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Project Portfolio Management

An organizational perspective

Figurer til kapitel 1

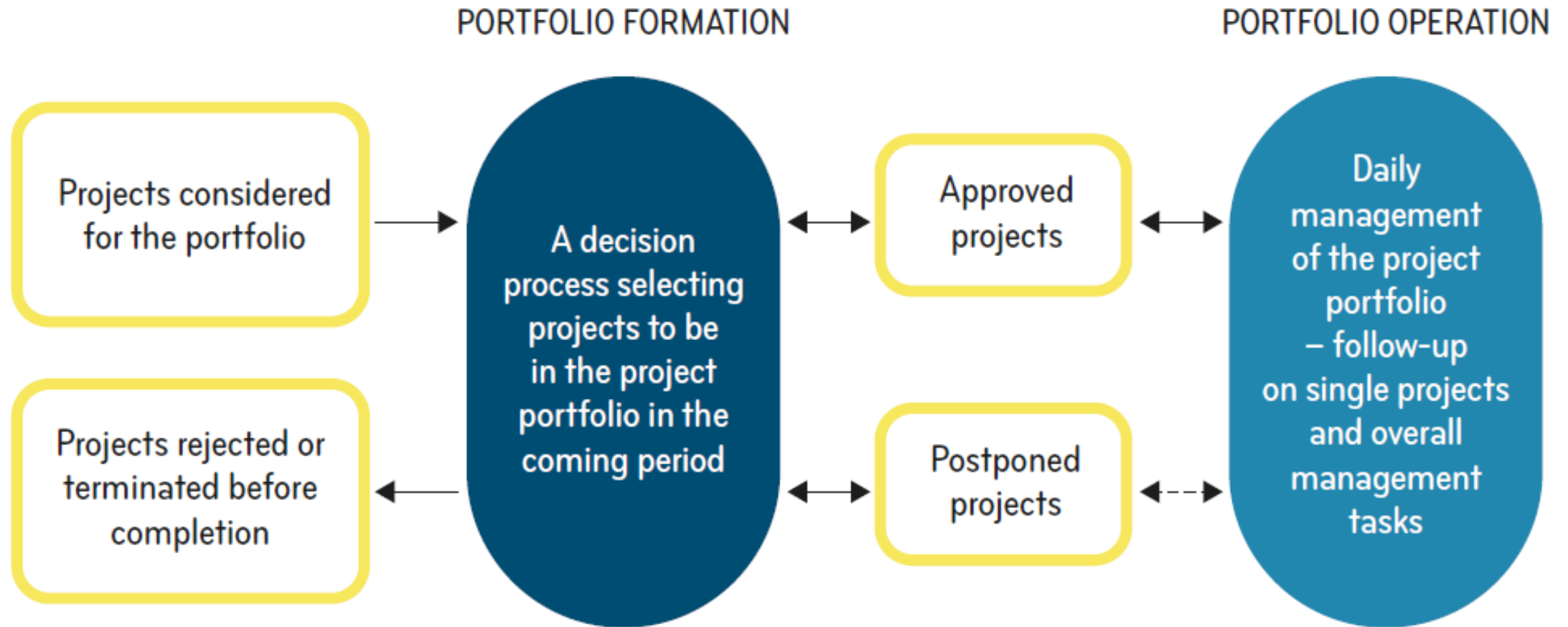


FIGURE 1.1: Main elements of project portfolio management.

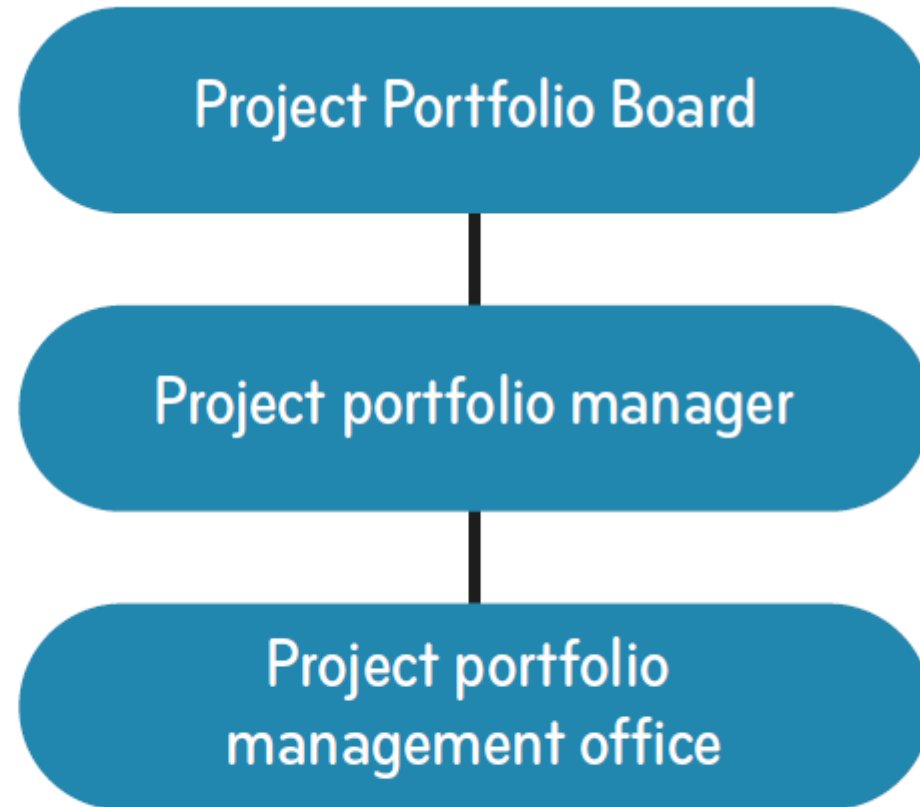


FIGURE 1.2: Generic project portfolio management organization.



FIGURE 2.1: Projects in the portfolio and their origins.

	Advantages	Disadvantages
All projects in one single portfolio	Resource allocation happens with a view to all projects in the organization.	Some project types may 'drown' among the many projects. It may be difficult to compare projects in the portfolio.
Projects are allocated to one of several portfolios	Projects can be evaluated based on their special characteristics. Types of projects needing attention can be allocated to their own portfolio.	Possible suboptimization, as resources are allocated to different portfolios without considering which are best suited.
Some projects are allowed outside the portfolio	Small projects can be started and managed outside the bureaucracy of project portfolio management.	The resources that possibly many small projects take up are not part of the general consideration of resource allocation.

FIGURE 2.2: Advantages and disadvantages of different portfolio setups.

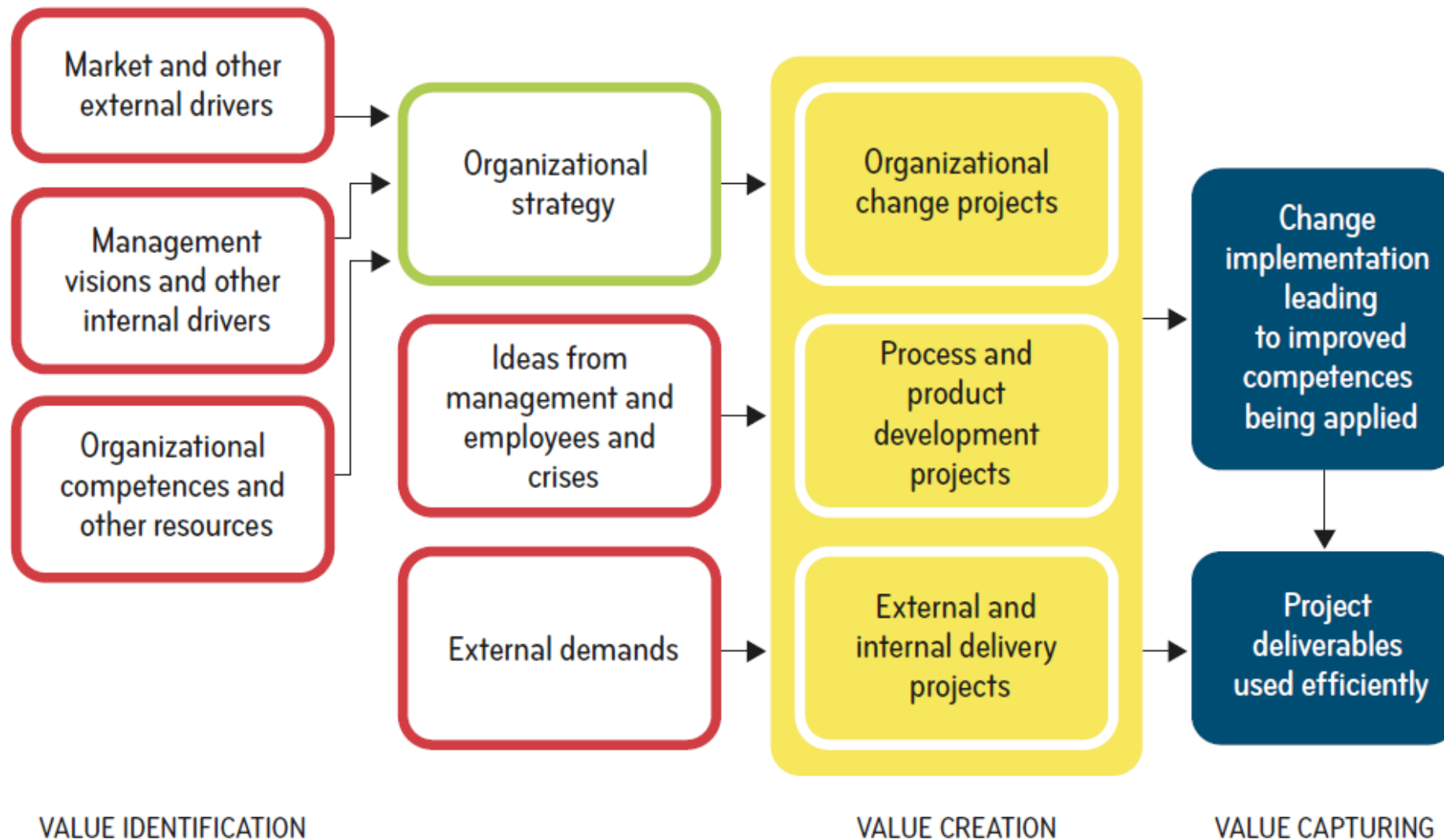


FIGURE 2.3: From strategy to value capturing.

