Routledge Frontiers in Project Management

THE FRONT-END OF LARGE PUBLIC PROJECTS

PARADOXES AND WAYS AHEAD

Edited by
Terry M. Williams, Knut Samset and Gro Holst Volden

The Front-end of Large Public Projects

Large public projects represent major complex investment and whilst there has been much written about how to develop, manage and deliver such projects, practice still does not match up with expectations. In this book, researchers from the Norwegian Concept Research Programme explore the paradoxes between theory and practice in collaboration with experts in the field of project governance.

This book delves into the reality of large public projects, to show how they can be managed effectively and efficiently, recognising the realities of their context. It offers a range of practical conclusions as to the paradoxes of the governance and management of public projects. The international spectrum of authors draw their examples from the UK, Norway, Canada, France, Australia and the Netherlands.

Bridging the gap between research, theory and practice, this book will benefit academics and researchers in the field of project management and corporate governance as well as those in the practice of public project governance, civil servants and industry practitioners.

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Routledge Frontiers in Project Management

Edited by Darren Dalcher

Project management has become a key competence for most organisations in the public and private sectors. Driven by recent business trends such as fewer management layers, greater flexibility, increasing geographical distribution and more project-based work, project management has grown beyond its roots in the construction, engineering and aerospace industries to transform the service, financial, computer, and general management sectors. In fact, a Fortune article rated project management as the number one career choice at the beginning of the 21st century. Yet many organizations have struggled in applying the traditional models of project management to their new projects in the global environment.

Project management offers a framework to help organisations to transform their mainstream operations and service performance. It is viewed as a way of organising for the future. Moreover, in an increasingly busy, stressful, and uncertain world it has become necessary to manage several projects successfully at the same time. According to some estimates the world annually spends well over $10 trillion (US) on projects. In the UK alone, more than £250 billion is spent on projects every year. Up to half of these projects fail! A major ingredient in the build-up leading to failure is often cited as the lack of adequate project management knowledge and experience. Some organizations have responded to this situation by trying to improve the understanding and capability of their managers and employees who are introduced to projects, as well as their experienced project managers in an attempt to enhance their competence and capability in this area.

Routledge Frontiers in Project Management provides short, state of play, guides to the main aspects of the new emerging applications including: maturity models, agile projects, extreme projects, six sigma and projects, human factors and leadership in projects, project governance, value management, virtual teams, project benefits.

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Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2022
by Routledge
4 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
605 Third Avenue, New York, NY 10158

Routledge is an imprint of the Taylor & Francis Group, an informa business

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
A catalog record has been requested for this book

ISBN: 978-1-032-18972-7 (hbk)
ISBN: 978-1-032-18973-4 (pbk)
ISBN: 978-1-003-25717-2 (ebk)

DOI: 10.4324/9781003257172

Typeset in Bembo
by codeMantra

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Ofer Zwikael is one of Australia's most highly awarded project management scholars. His four books and over 250 peer-reviewed papers have been recognised through research awards from the Academy of Management, British Academy of Management, Project Management Institute, International Project Management Association, Emerald and the Australian Institute of Project Management. He is the director of the Research School of Management at the Australian National University. His research on project benefits management has been funded by major organisations, including the Australian Department of Defence and the Project Management Institute. He has held leadership roles including associate dean and associate editor for the *International Journal of Project Management*.

1 Introduction

Gro Holst Volden and Knut Samset

1.1 Paradoxes in front-end management

The traditional focus of the project management community has, by and large, been restricted to what is termed 'the iron triangle' of cost, time and scope (Morris 2013). The iron triangle is an example of reductionist thinking where project performance is reduced to the 'simple' measures related to project implementation only. In recent years, many authors have argued the need for a wider, strategic view on projects, as the purpose of projects is essentially to deliver benefits and create value for the funding entity, for users and/or for society at large (Morris 2013; Samset & Volden 2016; Williams & Samset 2010; Zwikael & Smyrk 2012). The focus of this book is on large *public* projects, where a broad societal perspective on project outcome is particularly relevant – large public projects being tools for policy development.

In line with such a broad interpretation of project success, there is an increasing recognition of the strategic role of the front-end phase in shaping the success of projects. The front-end phase is here defined as the period from when the initial idea is conceived to when the final implementation decision is made, during which it is still possible to make major changes or terminate the initiative at an affordable cost. Williams et al. (2019) refer to a number of studies which argue the case for using more resources in the front-end phase in order to improve project and portfolio success.

It is a paradox in itself that this crucial phase of the project lifecycle is not better understood. An extensive literature review on the front-end phase of projects found that the literature on front-end management is fairly sparse, and that this phase is still not well understood (Williams et al. 2019). For example, it is not clear who the key players are at this stage, and how management competencies should be improved. There is not even consensus as to whether the front end is part of the project lifecycle, or a separate undertaking that precedes the project. What seems clear, though, is that those who initiate the project are most likely from outside the project management community. Initiators of public investment projects might be politicians, the responsible ministry or agency (governing organisation), user groups or other stakeholders at local level.

