extra efficiencies reduced our proposed average bill by a further £31.

When we updated our plans to reflect these changes we achieved our highest ever customer acceptance of our plan with 84% finding it to be acceptable.



Introduction

Process

- Overview
- Tools and guidance
- [Practical examples](#)

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: BUDGETING PRACTICAL EXAMPLES

South West Water: Integrating sustainability throughout strategic planning, budgeting, forecasting processes

FIVE YEAR BUSINESS PLAN

The five year business plan to 2020 continued the sustainability thread but developed more specific and detailed sustainability commitments to develop five year priorities following extensive consultation with customers and stakeholders.

This was our largest ever consultation and throughout this process our activities have been robustly challenged and refined with the input of the independent WaterFuture Customer Panel and our Board of Directors.

BUDGETING AND FORECASTING

The sustainability priorities identified by customers and stakeholders are embedded into performance expectations for the five year business plan through the published Outcome Delivery Incentives (ODI) framework. For internal planning and driving delivery these are further divided into annual performance targets. Annual performance targets are set (in the form of ODI targets), as well as capital investment and cost efficiency targets.

Detailed budgets and delivery plans are prepared by each function based on their targets, and presented to the executive team. An ODI board, made up of members of the executive and senior management team, approves ODI delivery strategies as well as tracking delivery against target. This ensures all ODI performance is driven through the same framework, and links delivery of sustainability objectives into the governance and drive of overall business performance. Performance against ODI targets is reported monthly through internal management reporting and Board reporting.

The research and engagement helped us to develop eight “outcomes” which form the basis of the five year plan to 2020:

- **Clean, safe and reliable drinking water**
- **Reliable wastewater service**
- **Responsive to customers**
- **Protecting the environment**
- **Available and sufficient water resources**
- **Benefiting the community**
- **Resilience in extreme conditions**
- **Fair charging**

Each outcome is published in South West Water’s 2015 – 2020 business plan together with specific KPIs that fall under each outcome. The published plan includes the current performance level, the 2020 target and plans in place to achieve the target.

These published KPIs (categorized as reputational only, reward/penalty, or penalty only) form the ODI framework which attributes financial reward and penalty to performance outcomes.



“Through identifying long term sustainable outcomes with stakeholders, it was much easier to align short term targets and incorporate these into budgeting and forecasting processes.”

Susan Davy, Chief Financial Officer, Pennon Group (South West Water)





PROCESS: BUDGETING PRACTICAL EXAMPLES

Danone: Moving away from a traditional annual budgeting cycle

Set and agree performance commitments and budgets for each business unit and function

The Danone Executive Board sees sustainability as a strategic priority and provides tone, guidance and direction from the top. Our approach is to integrate sustainable business practices across our 160 plants, on five continents, in over 120 countries, while applying financial skill tests to the way environmental data is measured and managed.

With this backdrop, Danone has taken a radical step and moved away from a traditional annual budgeting cycle in a desire to create a more flexible approach. Under the new model we have a flexible quarterly spending plan, supported by a five quarter rolling forecast which facilitates quick and responsive reallocation of non fixed resources to where they add most value at a point in time.

The role of our finance people in this is very important. For us, the concept of adding value is broad, and not

just financially based. Our strategy is for us to grow in a sustainable way, serving the health of each person, of each community and of our planet. Resources are allocated accordingly. Under the new approach, business units have the freedom to manage their own resources while remaining accountable. Rather than managing by budgets, management is through clear priorities and boundaries, and a focus on customer outcomes.

Performance commitments are set in terms of goals, with devolved responsibility to business unit level. Business units are responsible for reviewing the medium term outlook (goals, strategies, action plans and value drivers) annually, and the short term outlook (actual and forecast performance indicators) every quarter. Operational resources are managed by setting goals based on KPIs.

The approach is adaptable to changing product and strategic cycles and the evolving risk environment. With carbon reduction established as a guiding principle, carbon reduction has been elevated to coequal status with business targets. We are also working hard to optimize water usage, which is key to operations. Executives' vision for the future includes a monthly "sustainability closing", much like a financial closing, for greater transparency and stronger competitive advantage. For this, reliable information systems are required, which support the measurement of wider value and the resources available to enhance that value.