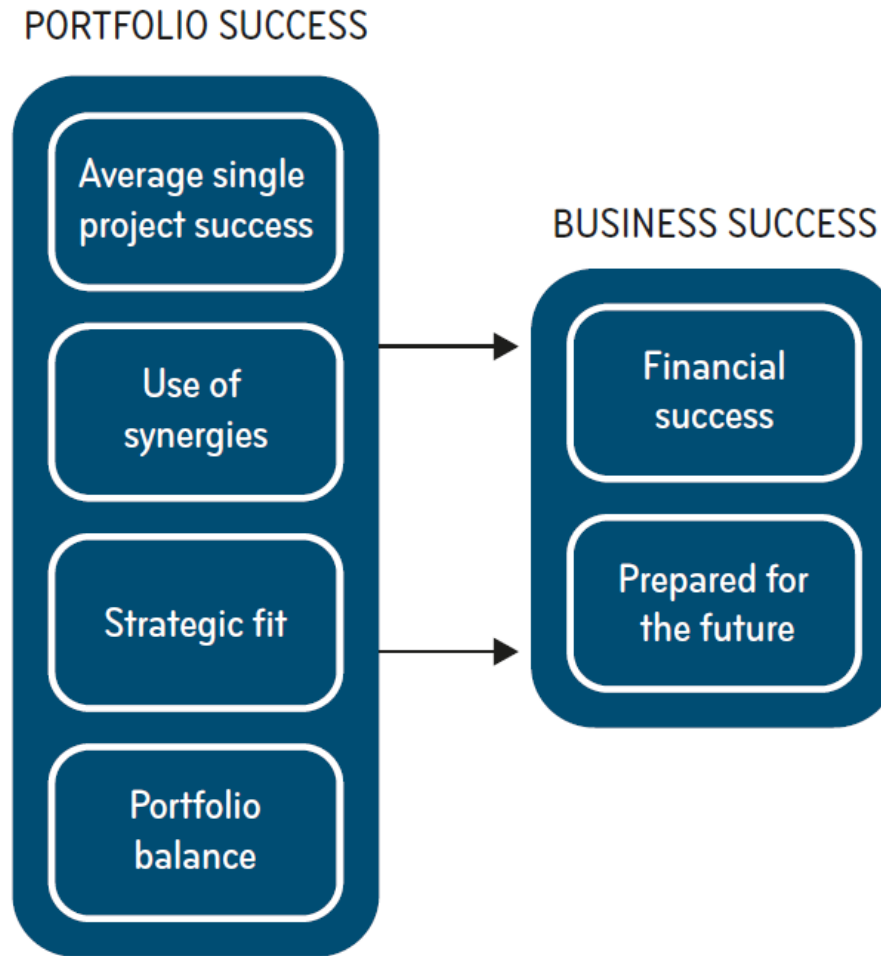


FIGURE 3.1: Project portfolio success and business success.

NOTE: Builds on Meskendahl, 2010.

Supports average project success because....	
Formalized project portfolio formation processes – that all projects must be evaluated regularly in comparison with other projects	<p>Projects that can be foreseen to fail are not started.</p> <p>Project that are started will have enough resources.</p> <p>Projects do not continue or are adjusted if they are estimated to fail.</p> <p>Project planning takes possible shared resources with other projects into account.</p>
Standardized project management processes – that all projects are managed according to the same standards	<p>Evaluation and other procedures become easier because they are repetitive.</p> <p>A common project language helping communication.</p> <p>Shared reporting requirements facilitating control and follow-up.</p> <p>Learning across projects is easier if project management is standardized.</p>

FIGURE 3.2: How formalization and standardization support single project success.

Type of interdependency	Possible advantage of a portfolio perspective
Using the same resources	<p>Roadmapping ensures that the resource usage is planned in such a way that the projects require the resources at different points in time.</p> <p>Follow-up across projects ensures that possible delays that result in resource requirements that influence other projects will be handled.</p>
Using the same resources that the organization does not possess	<p>The project portfolio formation process will reveal that an investment in new competences, facilities or equipment can facilitate more than one project</p>
Projects are dependent on the deliverables from other projects	<p>Relevant projects are not discarded because of small value if they contribute to the value of other projects.</p> <p>Lineage management ensures that projects leading to the same end result are planned jointly, and that learnings are forwarded to consecutive projects</p>

FIGURE 3.3: How project portfolio management can exploit project synergies.

- The formation process considers if a project is in line with the strategy
- The portfolio management processes reveal if there are gaps in the organizational strategy that require new projects to be defined and, possibly, the strategy to be adjusted
- Roadmapping supports that a chain of projects will lead to a common goal supporting the strategy

FIGURE 3.4: How project portfolio management supports strategic fit.

- Resource requirements are distributed across time
- Exploration versus exploitation is considered
- Ensures that the projects have different risk-value profiles

FIGURE 3.5: How portfolio management supports portfolio balance.

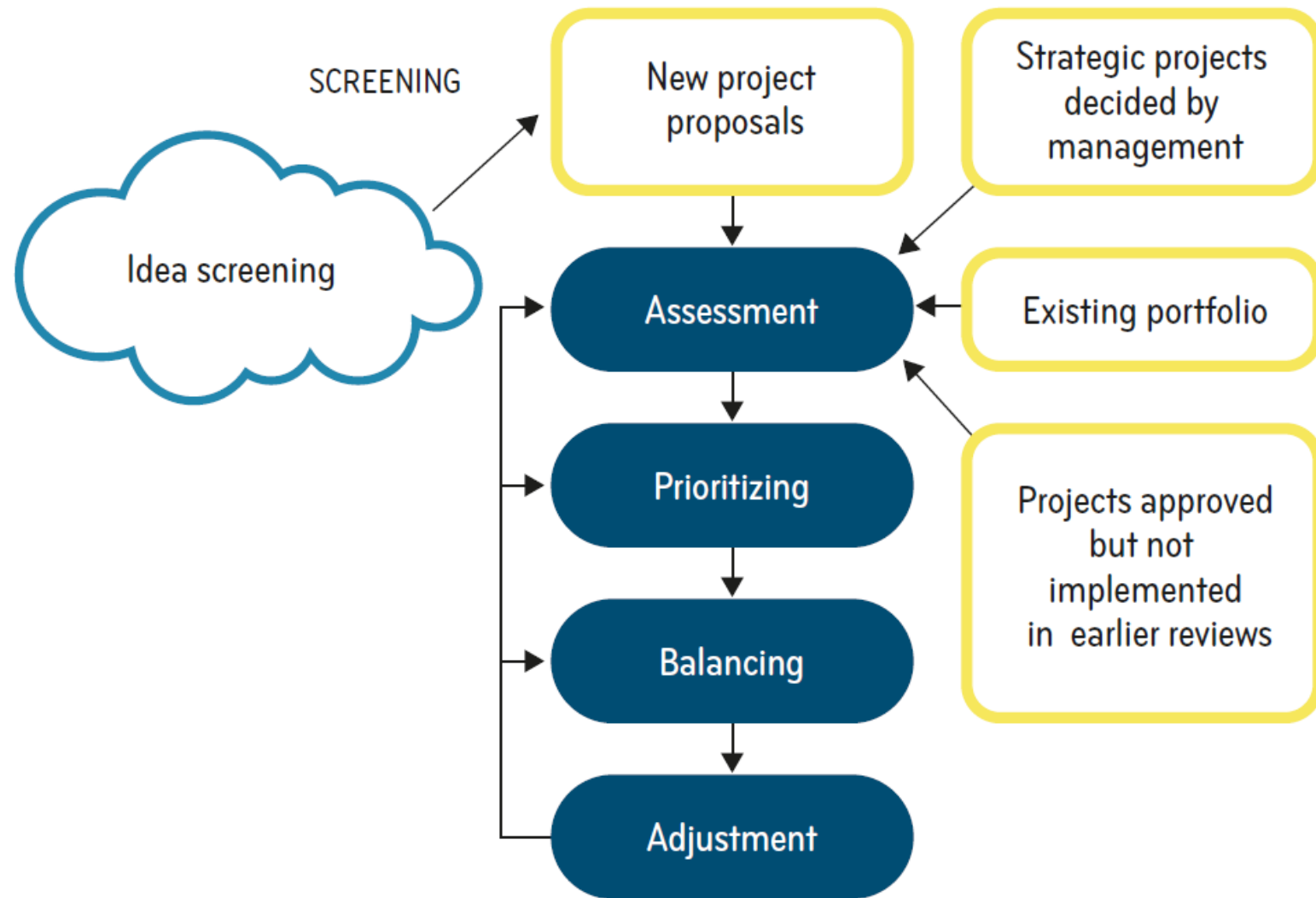


FIGURE 4.1: The portfolio formation process.