DOI: 10.4324/9781003257172-1

There is clearly a need to understand how projects materialise from some initial conceptual idea or consideration. Whether actively encouraged or unexpectedly apparent, all projects are the result of some form of ambition and consideration. The front-end phase can be seen as the result of two processes that run in parallel: the analytic and decision-making processes. Williams et al. (2019) note that two key terms in this phase are 'strategy' and 'context'. They suggest that the greater the maturity of the governing organisation in dealing with projects, the more structured and well-defined the management of the front end is likely to be. But there is still a gap in the literature. Much work has been done regarding project management, as well as on strategy formation at the organisational level, but little on how these two come together – which is, obviously, during the front-end phase.

Samset and Volden (2016) presented research findings based on longitudinal research on the front-end management of major public investment projects in Norway. The authors argued that many challenges and weaknesses need to be overcome to achieve project success such as the absence of a realistic goal or purpose, lack of competence among planners, hidden agendas, processes driven by needs other than those of society at large, unrealistic and inconsistent assumptions and how to secure essential planning data and adequate contract regimes. More importantly, there was a tendency to ignore the crucial assessment of problems, needs, opportunity space and the choice of conceptual solution to the problem at hand, and instead jump directly to more detailed, and often quantitative and data-intensive, analyses of only one specific preconceived or preferred conceptual solution.

These challenges and weaknesses were framed by the authors as ten paradoxes that overlap to a varying extent. Paradoxes are here understood as situations with a counter-intuitive result, at least in the broad societal perspective. This paper was what initiated the collective work on this book. It is referred to as the 'paradoxes paper' throughout the book. The full paper is included as an appendix at the end of the book.

In short, the paradoxes are:

1 **The success paradox: success is measured in operational terms only, rather than the wider, strategic perspective**. Projects that are completed with considerable cost overrun and behind schedule generate negative media attention and even public inquiries, irrespective of whether they are relevant and good value for money. By contrast, projects may avoid negative attention if completed on budget, regardless of their strategic success.
2 **The paradox of the significance of front-end management: less resources are used up front to identify the best conceptual solution (project governance) than to improve performance during implementation (project management)**. The choice of conceptual solution often originates in the mind of an individual, based on intuition

and experience, rather than systematic analysis of problems, needs, requirements, etc. By contrast, comprehensive planning and analysis is associated with the project once the choice of concept is made.

3 **The paradox of early information overflow: decisions are confounded by masses of detailed information rather than carefully selected facts and judgments to highlight the essential issues**. The priority should be to establish an overall perspective based on a targeted search for information. Experience shows that large amounts of detailed data at an early stage may result in what is referred to as 'analysis paralysis'. Instead of opening up the opportunity space, it may, in fact, lock decisions into an initially preferred concept.

4 **The paradox of the unexplored opportunity space: the choice of conceptual solution is made without systematically scrutinising the opportunity space up front**. There is much evidence to suggest that in many cases the chosen concept is not necessarily the most effective solution to the initiating problem. In many cases, the process started out with a predetermined solution, without exploring other options. This is referred to as path dependency.

5 **The paradox of strategic alignment: strategy and alignment of objectives are highlighted as essential, but in many cases the internal logic of causality and probability of realisation are erroneous**. Alignment of objectives is the exercise of defining the causal link from the project outputs to outcome and long-term benefits of the project. Unfortunately, this is not always done. Objectives are missing or unclear, and there may be design faults at different levels, such as too many, overly ambitious and even conflicting goals.

6 **The cost estimation paradox: effort is made to get the final cost estimate (the budget) right, while early cost estimates are treated superficially**. The 'real decision' is made at an early stage, based on initial estimates that are often substantially underestimated. There is much to suggest that this may result in the approval of projects that otherwise should have been rejected at an early stage.

7 **The paradox of disregarded analyses of costs and benefits: detailed estimation of cost and benefits is commonly done up front, but disregarded by decision-makers**. Substantial amounts of resources are devoted to cost-benefit analyses, especially for transport projects. However, the estimated value for money had no significant impact on the selection of projects in Norway. On the contrary, many unprofitable projects were realised. Obviously, decision-makers emphasise other aspects, but these are not included in the analyses.

8 **The paradox of 'predict and provide': the tendency is to choose a 'predict-and-provide' strategy rather than explore alternative solutions**. A variant of Paradox 4 ('opportunity space') is that in the case of congestion problems, need is often defined narrowly as the need

to increase capacity. While excess demand for public services and infrastructure is to be expected when offered free-of-charge to citizens, in some cases, there may be goals for a different development. Project owners need to clarify the needs and goals that should apply to the project.