[See case study on the Danone sustainable ERP system for further information](#)



Introduction

Process

- Overview
- Tools and guidance
- Practical examples

Governance

Performance management

Technology and Data

Maturity and reference



PROCESS: FORECASTING PRACTICAL EXAMPLES

Yorkshire Water: Integrating carbon forecasting into operational and financial forecasts

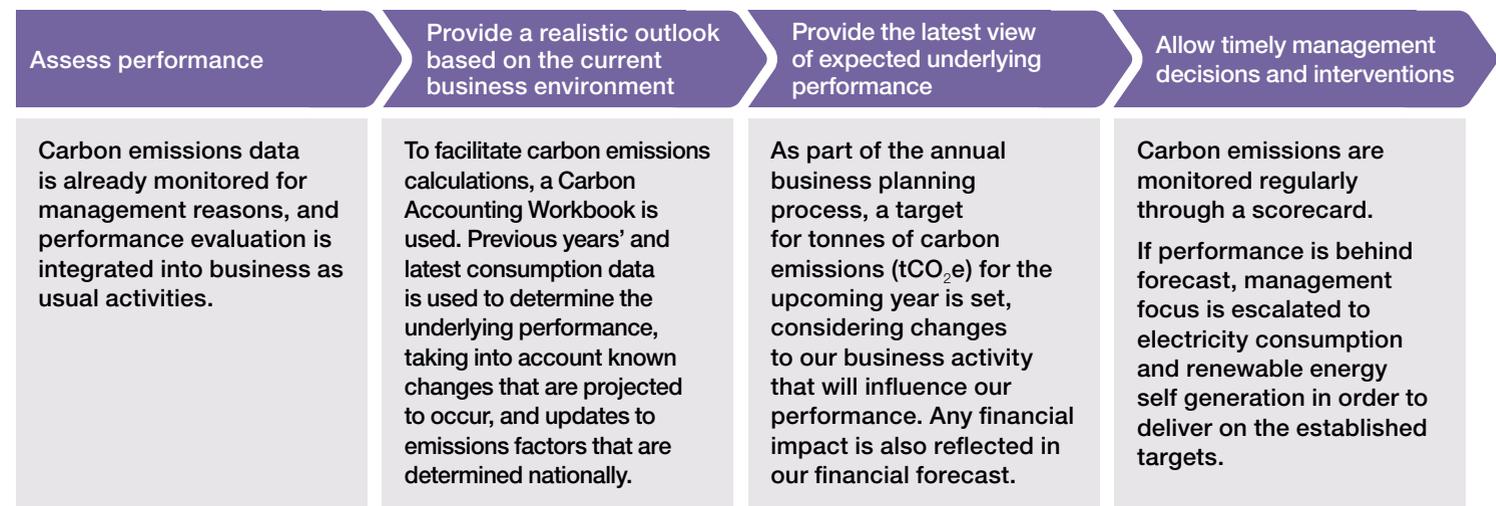
- Assess performance
- Provide a realistic outlook based on the current business environment
- Provide the latest view of expected underlying performance
- Allow timely management decisions and corrective actions

BUSINESS NEED

At Yorkshire Water, we understand that one of our core business risks derives from operational emissions (primarily the energy consumed to pump and treat water and waste water). Reducing carbon emissions is essential to the organization, as a lower carbon footprint goes hand in hand with efficiency, innovation and cost reduction.

Integrating carbon forecasting into operational and financial forecasts has allowed us to support major investments in renewables and energy efficiency, support regulatory and legal compliance, and enhance colleague engagement and our external brand.

PROCESS



LEVERS OF INTEGRATION

- The Carbon Accounting Workbook, a practical spreadsheet tool, helped us to integrate sustainability within our forecasting process.
- We formalized our approach by developing written processes for all data to ensure a consistent and repeatable procedure is in place.
- The introduction of Confidence Grades enabled understanding and reporting of the maturity of each element of data, with calculations being verified externally for accuracy and completeness.



- Overview
- Tools and guidance
- [Practical examples](#)



PROCESS: FORECASTING PRACTICAL EXAMPLES

City, University of London: Forecasting carbon emissions savings

WHAT

Within the carbon management plan, we prepared a forecast of carbon emissions savings based on the budgeted capital expenditure, which included carbon reduction projects. The table below shows the predicted implementation cost of the key schemes identified [here](#), and also gives an indication of the likely savings both financially and in terms of tonnes of carbon. If these predicted savings materialize from implementing the measures, then the initial capital investment would pay for itself within the five year time frame.

WHY

City, University of London is Islington's third largest carbon dioxide emitter. Cutting CO₂ emissions as part of the fight against climate change should be a key priority for universities, it's all about getting your own house in order and leading by example. The Higher Education Carbon Management programme has been designed to assist universities like City, University of London in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their CO₂ emissions.

City, University of London was selected in 2007, amidst strong competition, to take part in this ambitious programme. As one of the most proactive Higher Education Institution's in the UK in responding to the risks that climate change presents, City, University of London has joined the 48 universities across the UK who have to date partnered with the Carbon Trust on this programme in order to realize carbon and cost savings.