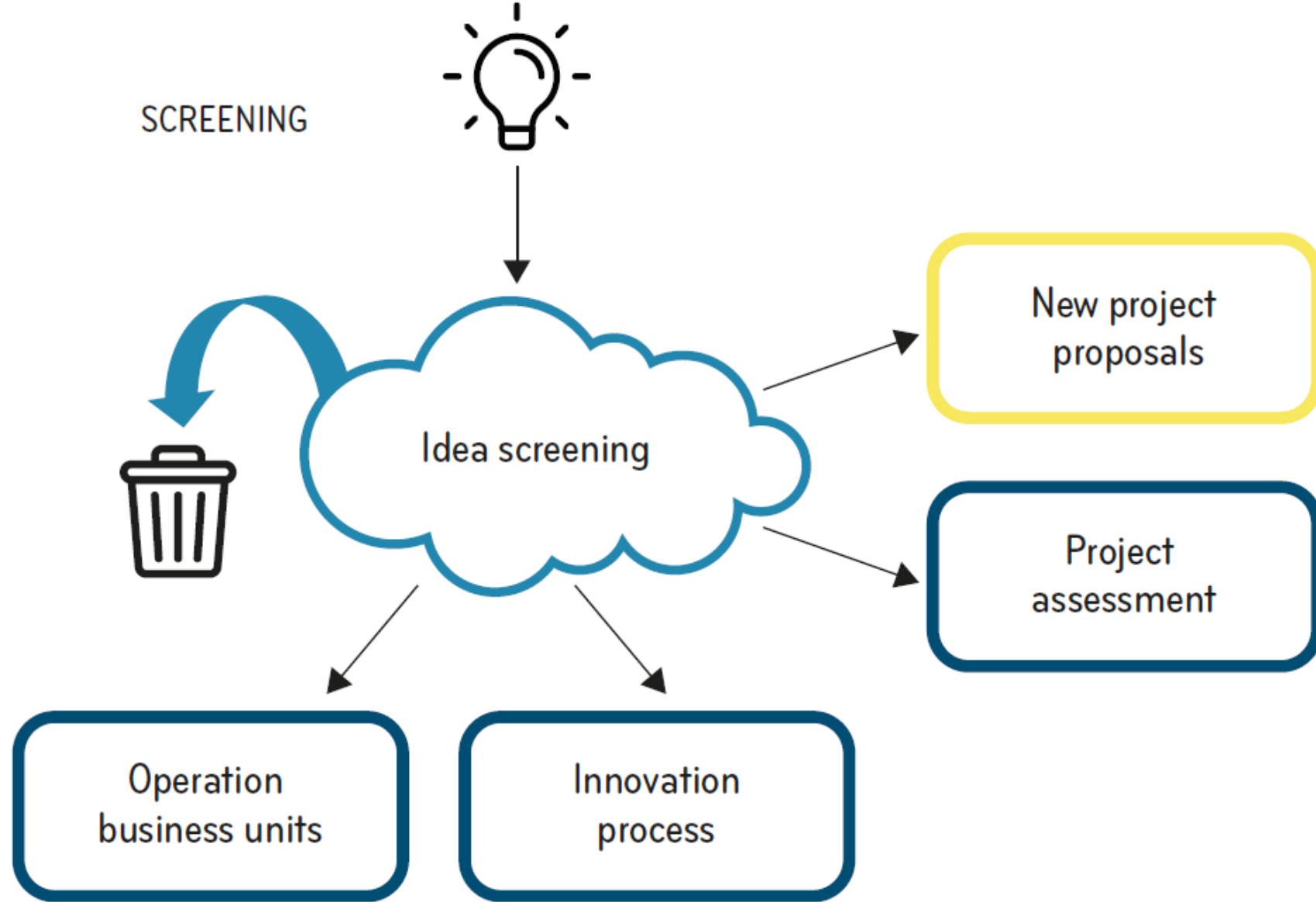


FIGURE 4.2: The idea-generation and -screening process.

Perspective	Focus	Examples of elements to consider
Outcome	The effect of the project	What financial value does the project generate? What other types of value does the project generate?
Process	Project practices and management behaviour	Is the project managed in a way that considers the work-life balance of project employees? Is sufficient time set aside to perform tasks?
Learning	Possible lessons learned	Does the project make use of new working methods? Does the project employ new equipment?

FIGURE 4.3: Three perspectives of project evaluation.

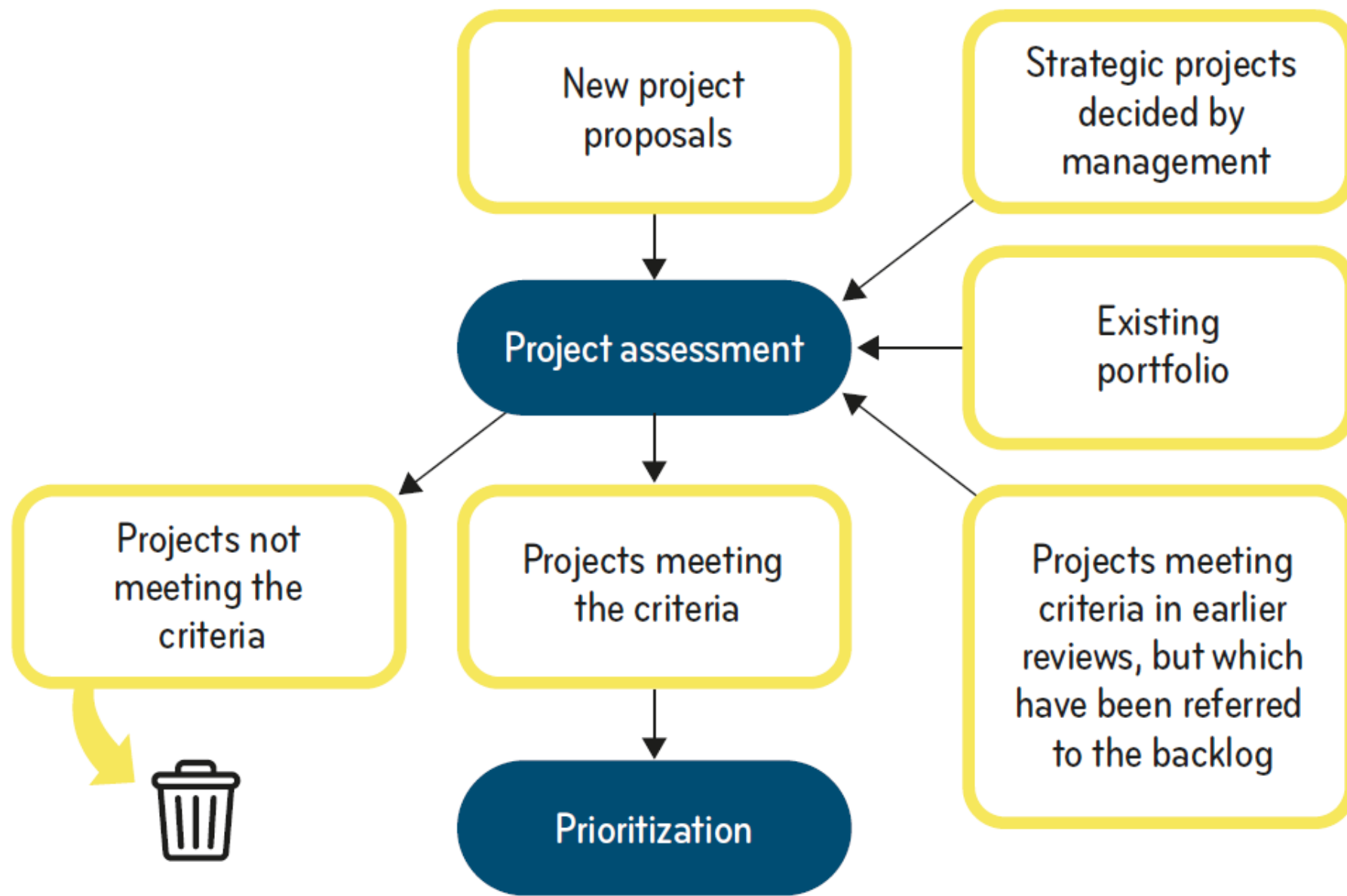


FIGURE 4.4: The assessment process.