9 **The paradox of perverse incentives: availability of public funding with no financial obligations for the beneficiaries may cause perverse incentives and result in counter-productive projects**. Different actors may have vested interest in certain projects being chosen, with no incentive to opt for the most socially beneficial or cost-effective alternative. This may result, inter alia, in supersized projects, positively biased business cases and the selection of projects that turn out to be complete failures.

10 **The paradox of myopic decisions: long-term viability is the intention, but the planning horizon is too short, resulting in sub-optimal choices**. The study of project appraisals shows that needs and benefits are often assessed in a short-sighted and static perspective; trends are extrapolated without discussing alternative scenarios; and significant risk factors, such as political risk, are not identified and discussed. Such practice may lead to decisions that society will regret in the future.

The overall picture is that there are certain recurring deficiencies in analytic as well as decision-making processes, and that the potential for improvement is considerable. In fact, the 'paradoxes paper' found that flaws in both processes may be correlated, and further that projects with many such deficiencies in the front-end phase tend to end up being less relevant to society.

In a subsequent doctoral thesis, Volden (2019) discussed possible explanations for the observed paradoxes. Planners and analysts, who are often engineers and economists, may be hesitant to question fundamental issues that can be considered part of what is conceived as the political sphere. We have all heard analysts say, "We produce analyses, not guesswork", implying that they are more comfortable working with tangible measures and clearly defined tools and methods than with multidimensional and qualitative assessments of success criteria that may be unclear and even disputed. There may also be cognitive shortcomings to innovative thinking, to applying long-term perspectives and to planners' understanding of fundamental uncertainties. Another quite likely explanation is that project initiators (who often commission the analyses) see it in their interest to explore only one specific conceptual alternative, and restrict the terms of reference accordingly. Or even worse, they do not endorse an early project appraisal at all.

Perverse incentives can be found at different administrative levels in society, and may cause other paradoxes discussed in this book. We have seen this in Norway, in the case of roads, hospitals, universities, sporting events, etc., where the local administrative level has been a key promoter, often in collaboration with other stakeholder groups and even members

of parliament. This is a country where the local democracy stands strong, while at the same time local government is financially weak and dependent on the national government to finance local infrastructure. This may have given rise to serious problems with adverse incentives on the part of local initiators.

From this previous work, some key improvement measures are highlighted:

- The business case should be presented to decision-makers early enough to prevent premature lock-in to an unjustified concept.
- Incentives for project initiators ought to be brought in line with society's interests as much as possible. Adverse incentives relating to discretionary assessment and approval processes need to be dealt with.
- Analyses should be transparent and overseen by independent experts.

The funding entity (which, in the case of state-funded projects, is the government on behalf of all tax payers) should put in place a set of processes, systems and regulations up front, in order to ensure project success, strategically as well as tactically. This is referred to as project governance (Williams & Samset 2012), and is closely related to the topic of the present book. In fact, front-end paradoxes and project governance need to be understood and discussed together. Project governance should potentially be essential to overcome the front-end paradoxes. However, in order for the project governance framework to be effective, we first need to fully understand the paradoxes and how they work in different contexts.

1.2 Aim of the book and introduction to each chapter

The 'paradoxes paper' was our first probe into the matter. The paper defined a set of paradoxes to highlight various deficiencies in the front-end phase. However, we did not provide a thorough explanation of the paradoxes, the relationship between them or how to overcome them. Further, the findings were mostly based on Norwegian experiences. With the present book, the intention has been to investigate front-end paradoxes further – from different angles and with experiences from different countries, with the aim to achieve a deeper – and, hopefully, more generic – understanding, and to identify effective remedies or solutions.

The authors are all major experts in the field of front-end management and project governance. The book consists of six main chapters and a concluding one, which are briefly introduced below. Readers will learn about front-end paradoxes in various case projects from the United Kingdom, Australia, Canada, the Netherlands and Norway. The chapters and cases vary in terms of context (country, sector, etc.), their theoretical approach and the type of paradoxes they focus on. Together, they cover all ten paradoxes, and further develop the ideas about paradoxical dilemmas in front-end management and governance.

1.2.1 Understanding project success

Chapter 2 is written by Professor Terry M. Williams from the University of Hull, who is also director of the Risk Institute.

This chapter sets the scene for readers by contemplating what is meant by 'project success', both in tactical and strategic terms. The logic is that the strategic success criteria should be considered first, with more attention being devoted later to tactical criteria as the project gradually takes shape. However, according to Paradox 1, 'the success paradox', in practice, minds tend to be focused mostly on efficiency targets. Williams discusses how this is related to difficulties in understanding what 'strategic project success' actually is, being a multifaceted, often difficult to measure and possibly a contested term. The chapter was also inspired by the related Paradox 10, 'the paradox of myopic decisions', that is, that projects are assessed from a short-term perspective – people want to be able to decide immediately if a project has been successful or not, without taking the time to wait for the verdict of history.