Provide a realistic outlook based on the current business environment

Provide the latest view of expected underlying performance

HOW

Firstly, an organizational carbon risk assessment exercise was carried out to categorize risk, identify the key drivers, the areas, and the nature of their impact. The outputs of this, alongside the current and expected cost of energy and carbon (£12 per tonne under the UK Carbon Reduction Commitment Energy Efficiency Scheme) were analysed. With a view to mitigation of these costs, a series of initiatives were identified alongside lifecycle financial savings. Key areas of action were identified including: purchasing, technology, energy efficiency, estates masterplan, green travel plan, working with local partners and awareness campaigns. An emissions baseline was measured and set, incorporating scope 1, scope 2 and business travel emissions. Options for reduction were identified and prioritized using a Marginal Abatement Cost Curve (MACC) approach, and these prioritized options were fed into the forecasting model to determine likely cost and carbon savings, as shown in the table above.

Total Estimated Capital Expenditure	£7,824,000				
	Year 1	Year 2	Year 3	Year 4	Year 5
Total Annual Cost Savings	£147,157	£242,480	£272,146	£959,727	£959,727
Total Annual Carbon Reduction (tonnes CO ₂)	574	1,204	1,361	3,695	3,695

See case study on using a marginal abatement model for further information [↗](#)



- Overview
- Tools and guidance
- **Practical examples**



PROCESS: FORECASTING PRACTICAL EXAMPLES

Siemens: Anchoring our Environmental Portfolio into strategic planning, budgeting and forecasting processes

Siemens has considered climate change a megatrend for over a decade. In 2008, as part of our core strategy, we identified products, systems, solutions and services that could be independently identified as benefiting the environment and having a positive impact on CO₂ emissions. The Environmental Portfolio is part of Siemens' response to global challenges such as climate change, scarcity of natural resources and environmental pollution. It is therefore a key element of our sustainability focus on "Decarbonization".

Provide the latest view of expected underlying performance

Allow timely management decisions and corrective actions

Siemens' Environmental Portfolio – our decarbonization driver

With its Environmental Portfolio, we tackle major challenges, such as climate change, environmental pollution and resource scarcity. The Environmental Portfolio comprises products, systems, solutions and services that meet one of our criteria, namely energy efficiency or the use of renewable energies. Offerings from the Environmental Portfolio help to alleviate negative impact on the environment and to reduce emissions of carbon dioxide and other greenhouse gases contributing to global warming.

Our Environmental Portfolio in facts and figures

36
billion €

In fiscal year 2016, the Environmental Portfolio generated revenue of 36 billion euro

46%
of total revenue

In fiscal year 2016, the Environmental Portfolio represented 46% of Siemens' total revenue

521
million tons CO₂

Siemens' environmental portfolio helps our customers reduce their CO₂ emissions by 521 million tons in fiscal year 2016. This amount is equivalent to more than 60% of Germany's annual CO₂ emissions

What characterizes a product in the Environmental Portfolio?

Renewable energy systems and components qualify for our Environmental Portfolio as well as products and systems, that are far more energy efficient in the use phase at our customers than comparable solutions. i.e. yield an increase in energy efficiency of at least 20% or a greenhouse gas reduction of at least 100,000 metric tons of CO₂ equivalents in the reporting year.





PROCESS: FORECASTING PRACTICAL EXAMPLES

Siemens: Anchoring our Environmental Portfolio into strategic planning, budgeting and forecasting processes

The Environmental Portfolio consists of products, systems, solutions and services that meet one of our selection criteria, namely energy efficiency and renewable energy. Within this selection, products need to reach criteria such as an improvement in energy efficiency of 20% or more, or a reduction of at least 100,000 tonnes of carbon dioxide equivalent in the customer use phase during the reporting period.

With our Environmental Portfolio we intend, among other things, to help our customers reduce their carbon dioxide footprint, cut their energy costs and improve their profitability through an increase in their productivity. In addition to its environmental benefits, our Environmental Portfolio enables us to compete successfully in attractive markets and generate profitable growth underlining Siemens' strategic focus on technologies for energy efficiency and climate and environmental protection. For fiscal 2016, more than three quarters of the revenue from our Environmental Portfolio was generated from products and solutions for energy efficiency.

Representing almost half of Siemens' global revenues these products and solutions enable us to compete successfully in attractive markets and generate profitable growth. In 2016 the Environmental Portfolio generated €36.3m in revenue

and accumulated annual emission reductions for customers of 521 million tonnes of carbon dioxide. By forecasting and monitoring two key performance indicators – revenue and customer emission reductions – management can make timely decisions and interventions on the progress of the portfolio based on short term performance of both financial and non financial impacts.

The entire Siemens business portfolio is reviewed on an annual basis to ensure the appropriate qualification of existing and new Environmental Portfolio elements. For additionally qualified elements, we report their prior year revenue and prior year contribution to the accumulated annual customer reduction of carbon dioxide emissions on a comparable basis.

Essential Guide to
**Strategic Planning,
Budgeting & Forecasting**

Introduction

Process

- Overview
- Tools and guidance
- **Practical examples**

Governance

Performance management

Technology and Data

Maturity and reference

