

THE CIRCULAR INFLUENCER

A research into the impact of incentives in the circular strategic decision-making processes within project management stakeholders

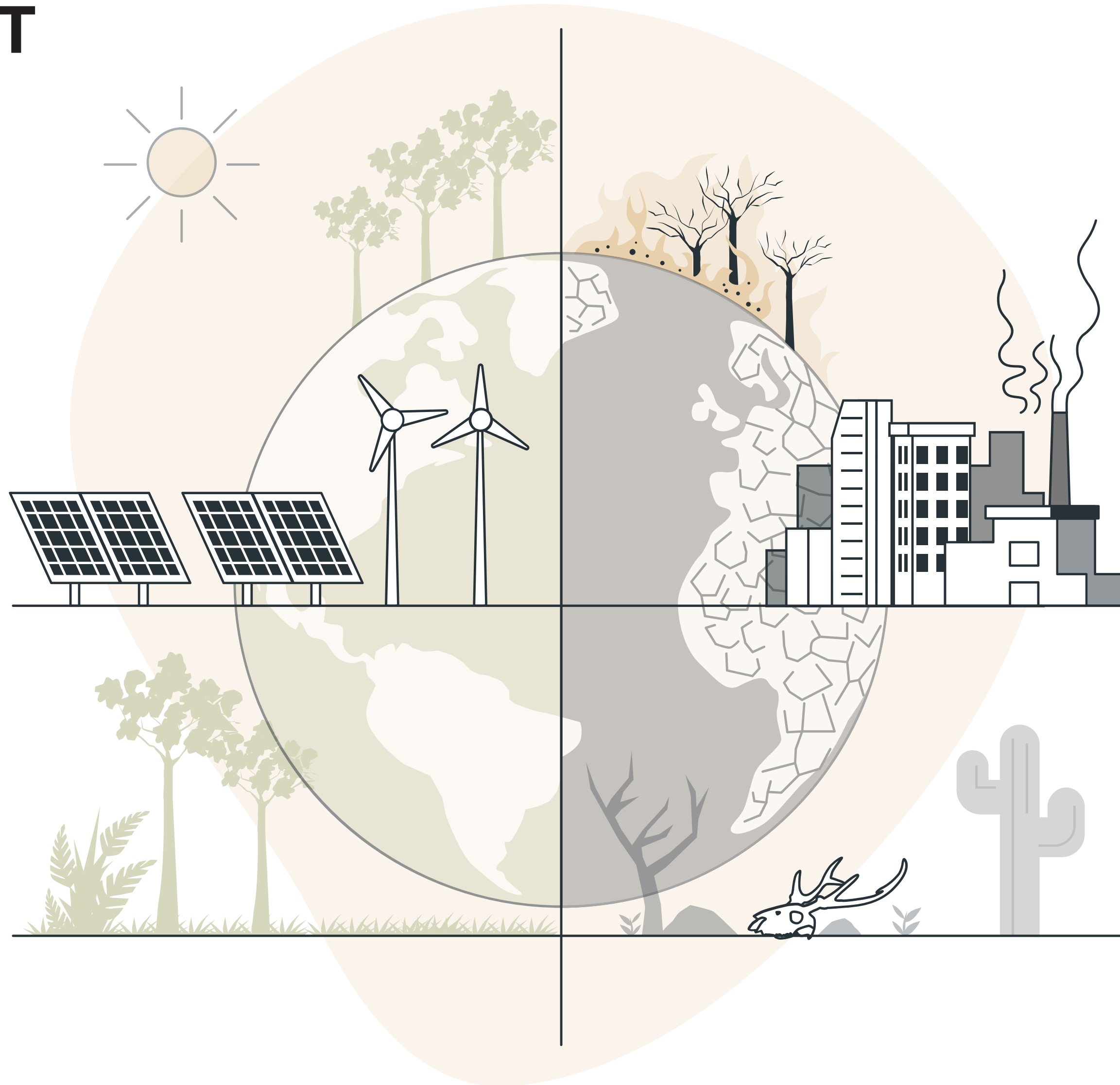


june 26th, 2023
master thesis presentation

CONTENT

- i. Introduction
 - Problem statement
 - Research aim & questions
- i. Research methods
- ii. Theoretical
- iii. Empirical study part I
 - Explorative interviews
- iv. Empirical study part II
 - Brainstorm and validation interviews
- v. Conclusion

CONTEXT



CONTEXT

The construction industry is responsible for a total of _____ of **global CO2 emissions** for the extraction, processing, and transporting of building materials

CONTEXT

The construction industry is responsible for a total of **67%** of **global CO2 emissions** for the extraction, processing, and transporting of building materials

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The construction industry is responsible for a total of **67%** of **global CO2 emissions** for the extraction, processing, and transporting of building materials

The construction industry is accountable for **36%** of total **raw material consumption**