Chapter 2 offers advice as to which issues need to be considered when defining a project's strategic success, and illustrates the effects of governance mechanisms, and various analytic tools and practices that may be helpful in this phase. The discussion is based on literature and examples of good practice from the United Kingdom and elsewhere.

1.2.2 How to construct an effective front-end phase

Chapter 3 is written by Professor Ofer Zwikael and Dr Alicia Gilchrist from the Australian National University.

They discuss the essential logic of the front-end phase and how this phase should be designed. It is assumed in the literature that the front-end phase begins with an idea, which, in turn, is triggered by a problem or an opportunity. Yet, there is not a simple answer to what it takes to come up with a good project idea. In practice, there is often pressure to 'be seen to be doing something' with the problem at hand, and a tendency to jump to the seemingly best solution, without exploring options.

Chapter 3 is particularly inspired by Paradox 2, 'the significance of front-end management', Paradox 4, 'opportunity space', and the related Paradox 8, 'predict and provide'. The Australian Defence Force, with its rigorous and advanced front-end phase, is used as a case study throughout the chapter, and recommendations are offered based on experiences from this sector.

This chapter may thus assist practitioners in constructing an effective front-end phase that will facilitate the achievement of strategic objectives. There are also implications for the literature in providing suggestions as to how common front-end paradoxes may be resolved.

1.2.3 The front end as seen from a social practice perspective

Chapter 4 is written by Professors Monique Aubry and Serghei Floricel from The University of Québec in Montréal (UQAM), Canada.

This chapter relies on the notion of 'project representation'. A representation is a perceptual, conceptual and social construction which uses words, signs and drawings to describe the project and its context. The authors apply a social practice perspective to shed light on paradoxes and other difficulties in the front-end phase. According to this perspective, the development of a project representation is not seen as a 'best option waiting to be selected', but as a fragile, temporary outcome of multiple efforts. Processes are always emergent and follow multiple logics.

The authors discuss four trade-offs relevant to the development of project representations. These trade-offs are then used to suggest explanations for Paradox 2, 'the significance of front-end management', and Paradox 4, 'the opportunity space'.

This chapter advances our understanding of front-end dynamics, as a process situated in time and having its own temporal logics. The focus on representations from a practice perspective will help readers grasp why front-end activities are rarely a linear unfolding process. The authors use several empirical vignettes from projects currently being developed in Quebec to demonstrate their points throughout the chapter.

1.2.4 Exploring the cost estimation paradox

Chapter 5 is written by Dr Richard Kirkham from the University of Manchester, United Kingdom.

This chapter looks at the process of cost estimation in the early phases of projects. Early cost estimates are often inaccurate and unreliable, some of the reasons being optimism bias and other cognitive issues that come into play. Others are incomplete information and availability of data. We also see projects being approved with no clear and realistic scope or objectives – in which case it is quite common that cost estimation will be insufficient as well.

The author discusses a series of interrelated problems and possible solutions from the perspective of major project delivery in the United Kingdom. The chapter is inspired by Paradox 6, 'the cost estimation paradox' – that is, the focus on getting the final cost estimate right, while treating earlier cost estimates superficially. The discussion also touches on other related paradoxes, including Paradox 7, 'the paradox of disregarded analyses of costs and benefits'. It is noted that government projects are truly uncertain in the front-end phase, and that the naïve desire for commitment to early, often deterministic, estimates is in itself a paradox.

The chapter makes a significant contribution to understanding fundamental difficulties relating to cost estimation at the front end of projects.

1.2.5 Incentives and politics

Chapter 6 is written by Professor Bert van Wee from Delft University of Technology in the Netherlands.

The main topic of this chapter is Paradox 9, the 'perverse incentives' paradox. The discussion centres around a case project, the Betuweroute, a rail freight line connecting Rotterdam Harbour with the hinterland. This project had a very long front-end phase, with Rotterdam Harbour as the key promoter, in search of enhanced competitiveness relative to other harbours in France, Belgium and Germany. Other arguments were also raised in the process, not least environmental concerns, and notions that the project would be good for the economy. But in the end, the project experienced a large cost overrun, had negative effects on the environment and was not economically viable.

The chapter reviews the front-end phase to explain what went wrong. It shows how the Betuweroute was a classic example of a project driven by perverse incentives, van Wee arguing that a fundamental problem is the way such projects are financed.

The author also discusses how Paradox 9 is related to all of the other paradoxes and suggests that understanding the 'perverse incentives' paradox may be helpful in understanding, and hopefully overcoming the others as well.