- Explanation of strategic need for or other purpose of the project
- Financial and other types of value to be generated
- Major deliverables
- Time frame
- Resource requirements
- Risk profile, e.g. best, expected, and worst-case scenarios
- Major uncertainties
- Possible learnings
- Possible interdependencies with other projects

FIGURE 4.5: Typical elements in a business case for project selection.

Name	ID	Project owner	Project status	Project purpose/ supports which strategic goal	Criterion 1		Criterion 2			Score/ priority	Decision/ action
					I1	I2	I1	I2	I3		
Project A											
Project A											
...											
Project xx											

FIGURE 4.6: The project register.

Concept	Explanation	Example
Decision factor	The overall value sought	Market value
Criterion	The variables that the organization considers when assessing if the value is achieved. Usually, several criteria are needed for one factor.	Customer loyalty
Indicator	How the level of each criterion is measured	Percentage of possible customers indicating preference for this brand in a survey
Cut-off value	The level of the indicator that should be achieved by conducting the project	10%

FIGURE 4.7: Factors, criteria, indicators, and cut-off values.

Decision factor	Criteria	Example indicators	Type of measure S=scale P= percentage N = Absolute number
Strategic value	Strategic fit	Directly or indirectly supporting the strategy	S
	Preparing for the future: Building new competences	Employees who, within 3 years has attained level 1,2 and 3 knowledge of AI	N
	Preparing for the future: Sustainability improvement	CO ₂ emission	P
Financial value	Net value	Return minus costs	N
	Rise in turnover	Turnover	P
	Return on investment	ROI: Income relative to cost	P
	Saved costs on resources	Resources calculated in financial terms (relative)	N/P
Operational and process value	Increased efficiency	Setup and change-over times	N
	Increased employee welfare	Staff turnover Results from workplace assessment survey	P S
	Digitalization of processes	Data in organization converted to digital format	P
Market value	Increased competitive advantage	Assessment on specific factors or overall	S
	Market share	Sales in financial value or units compared to competitor sales	P
Level of project management challenges/ Milestone uncertainty	Organizational experience from managing similar projects	Number of similar projects carried out during the preceding five years	N
	Degree of uniqueness/standard	Assessment on scale	S
	Availability of project resources	Assessment on scale of availability of persons, skills, competences	S
	Project complexity	Structural complexity (budget, size, no. of resources, no. of future users)	S
		Socio-political complexity (regulatory environment, stakeholder complexity) Emergent complexity (foreseen change/stability in the other two types of complexity during the project)	S S
Project interdependencies	Description related to project start and completion converted to a level of interdependence	S	
Level of uncertainty	Financial risk	Different expected values for an investment with associated probabilities	P
	Macro-environmental factors	Scale based on PESTEL assessment (political, economic, sociocultural, technological, environmental, legal)	S
	Information availability	Assessment on scale for defined elements	S
	Level of control over resources	Assessment on scale for defined resources	S
Level of sustainability	Expected need for product adaptation	Significant change, some change, no or limited change	S
	Reduced environmental footprint	Environmental footprint	N
	Higher share of renewable energy sources	Use of renewable energy compared to non-renewable sources	P
	Lower CO ₂ footprint	Direct emissions: X kg CO ₂	N
		Indirect emissions: Y kg CO ₂	N
		Travels, purchased goods: Z kg CO ₂	N
Higher degree of recycling or recovering of waste	% from net zero value	P	
	Kg materials recycled/recovered/reused/repared compared to those disposed of	P	
Higher share of certified supplies	Supplies from green suppliers compared to traditional	P	

FIGURE 4.8: Examples of assessment criteria and indicators.

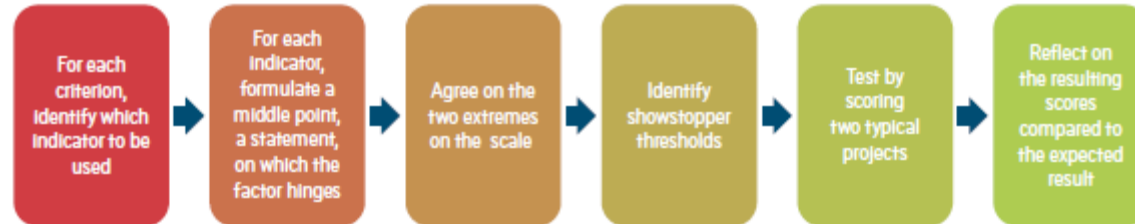


FIGURE 4.9: Process to develop assessment scales for criteria.

NOTE: Builds on Mitchell et al. (2022).

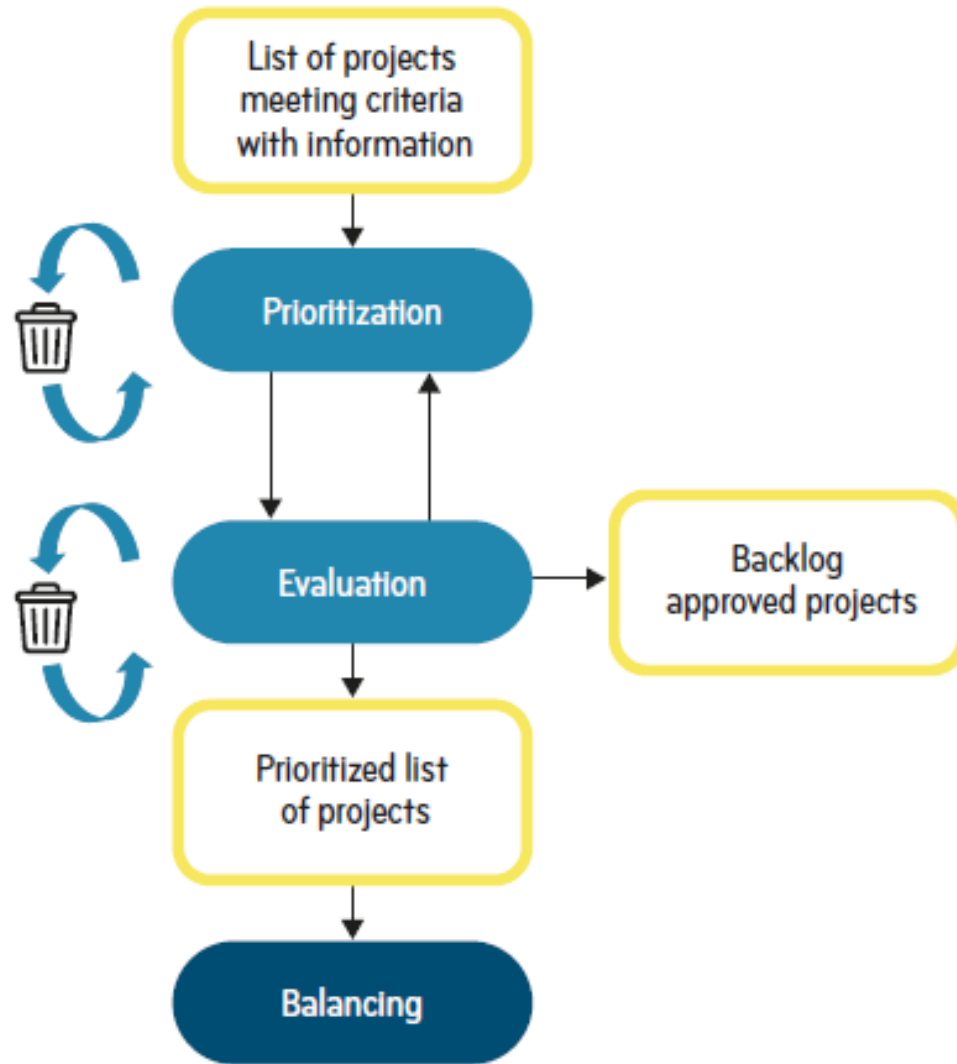


FIGURE 5.1: The prioritization process.

Name	ID	Project owner	Project status	Project purpose/ supported strategic goal	Level of sustainability 0.2		Financial value 0.8		Project score	Decision
					CO ₂ print 0.5	Recycling 0.5	Resources 0.4	ROI 0.6		
The green stove	1	Mohammad Yassine	Up for approval	Improve sustainability of value chain processes	5	4	1	1	1.7	
Project X	2	Ole Olafson	Planning phase completed	Restructure for ambidexterity	4	3	3	4	3.6	
Vision 2022	3	Ole Olafson	Execution	Optimize value chain	3	1	5	5	4.4	
2 nd Spring	4	Line Jensen	Initiation phase	Implement restoration as service	2	2	2	1	1.5	

FIGURE 5.2: Example of a filled-in project register from a stove-producing company.