CONTEXT

The construction industry is responsible for a total of **67%** of **global CO2 emissions** for the extraction, processing, and transporting of building materials

The construction industry is accountable for **50%** of total **raw material consumption**

CONTEXT

The construction industry is responsible for a total of **67%** of **global CO2 emissions** for the extraction, processing, and transporting of building materials

The construction industry is accountable for **50%** of total **raw material consumption**

The construction industry accounts for _____ of Dutch **energy consumption**

CONTEXT

The construction industry is responsible for a total of **67%** of **global CO2 emissions** for the extraction, processing, and transporting of building materials

The construction industry is accountable for **50%** of total **raw material consumption**

The construction industry accounts for **40%** of Dutch **energy consumption**

CONTEXT

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The construction industry is accountable for **50%** of total **raw material consumption**

The construction industry accounts for **40%** of Dutch **energy consumption**

The Dutch construction industry produces **1.5 million** tons of demolition waste per year

CONTEXT

The construction industry is responsible for a total of **67%** of **global CO2 emissions** for the extraction, processing, and transporting of building materials

The construction industry is accountable for **50%** of total **raw material consumption**

The construction industry accounts for **40%** of Dutch **energy consumption**

The Dutch construction industry produces **23 million** tons of **demolition waste** per year

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CONTEXT

scarcity of these building materials

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→ **resulted into increased pricing of construction materials**

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→ **subsequently slowed the building industry**

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**DECREASE IN
SUPPLY**

CONTEXT

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DECREASE IN
SUPPLY

growing population

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DECREASE IN
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growing population

→ **resulting in a higher demand for housing**

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DECREASE IN
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INCREASE IN
DEMAND