1.2.6 Learning from past mistakes and successes

Chapter 7 is written by Professor Knut Samset and Dr Gro Holst Volden, the previous and current director of the Concept Research Programme at the Norwegian University of Science and Technology (NTNU).

The authors argue that paradoxical dilemmas, such as those discussed in this book, could have been avoided if planners and managers were better at learning from experience. The striking absence of ex post evaluation of public projects was, in fact, discussed in the initial 'paradoxes paper' as the 11th paradox.

Researchers at NTNU have, since 2012, conducted ex post evaluation of some of the largest public infrastructure projects in Norway, to determine their success ex post, tactically as well as strategically. The authors discuss some experiences with these evaluations and argue that there is much to learn across project types and sectors. Some are better at benefits management, others at cost control and still others at handling unintended consequences. They also discuss how ex post evaluation may contribute to learning and improvement, depending on the results and recommendations being perceived, understood and used.

The chapter ends with a discussion on how ex post evaluation can be helpful in overcoming each of the ten paradoxes.

1.3 Conclusion

The concluding chapter is written by Professor Terry M. Williams, who pulls the threads together from the previous chapters. In so doing, he includes Paradox 3, 'early information overflow', which is implicitly discussed in all

chapters. Further, he discusses how the paradoxes are not ten independent entities, but are related causally.

The chapter takes a cross-chapter view, and brings together thoughts on seven ideas that crop up in most, if not all, of the chapters:

- the problem or need that triggered the project idea;
- the jump to an early project solution;
- stakeholders and consultation;
- information generation and flow in the project;
- accountability for the results of the project;
- and reflecting back on a project.

The authors hope that this book will help decision-makers as well as the public to understand the decisions being made at the front end of major public projects, so as to avoid some of the behavioural traps, to make better decisions in paradoxical situations and to plan and deliver projects that actually provide our countries with the benefits they are supposed to, both efficiently and effectively.

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2 Project success

Terry M. Williams

2.1 The nature of project success

This book concerns the development, management and delivery of large public projects, with the acknowledgement that, often, this is not as successful as we would wish. Before we can investigate the issues around this, however, we need to consider what makes a 'successful' project? What are we trying to achieve by carrying out all these projects? This is important not just for an academic discussion of the projects but because any party trying to make a project 'successful' will be aiming for whatever is their definition of 'success'. This chapter will therefore first look at the academic background to this question, dividing the idea of success into strategic and tactical success. It will then look at the various paradoxes that accompany major public projects as criteria for success are developed.

Project management was originally developed to achieve the successful delivery of large, complicated projects where the definition of what needed to be done, and why, was fairly clear. The so-called bodies of knowledge, the best known of which is the PMBOK (Project Management Institute 2017), were developed with the accumulated knowledge from successfully achieving well-defined projects that were large, complicated and demanding. Barnes (1988) famously said (of construction projects) that "the client's objectives are always a combination of the objectives for performance of the completed scheme, for achieving this performance within a named cost or budgetary limit and for getting the project into use by a target date" (p. 69). The threefold criterion of success – meeting cost, schedule and performance targets – has, in the last 50 years, been widely used as a standard project management success criterion, often called the 'iron triangle'. Project managers are commissioned to go and work on their projects, and come back with them delivered to the specified iron triangle targets.

As projects in the real world have developed, certain problems have been encountered with this definition. Some projects deemed successful according to this criterion did not seem, on the face of it, to be successful. The Zwentendorf Nuclear Power Plant (EVN 2020) was the first commercial nuclear electric-generation plant, built in Austria. Construction began in April 1972

DOI: 10.4324/9781003257172-2

and was completed in four years; however, a referendum was held on 5 November 1978, in which a slim majority voted against starting the reactor up, so it has never operated as a nuclear reactor. An "on-shore torpedo battery built in rock on the northern coast of Norway in 2004" – huge and complex, accommodating 150 military personnel – was "officially opened as planned and without cost overrun. However just one week later it was closed down by Parliamentary resolution" since the concept of permanent torpedo batteries was obsolete (Samset 2010, p. 13). On the other hand, projects such as the Sydney Opera House or the Scottish Parliament, famously over-budget and late, but producing iconic buildings, might be considered unsuccessful according to the 'iron triangle' definition, but are successful in other, perhaps more important ways.