	Advantages	Disadvantages
Scoring methods	<p>Results in a direct prioritization given by the score.</p> <p>Forces the organization to set up a transparent model with explicit selection criteria and their individual weight in the decision.</p> <p>New projects entering the process can be added to the list based on their score.</p>	<p>Requires precise data on the indicators – data that are not always attainable.</p> <p>Some assessment criteria may not be possible to put into numbers.</p> <p>Value cannot always be broken up into a linear model.</p> <p>Does not take interdependencies among projects into account.</p>
Direct comparison	<p>Allows for a holistic comparison of projects.</p> <p>Can to some extent take interdependencies among projects into account.</p>	<p>Unclear assessment criteria.</p> <p>Many projects means many comparisons.</p> <p>Must be redone when new projects enter the process.</p>
Optimization models	<p>Is automatic once the model has been designed.</p> <p>Ensures that the project portfolio has the best possible composition based on the optimization criteria.</p>	<p>Requires precise data on the indicators – data that are not always attainable.</p> <p>Some assessment criteria may not be possible to put into numbers.</p> <p>Value cannot always be broken up into a linear model.</p>

FIGURE 5.3: Pros and cons of different prioritization methods.

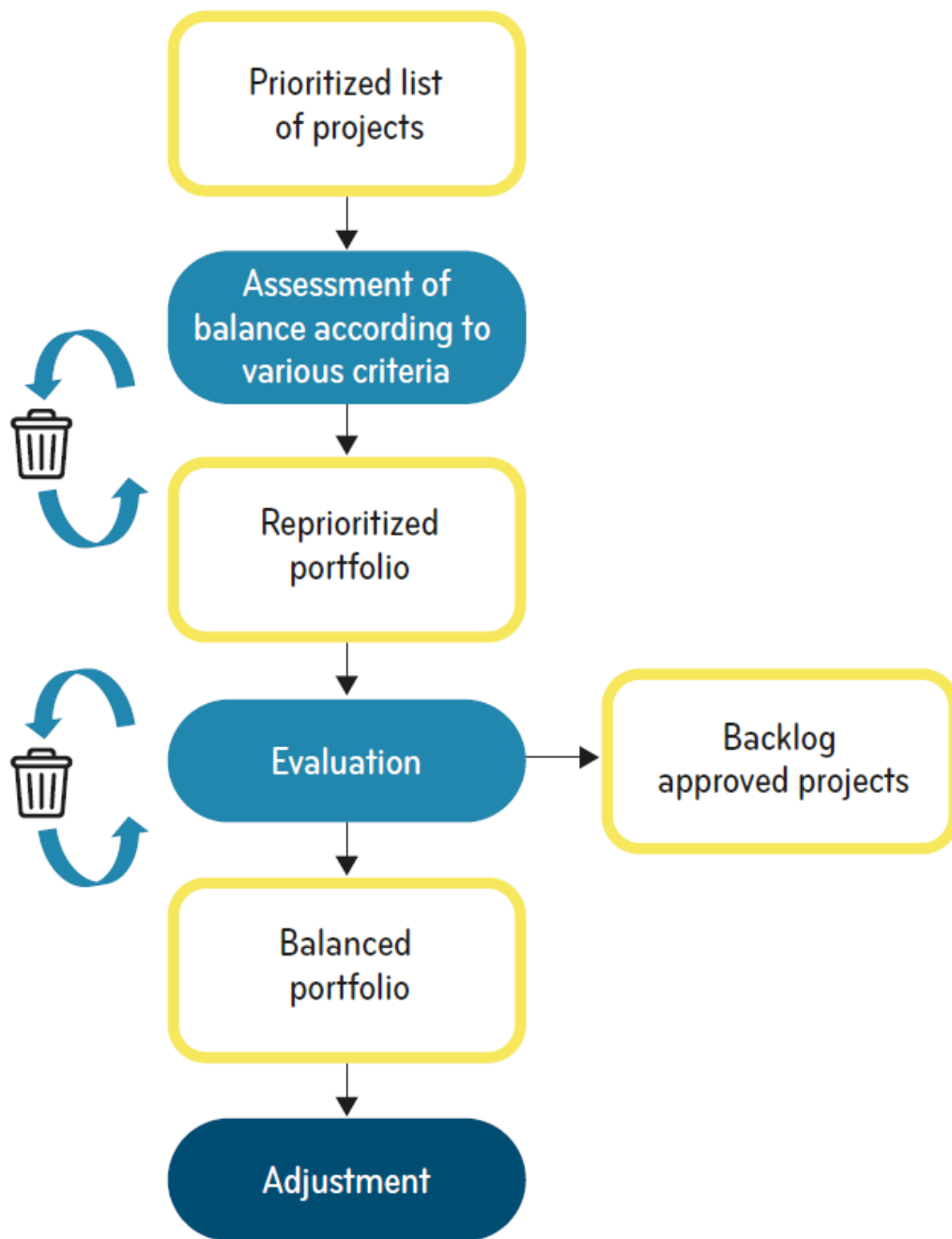


FIGURE 5.4: The balancing process.

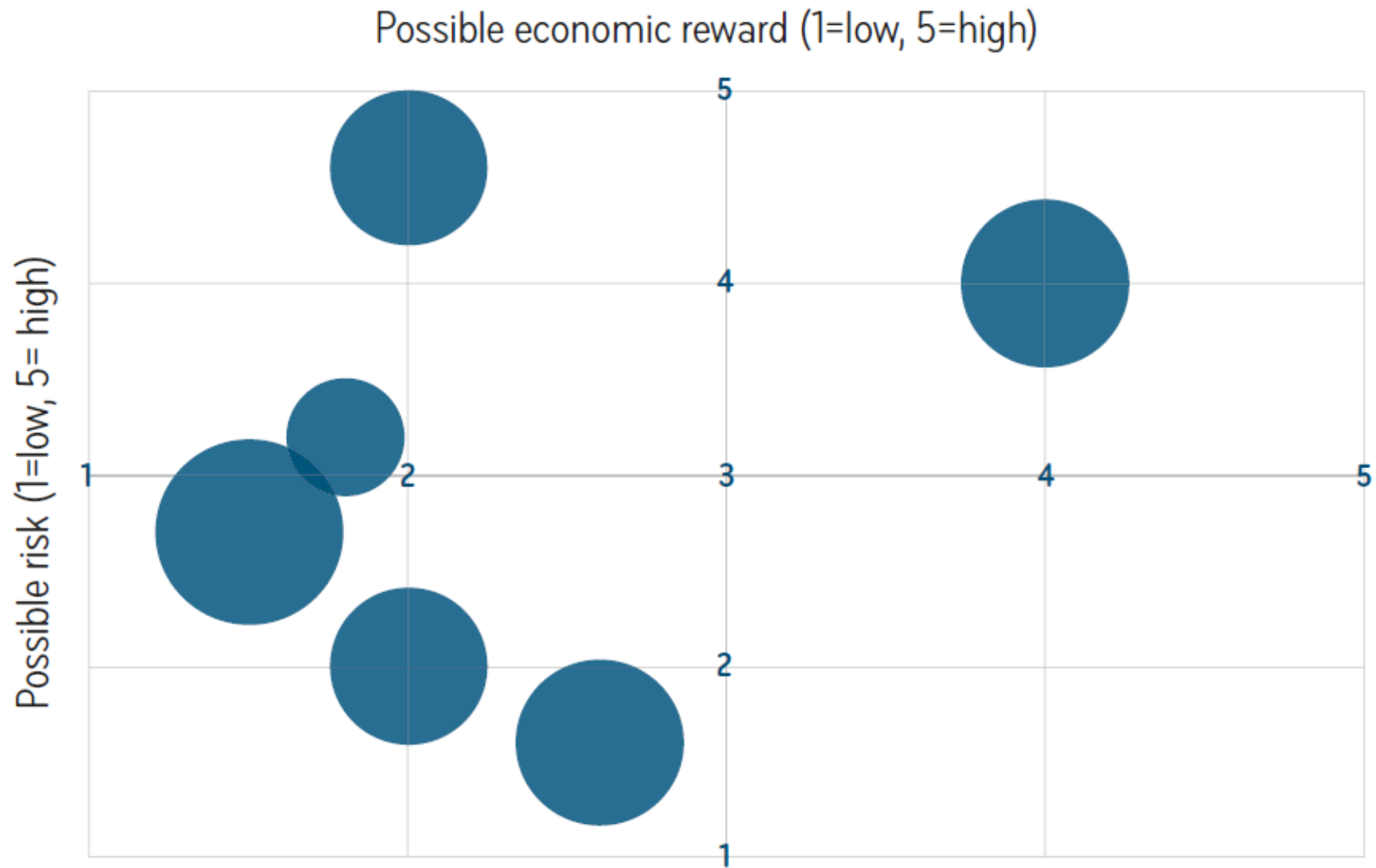


FIGURE 5.5: Risk-reward diagram.



FIGURE 5.6: Graphical representation of project interdependencies.

NOTE: Each circle represents a project. The text in each circle is the name, the investment, and the expected NPV of the project. The size of the circle corresponds to the investment. Colour represents strategic importance. Red are non-important, yellow somewhat, and green indicates important projects. Arrows show interdependencies. Inspired by Killen (2017).