Projects are not set up simply to achieve the project itself – they are set up for a purpose. Morris, in much of his work (e.g. Morris 2009), shows how corporate and business strategy is implementation by the use of projects. This is particularly true in the domain of public projects, the subject of this book. Tony Meggs, then chief executive of the UK's Infrastructure and Projects Authority (which oversees all UK major government projects), wrote in his blog that

> The vast majority of government policies are delivered through the implementation of a project or programme of some description. These projects and programmes span a wide range … [but] have one thing in common: if the projects are not successfully implemented, then the policy objectives are not delivered.
>
> (Meggs 2018)

Clearly the definition of success therefore needed to broaden out to include the underlying strategic aim of a project. Is it useful? Does it do what we set out to do? Over time, therefore, many authors have come to distinguish between what might be termed the tactical success ('project management success' or 'efficiency' success of a project: did it fulfil the immediate specification as set out at the start of the project?) and the strategic success ('project success' or 'effectiveness success': did it provide the outcome and benefits envisaged?). This recognition of the twofold nature of the concept of project success is becoming widely recognised and will be used in this chapter.

Even then, this idea of 'strategic success' is not necessarily well-defined, for a number of reasons, and we will look at six particular issues, all of which will be touched upon later in the chapter.

First, major public projects have a long lifespan, so 'success' can be regarded with a shorter or longer-term view. Perhaps the most influential definition of project success looking specifically at this was developed through work with the U.S. Agency for International Development, then the United Nations,

and OECD (Samset 2010, Chapter 2). This characterised project success as having five dimensions, starting with the immediate project, working through its immediate benefits, and through to the wider and longer-term aspects (see Table 2.1).

This definition has proved useful for looking at major public projects. Zwikael and Meredith (2020) came up with a similar, three-stage definition, but focusing on different viewpoints: project management success, the performance of the project manager in achieving the project plan; project ownership success, the project owner's performance in realising the business case; and project investment success, the investment performance of the project for the funder.

One curious feature of taking a shorter or longer-term view is that stakeholders' view of 'project failure' is not a simple inverse of their view of 'project success'. Chipulu et al. (2019) found that stakeholders' assessment of project 'success' appeared more focused on project effectiveness, but when assessing project 'failure', they appeared more focused on efficiency. A cursory reading of the newspapers reflects this in the public discourse: reports of 'project failure' often focus on projects running out of control in terms of budget and time, whereas reports of 'project success' rarely talk about budgets or timescales, but rather the project output (e.g. the building or system produced). This is in the public view – discussions of, say, National Audit Office assessments in this chapter show a more balanced view.

Particularly in public projects, there is a wide range of different stakeholders, all of whom will have quite different perceptions of what constitutes project success, so our second point is the need to recognise these. There is a plethora of literature on stakeholders, but it is, perhaps, particularly within public projects that the range of stakeholders and heterogeneity of their views on project success is so clear. Politicians, public opinion, local residents, business, regulators, NGOs – the list of influential stakeholders can be considerable. The literature also shows the importance of recognising

Table 2.1 Successive success criteria (Samset 2010)

The Project				*Short-Term*
	1	Efficiency	Was the project well managed?	
	2	Effectiveness	Were the goals achieved?	
	3	Relevance	How useful was the output to the organisation?	
	4	Impact	Was the goal appropriate to the organisation's purpose?	
	5	Sustainability	Are the benefits sustainable in the longer term?	
Wider concerns				*Longer-term*

and bringing together these views: a poor common understanding across the range of project stakeholders can impact upon benefit realisation (O'Leary 2012) in any project. In complex infrastructure projects, Wahab (2011) shows the importance of reconciling perceptions of benefits across often disparate stakeholder groups during the design process. Having said that, a comprehensive literature survey in Davis (2014) shows little commonality between the definitions of success among senior management, project teams and project recipient stakeholders. We will look at some examples of stakeholder views in this chapter.

Much of the literature covers the idea of comparing the costs of a project, and the benefits that accrue from that project – the simplest view being a straightforward 'cost-benefit analysis'. For some straightforward projects, this might be quite appropriate, but, as our third point, for most major public projects, the different types of benefits (or disbenefits) that might result from a project will not be easily quantifiable. Even where a benefit may be measurable, it might be difficult to turn that metric into a financial figure. For this reason, in many domains, governments suggest standard financial values for particular measurable benefits – transportation departments, for example, will often give financial value to reducing journey times by x minutes, or even a value for loss of life. Williams et al. (2020a) describe how countries such as the UK, Australia, Canada and Norway, and bodies such as the EU have detailed rules for quantifying benefits, generally emanating from their finance ministries.

The combination of disparate measures calculated in terms of finance raises a number of issues, such as the accounting conventions used, interest rates, how to evaluate through-the-life impact of a project and so on. Moreover, for important public projects, some of the benefits or disbenefits might be simply subjective and unmeasurable – such as 'social cohesion', 'visual amenity' or even 'national security'. Here attempts to measure the effect, let alone monetise it, might have little prospect of giving helpful advice. However, the idea of 'social impact bonds' is a useful development where a desired outcome is clear and measurable, but not obviously monetisable, for example reducing recidivism (see UK Government 2017). But for many projects, these might be some of the most important aspects. It is here that the differing views between different stakeholders discussed above can particularly become an issue. We will explore some examples in this chapter.