Project type/ organizational department	Digitalization and other IT	Process and operations development	Organizational change projects	Product development	Market development	Projects required by legislation
Head office			1			3
Production	1	5				1
Legal			1			2
HR	1	2	1			1
Research and development	1			4		
Finance	2	2	1	1		1
Logistics	2	2			1	
Marketing and sales					4	
IT	5	1		1		2

FIGURE 5.7: Project types in organizational departments.

NOTE: Inspired by Nielsen (2017).

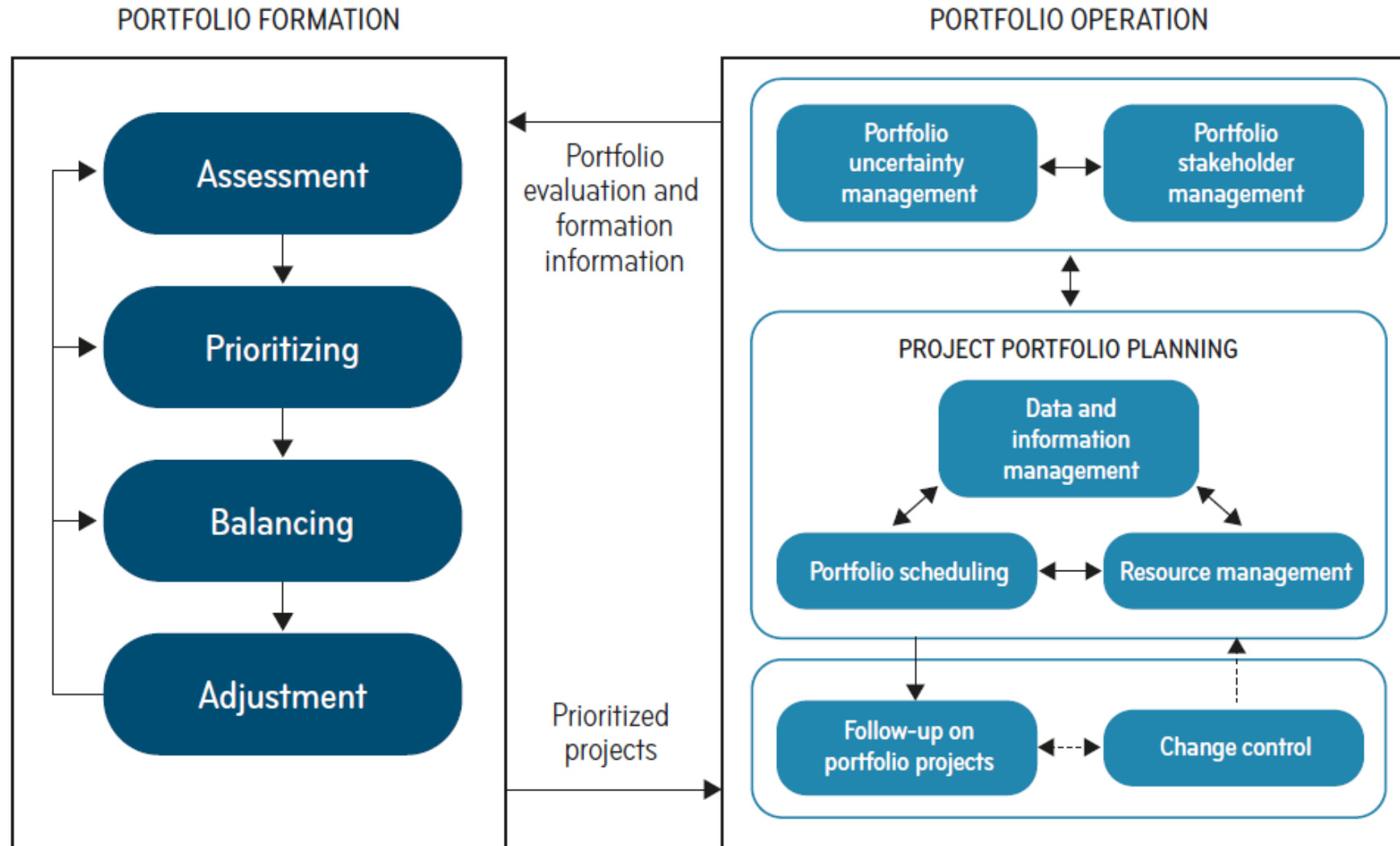


FIGURE 6.1: Project portfolio operation and its relation to portfolio formation.

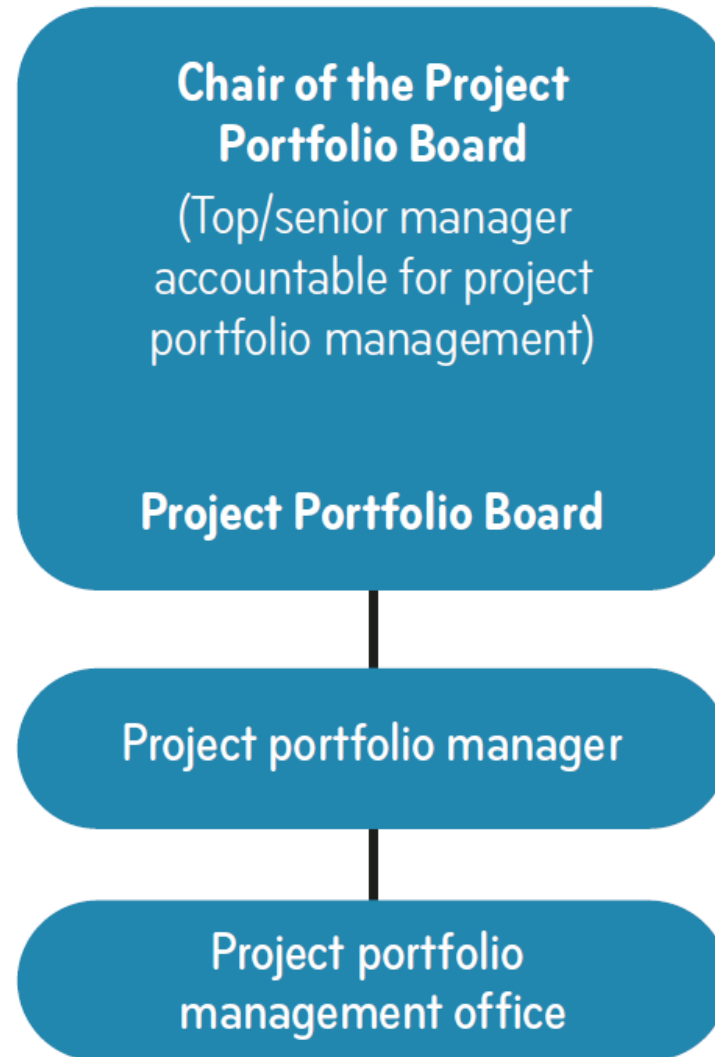


FIGURE 7.1: The project portfolio management organization.

- Deciding distribution of authority among project portfolio management and the rest of the organization
- Assigning responsibilities to the project portfolio manager and the project portfolio office
- Deciding principles for follow-up on portfolio performance
- Determine how possible local project portfolio committees and managers are appointed
- Enable a good project portfolio stakeholder collaboration to support project portfolio management success

FIGURE 7.2: Project Portfolio Board governance responsibilities.

NOTE: Based on Gupta et al. (2022).

- Performing quality assurance of the project portfolio formation processes
- Breaking down organizational strategy into portfolio objectives
- Setting principles for how the board works, e.g. format, timing, decision-making processes, etc.
- Setting principles for choice of methods for assessment, prioritization, and balancing
- Setting assessment, prioritization, and balancing criteria and deciding measurable indicators
- Challenging the information given on the projects, e.g. the assumptions about resources
- Carrying out an engaged formation process
- Deciding the reprioritization, postponing, or termination of projects that do not meet the criteria
- Approving ongoing project changes between meetings or assigning responsibility for changes to a portfolio change board
- Adjusting decision criteria and processes, if they result in decisions that do not support the organizational strategy in the best possible way

FIGURE 7.3: Project Portfolio Board formation process responsibilities.

NOTE: Based on Gupta et al. (2022).

- Setting and monitoring key performance indicators (KPIs) for the assessment of project portfolio management performance
- Maintaining a suitable structure of the project portfolio management organization
- Following up on the performance of possible decentralized portfolios

FIGURE 7.4: Project Portfolio Board portfolio performance responsibilities.
NOTE: Based on Gupta et al. (2022).

- Designing the project portfolio management organization for the Board's approval
- Establishing and maintaining the portfolio organization
- Developing and implementing the processes in portfolio management and ensuring their continuous improvement
- Developing documentation requirements and a system that will ensure that the needed data are generated and developed into the needed management information
- Setting standards for appropriate staffing and competences in the project portfolio management office.

FIGURE 7.5: Portfolio governance responsibilities of the project portfolio manager.

NOTE: Based on Gupta et al. (2022).

- Developing and proposing criteria and methods for assessing project proposals
- Proposing strategic buckets to be maintained and monitoring the performance and relevance of these
- Preparing and following up on the meetings of the Portfolio Board
- Updating the project register with a preliminary assessment and prioritization of submitted project proposals
- Providing recommendations for the Board with the information needed to allow it to make the necessary decisions
- Advising project managers on drawing up the required project proposals
- Challenging assumptions and estimates in project proposals
- Pre-approving project proposals to be submitted for Board decision

FIGURE 7.6: Project portfolio manager portfolio formation responsibilities.