We need to decide where the 'impact' of a project finishes. Our fourth point is that often a project has little effect until it goes into an operational delivery phase, and it is only then that benefits can be 'harvested'. This could be citizens using a system, or a piece of infrastructure. A road project might facilitate local development – but only if the local authority or local business takes up those opportunities. Sometimes, in itself, a project might not be providing a benefit, but enabling others to achieve a benefit – in this sense, the 'success' of projects will be dependent upon changes in the behaviour

of citizens, business, government agencies, civil servants or other relevant stakeholders.

Fifth, projects in a typical management environment can often be said to be "complex, ambiguous, confusing phenomena wherein the idea of a single, clear goal is at odds with the reality" (Linehan & Kavanagh, 2006). We have already pointed to the multiplicity of stakeholders, who might hold different views on what constitutes project 'success'. Also, we have pointed to the multiplicity of different success criteria, some of which might be measurable on the same scale, particularly if they can be expressed in some (perhaps proxy) financial terms – many of which will be incommensurable, or perhaps even unquantifiable. A project may be aiming for a number of targets. Furthermore, these are often not separate goals but a complex web of causally related factors. A simple example is shown in Williams (2016), which, for a small set of projects in a small company, shows how success factors contributing to project performance combine in complex interactions, demonstrating causal paths from root causes to different but related success criteria. Even for this small example, final project success criteria, including, as well as the 'iron triangle' parameters about the final product (defects on building handover and in use and life cycle performance), stakeholder satisfaction (customers, users, community and subcontractors), project management success (health and safety) and the production of a legacy rather than just a building – and the causal chains leading to these – were complex and interlinked.

Finally, for public projects, the surrounding environment can be turbulent and changing. The conventional approach to managing projects assumes that a project is defined, and then carried out according to its original target and specification. 'Project management' is difficult to envisage with constantly changing targets. This has long been recognised for projects in general:

> The Cartesian clarity of inner structures clashes with the increasing porosity of projects to complex contexts that they seek to deny.… The risk, in short, is that the idealistic 'island of order' may suddenly turn into a more realistic, very classic, 'iron cage'.
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> (Malgrati & Damiani 2002)

For public projects, this turbulence is especially noticeable. Political landscapes change. Major projects, particularly military or infrastructure, can take many years, whereas election cycles might only be four or five years, with a new government having quite different goals. Even if the government stays the same, in the UK, strategic spending reviews, which define the objectives and thus the scale and nature of public service investments, take place every two to five years. Public opinion can be very fickle, and can influence the political motivations behind a project. Sometimes requirements change because technology has moved on (e.g. greater use of driverless cars may have a significant impact on the benefits expected by some transport infrastructure projects – but again this is subject to the vagaries of public acceptability).

Sometimes, initial assumptions are simply wrong as decision-makers model how the world might change over the course of a project.

In these circumstances, the idea of specifying a set of well-defined project goals which remain constant is not practical. Cicmil et al. (2006, p. 679) contrast "traditional approaches based on rational, objective, and universal representations of the project with a phronetic [practical wisdom] analysis of the ambiguous, fragmented and political reality of project situations". Chapter 4 discusses the conceptual implications of undertaking a project front-end and show the development, over time, of circumstances and project work. Indeed, one of the current authors has written of "project organizations, as imperfect and fragile representations that chase a shifting nexus of intractable human, social, technical, and material processes" (Floricel et al. 2016).

Given this academic introduction to the idea of 'project success', this chapter will explore how these ideas actually turn out in practice in some major public projects, touching on many of the reasons why defining project success criteria is not clear-cut.

The chapter will look at the various stages of a project. We first explore what strategic success means and how targets are developed, then consider tactical success, taking a look at how this all evolves during project execution; we then look at the issues of success definition and project assessment after the project. As we explore the examples of projects, we will be looking at the realities of public projects and the environments in which they are born, developed and executed.

2.2 Strategic success in public projects

This section will take these considerations and look at what 'strategic' benefits mean in major public sector projects – what do we want out of our public projects, how is this defined, and how do projects arise out of these considerations?

2.2.1 What should happen

As discussed in the previous section, the starting point is not the project, but the policy purpose set out by the government – as described in the Tony Meggs quote above (Meggs 2018). In the same blog, Meggs talks about the search for "a seamless flow and inter-connectivity between policy conception, policy development, and policy delivery", this last increasingly through the medium of the project, as the public sector becomes increasingly projectified (e.g. Godenhjelm et al. 2015, in the EU). So how does this work out in practice?