NOTE: Based on Gupta et al. (2022).

- Monitor fulfilment of project portfolio management purpose
- Monitor the success ratio of project proposals
- Identify points for improvement in portfolio management

FIGURE 7.7: Project portfolio manager portfolio monitoring responsibilities.
NOTE: Based on Gupta et al. (2022).

- Facilitating good collaboration with portfolio stakeholders
- Participating in relevant steering committees of projects (it will not be possible for the portfolio manager to take part or be represented in all of these)
- Giving feedback to project managers
- Providing organizational perspectives on projects and training
- Daily management of the portfolio and continuous follow-up on its performance, as well as corrective actions, if needed
- Developing and maintaining portfolio data management tools and ensuring that relevant data are collected
- Assessing whether Project Portfolio Management Board should be involved in decisions on changes to the portfolio that have been submitted
- Ensuring that standard project model is being used in projects in the portfolio
- Setting up measures to ensure that lessons learned are captured and shared

FIGURE 7.8: Project portfolio manager portfolio operation responsibilities.

NOTE: Based on Gupta et al. (2022).

- Knowledgeable about the organization and its projects
- Good qualifications in project and portfolio management
- Experience with portfolio management
- Leadership and general management qualifications
- Good social skills

FIGURE 7.9: Project portfolio manager qualifications.

NOTE: Based on Gupta et al. (2022).

- A single central project portfolio management board or a central project portfolio management board with local project portfolio management committees placed in the business units?
- At which organizational level is the central project portfolio management to be situated in the organization?
- Which functions are to be assigned to the project portfolio management?
- Which roles will exist in the project portfolio management?
- What is the distribution of work between the project portfolio management and other organizational units (e.g. regarding project management model and guidelines)?
- Which levels and organizational units should be represented in the project portfolio management board?
- To whom does the project portfolio manager report?
- What are the reporting lines in the organization to the project portfolio manager and project portfolio management board?
- Which tools and methods are to be used? Which project management model?
- Which requirements for status reporting to the project portfolio management are the projects to comply with?
- How are the key performance objectives going to be measured?
- How is project portfolio management to be integrated with the rest of the organization?

FIGURE 7.10: Questions to reflect on when deciding a portfolio management model.

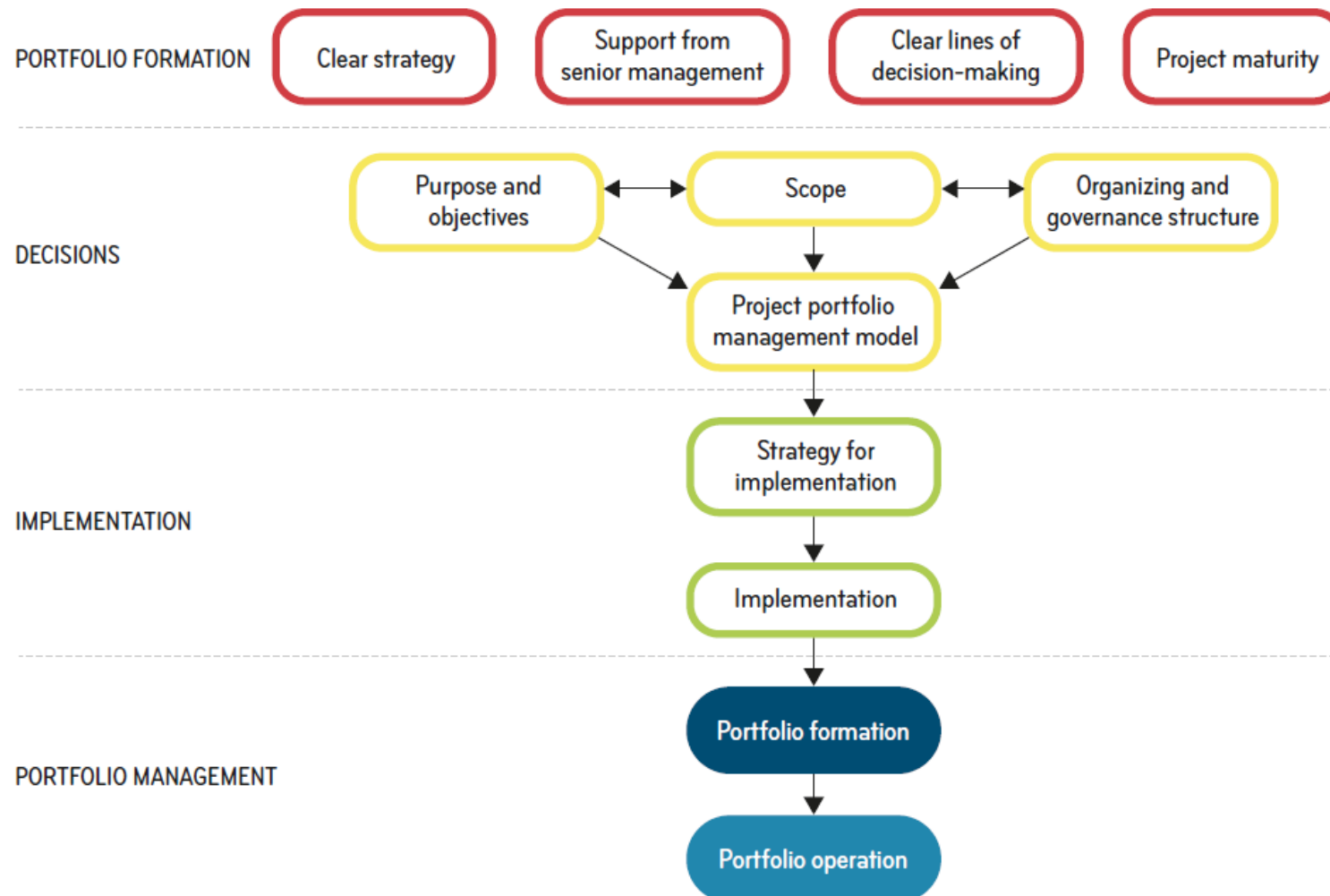


FIGURE 8.1: Preconditions and decisions for project portfolio management implementation.

NOTE: Inspired by Nielsen, 2017.

Preconditions	Issues if not met
A clearly formulated strategy	Difficult to assess the strategic fit of projects and adjust according to learnings from implementing the strategy.
Support from senior management	<p>Possibly lack of understanding of the need for a clear strategy.</p> <p>Difficulty in acquiring the resources and organization needed for successful implementation.</p> <p>Lack of understanding of the need to develop a formalized project portfolio formation process and a project model.</p> <p>Difficulty in managing resistance from the line management and project managers.</p>
The organization has clear lines of decision-making	<p>Difficult to delegate authority and responsibilities.</p> <p>Issues related to following the formalized processes.</p>
Project maturity	<p>Lack of knowledge of, willingness to manage, and actual handling of critical success factors for the projects.</p> <p>Difficulty in defining a project model.</p> <p>Lack of data for assessing projects.</p> <p>Issues related to adhering to the project model.</p>

FIGURE 8.2: Possible issues in project portfolio management with lacking prerequisites.

Chair of the Project Portfolio Management Board	Accountable for overseeing the entire project portfolio and ensuring that the portfolio aligns with the organization's strategic goals and objectives.
Members of the Project Portfolio Management Board	Ensure that the organization can deliver projects that meet their strategic objectives, and generate the intended value while balancing risks, resources, and budgets. Responsible for setting policies, oversight and decision-making regarding the project portfolio, and ensuring that the projects align with the organization's overall strategy.
Project Portfolio Management Office (PPMO) Manager	Responsible for managing the PPMO and ensuring that the project portfolio management model, policies, procedures, and tools and methods are up-to-date and followed.
Project owner	Responsible for monitoring the generation of the intended value after project completion.

FIGURE 8.3: Responsibility and accountability of the main project portfolio management roles.

Stakeholder	Help and harm potential	Stakeholder's necessary contribution	Stakeholder's requirements and wishes	Stakeholder's concerns	Possible challenges	Need for attention
Top and senior management	Can supply or withhold decision resources.	Develop clear strategy and make necessary decisions. Play an active role in the Portfolio Board.	Clear and transparent information for decision-making.	Possible lack of overview.	Lack of interest. Pet projects. Lack of compliance with own decisions. Lack of understanding for need for communication of decision criteria.	
Project portfolio management office	Can help by carrying out the tasks in an efficient way.	Produce the necessary information for the Portfolio Board. Carry out portfolio operations.	Collaboration from parties possessing the resources and information needed.	That they are not sufficiently empowered or respected to contribute as needed or will have to spend unnecessary resources doing so.	None in particular.	

FIGURE 9.1: Examples of stakeholders directly involved in project portfolio management.