In the UK (this author's home country), each government department sets out a 'single departmental plan', in which the Department sets out objectives and how they will be achieved. We are shortly to look at a transport case-study, so as an example, the UK Department of Transport sets out its plan

as a public document (Department of Transport 2019) with six overarching objectives (supporting the creation of a stronger, cleaner, more productive economy; helping to connect people and places; balancing investment across the country; making journeys easier, and so on). Some of these objectives are easier to quantify than others – some being more contested than others, and we shall see some examples. These departmental plans are supposed to set the foundation for the department's programme portfolio – its individual programmes and the desired outcomes from projects – and the project outputs that should provide those outcomes. This is laid out in the UK's 'Green Book' (HM Treasury 2020), the 'bible' for appraising and evaluating major UK projects. Of course, it is not practical that all projects are proactively prompted by the departmental strategic objectives – some will be initiated by practical events or political motivations – but this does give a basis by which we can see how projects fit into the overall strategy. This type of process is explored in more detail (from an Australian viewpoint) in Chapter 3.

Practically, governments are gradually developing systems by which the outputs likely to accrue from projects are identified, quantified and linked to these strategic priorities. This is sometimes badged as 'benefits management'. A major PMI study looked at these systems in eight countries/intergovernmental organisations (IGOs) and found developments in all but one. Indeed, all of the other seven countries had explicit discussion in their documentation linking project and national/government departmental goals – so at least the methods espoused and encouraged by the governments recognise this link. Schemes differed because of the nature of the countries/IGOs. The World Bank could be more integrated and focused. The physical size and federal structures of Canada and the US possibly explain the limited mandatory federal direction: perhaps benefits are better determined at the state/province/local level. Australian state jurisdictions similarly have autonomy. Norway has a centralised method, but its size allows some informality, since people in the profession often know each other. The UK has traditionally had a separation between policy and delivery (although this is now decreasing). The EU is not one state, but a collection of states, so some parts of the process are carried out at state level. Work in four of these countries is reported in Williams et al. (2020a), showing Benefits Management frameworks being used throughout, sometimes tailored to particular sectors (the transport and civil infrastructure sectors seemed particularly advanced). Some of these were advisory, except where they were mandated for the specific purpose of preparing business cases for final approval. It was noticeable that as projects progressed from approval through execution, the focus on benefits declined, as we will discuss below.

However, as discussed in Section 2.1 above, 'identifying and quantifying benefits' is too simplistic. There is a high degree of heterogeneity in public project benefits. Simple financial or economic benefits are more straightforward to recognise. A starting point is a classification system for benefits, since public projects in particular are undertaken to achieve a wide range of

financial and social benefits; the PMI Benefits study found many of these in practice (financial/non-financial; direct/indirect; a UK quadrant system; a Canadian five-stream system), but it was not clear how well-used these were (again, unless mandated for project approval). However, when we seek to improve the lives of the citizens of a country, we are in territory that is subjective and contested. Identifying benefits is therefore a process that needs to engage a wide range of stakeholders – which we will discuss below. The PMI study also showed that while some saw stakeholder engagement as an essential ingredient in benefits identification, for others it was more of a cosmetic process, as it was unclear whether it affected project decision-making.

Methods for quantifying benefits – an important ingredient for making out a business case for a project – appeared in the PMI study to lack standardisation. Methods, sophistication of the processes and the degree to which the different methods were mandated all varied widely between different parts of government, although these again seemed particularly well developed in the transportation sector. Many benefits of public projects are difficult to define, let alone to quantify, or monetise; certainly a complete financial measurement of expected benefits is not usually a sensible aim. Current government systems seem unlikely to be sufficient to measure many of these different types of benefits. Not surprisingly, the PMI study showed that a strong emphasis was put on easy-to-measure benefits, and those clearly and unambiguously linked to departmental strategic benefits. However, government projects span many types of project for which the main benefits are not quantifiable or monetisable, and it is not yet clear how these should be incorporated into a coherent government decision-making process.

2.2.2 An example: the A303 project

An example shows some of the different types of benefits, and some of the stakeholders involved. Stonehenge is a 4,000-year-old monument in the south of the UK, consisting of a ring of standing stones, each around 13 feet high and weighing around 25 tons. It is an iconic symbol of ancient Britain, a UNESCO World Heritage Site, and attracts many thousands of visitors, particularly at pagan festival times of year such as the summer solstice. There is a major road from the main part of England towards the holiday destinations of the south-west passing near Stonehenge, the A303. This has just one lane in each direction, and has long been recognised as a traffic problem, exacerbated by sightseers within their cars. It is generally felt to be a road that does not work, either for drivers, or for local residents, nor for travellers and holidaymakers.

So there is a clearly recognised road-transportation problem. But equally clearly, this is not matter of a simple road upgrade. The nature of the World Heritage Site makes this a sensitive project, with many from across the UK seeing the site as part of their essential cultural heritage. The local villages, communities and groups also have strong views about the amenity and travel