Stakeholder	Help and harm potential	Stakeholder's necessary contribution	Stakeholder's requirements and wishes	Stakeholder's concerns	Possible challenges	Need for attention
Project managers	Can withhold and provide information needed for decision-making. Can help the portfolio by a holistic view. Can harm the portfolio by a narrow view on own possible success.	Leading the project to success according to the decided project management model.	Feasible and useful project management model. Support from Project Portfolio Management Office.	By implementation: Diminished influence on how to perform job.	Lack of interest. Pet projects. Lack of compliance with own decisions. Lack of understanding of the need for communication of decision criteria.	
Line managers	Can withhold information about possible resources and solutions.	Giving the required resources. Respect Board decisions.	Clear information on qualifications needed when and where.	By implementation: Diminished influence on how to perform job.	May want to keep decisions on projects in own department.	
Possible project team members	Possibly sparing partner for project manager and others for preparation of business case.	Compliance with decisions and project management model.	Clear definition of role and tasks in the project(s) that they are assigned to.	None in particular, as they are not directly affected.	If the line managers and project managers are negative, these stakeholders may move from neutral to opposition.	

FIGURE 9.2: Examples of stakeholders directly involved in projects.

Stakeholder	Help and harm potential	Stakeholder's necessary contribution	Stakeholder's requirements and wishes	Stakeholder's concerns	Possible challenges	Need for attention
Financial department.	Information resources on economic consequences.	Supplying the needed financial analyses.	Clear specifications on needed information and constraints.	That the Project Portfolio Management Office will require much information, putting pressure on resources in the department.	May find that the requirement for information is excessive, lack of prioritization of task.	
Marketing.	Information resources on market information. Social capital in the form of market access.	Supplying the needed market analyses.	Clear specifications on needed information and constraints.	That the Project Portfolio Management Office will require much information, putting pressure on resources in the department.	May find that requirements for information is excessive, lack of prioritization of task.	
Communications.	Communication resources.	Supplying adequate communication materials.	Clear information on decisions and their reasoning.	None in particular.	Lack of understanding and translating the strategy, requirements for the business case, and reasoning behind decisions.	
Employees generating possible new projects.	Sharing or withholding ideas and encouraging or discouraging others from sharing ideas.	Generation of ideas for new projects that are feasible and in line with strategy.	Some projects approved. Transparent reasoning for Board decisions.	Wasting time preparing business cases on ideas and projects that are not accepted or put in the backlog.	Keeping a positive, creative culture while not getting non-viable project ideas into the pipeline.	
The organization in general.	Depends on the stakeholder in question.	Not putting obstacles in front of the portfolio organization.	Sense-making of the decisions made by the Portfolio Board.	That the project decided by the Portfolio Board takes up resources that could have been used in a better way outside the project portfolio.	Depends on the stakeholder in question.	

FIGURE 9.3: Examples of other internal stakeholders.

Element	Sub-elements	Integration in portfolio management model	Example elements
Sustainability mindset	Definition of sustainability	A precise description of the economic, societal, and environment aspects that are relevant for this organization.	A sustainable project will generate an economic surplus measured as NPV, and it will not have a negative environmental impact in terms of CO ₂ emission. Furthermore, the project cannot affect employee welfare of the project team negatively.
	Sustainability in values	A precise description of what is regarded as important and must therefore carry weight in decisions. The value can be formulated as complying with legal and other constraints, as instrumental value in the form of market advantage, or as intrinsic value.	The organization believes that sustainability has its own merit. It emphasizes environmental impact, including long-term consequences, over immediate economic gain as long as the project will result in economic surplus.
	Sustainable principles for assessment	Sustainability criteria included in project assessment.	Environmental and societal criteria must each have a weight of at least 20% in project assessment.
Sustainability in project assessment	Sustainability in governance system	Project portfolio governance includes all stakeholders in the decision-making process.	The decided project portfolio must be discussed in forum A, B, and C before the decision is final.
	Sustainability in performance measures	Project key performance indicators include indicators for all three sustainability elements.	KPIs as noise, use of sustainable materials, innovative solutions for less environmental impact, employee wellbeing.
	Sustainability in reporting	Reporting to a wide range of stakeholders.	A plan for reporting to the organization and external stakeholders must be in place for all projects.
Sustainability in project portfolio processes	Sustainability in formation processes	Selection and balancing criteria include indicators for all three sustainability elements.	Environmental and societal criteria must each have a weight of at least 20% in project assessment.
	Sustainability in operation processes	The PM model integrates measures for project success on the decided KPIs.	Planning must balance speed and use of resources.
	Sustainability in resource management	4R (reduce, reuse, recycle, recover) considered in resource management.	The PM model and the reporting requires resource use considerations.
	Organizational learning and portfolio improvement	How project learning should include learning related to sustainability.	Lessons learned must include learnings on 4R related to use of materials.

FIGURE 10.1: Elements in integrating sustainability in project portfolio management.

NOTE: Inspired by Aghajani et al. (2023).

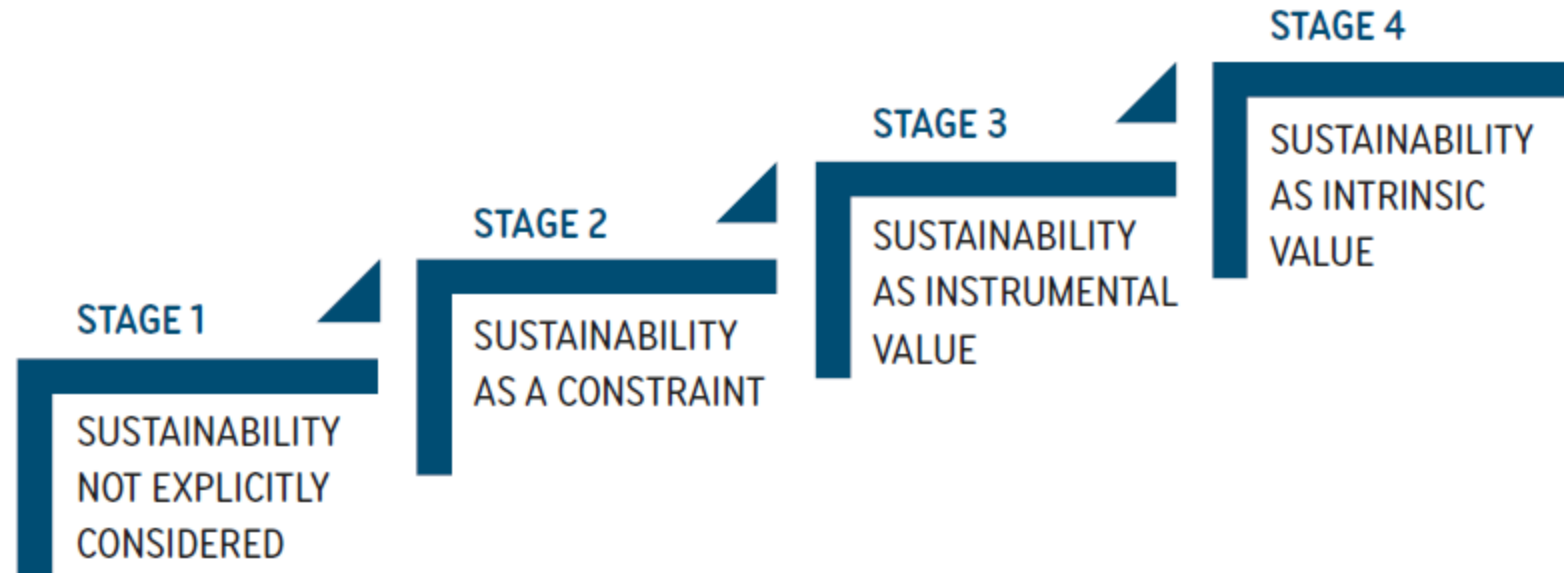


FIGURE 10.2: Stages in value perspectives on sustainability in project management.

NOTE: Based on Friedrich (2023).

	What it concerns	Challenges	Way forward
Agile project management practices	Some or all projects in the portfolio are managed with iterative planning and execution cycle 'sprints' that typically lasts 2-4 weeks. Teams are relatively autonomous and self-organized.	The formalized and standardized processes of project portfolio management are poorly equipped to handle such projects. The governance of agile projects can become disjointed, incoherent and complex.	An agile project model with agile methods and ways of working.
Agile project portfolio management	Managing the portfolio in an agile way.	Project portfolio management is at its core about long-term planning based on relatively fixed decisions.	An agile project portfolio management model with an emphasis on agility, strategic adaptiveness, and ambidexterity in portfolio management. Ability to react to changes with appropriate speed, flexibility built into portfolio processes, and portfolio control, including agile reporting on execution progress.

FIGURE 10.3: Agile projects in the portfolio and agile project portfolio management.

- Not all parties in the organization may understand and accept the processes decided, and consequently, processes and decisions are set aside
- Rational decision-making is demanding in terms of the data required and the understanding of these data. Relevant data may not be obtainable, and objective data are often not achievable
- Participation in the processes is time-consuming for the often busy employees who are needed for the decisions
- The persons engaged in the process may have conflicting goals
- The strict, formal processes may be seen as cumbersome, hampering the motivation to suggest projects.

FIGURE 11.1: Challenges in conducting project portfolio management.