CONTEXT

scarcity of these building materials

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growing population

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**DECREASE IN
SUPPLY**

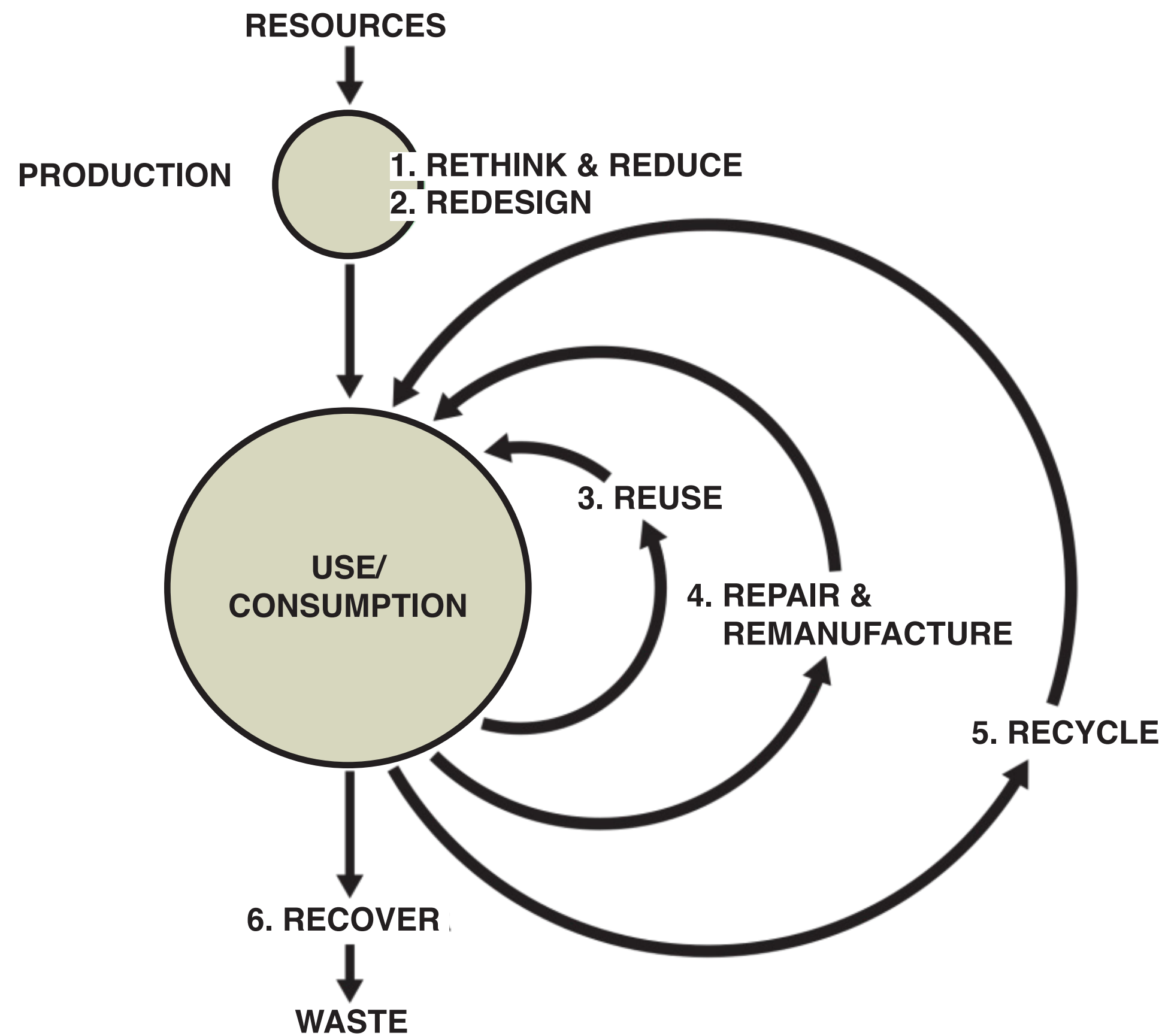
MISMATCH

**INCREASE IN
DEMAND**

SOLUTION

CIRCULAR BUILDING METHODS

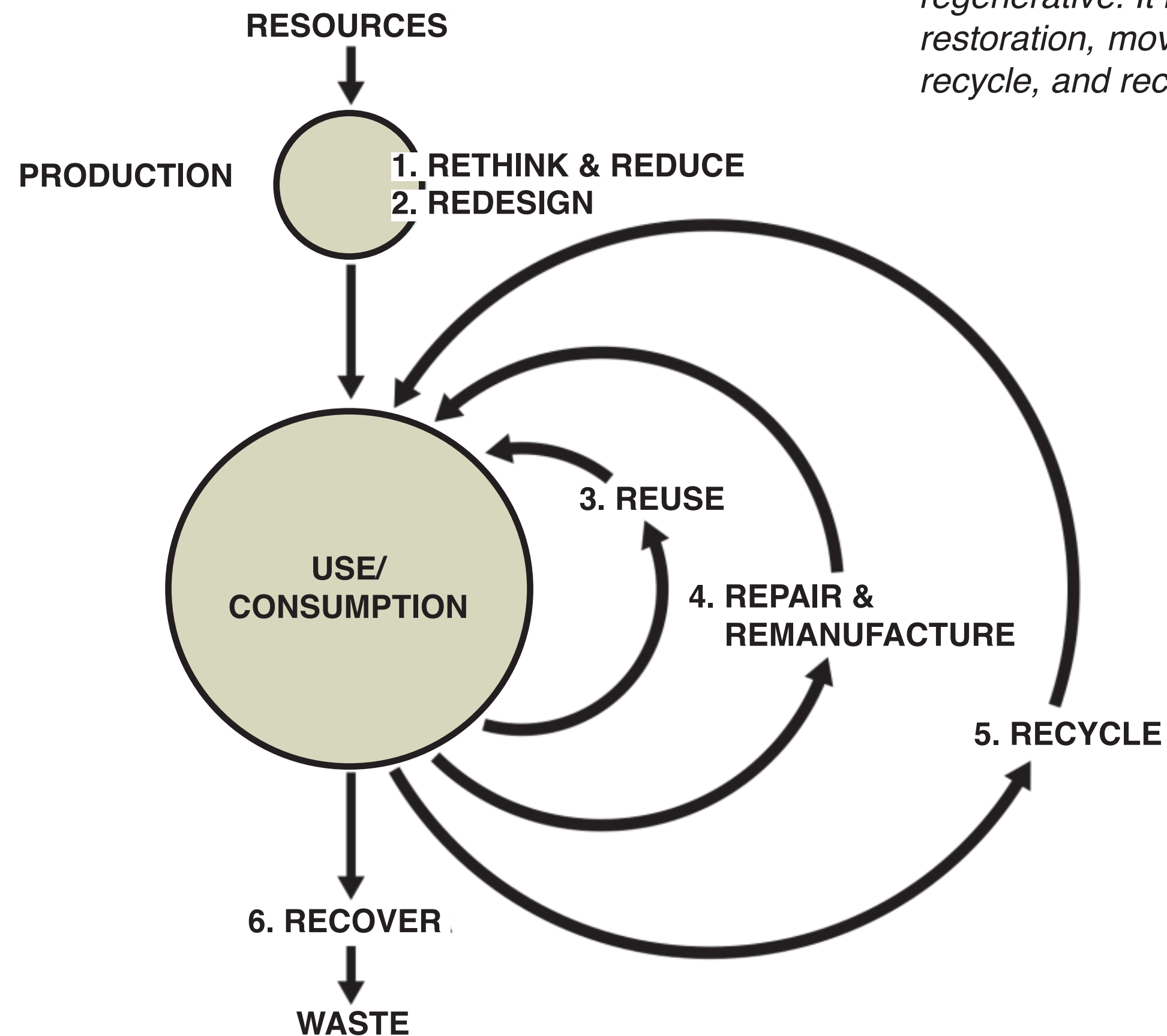
Governmental legislation: climate neutral by 2050



SOLUTION

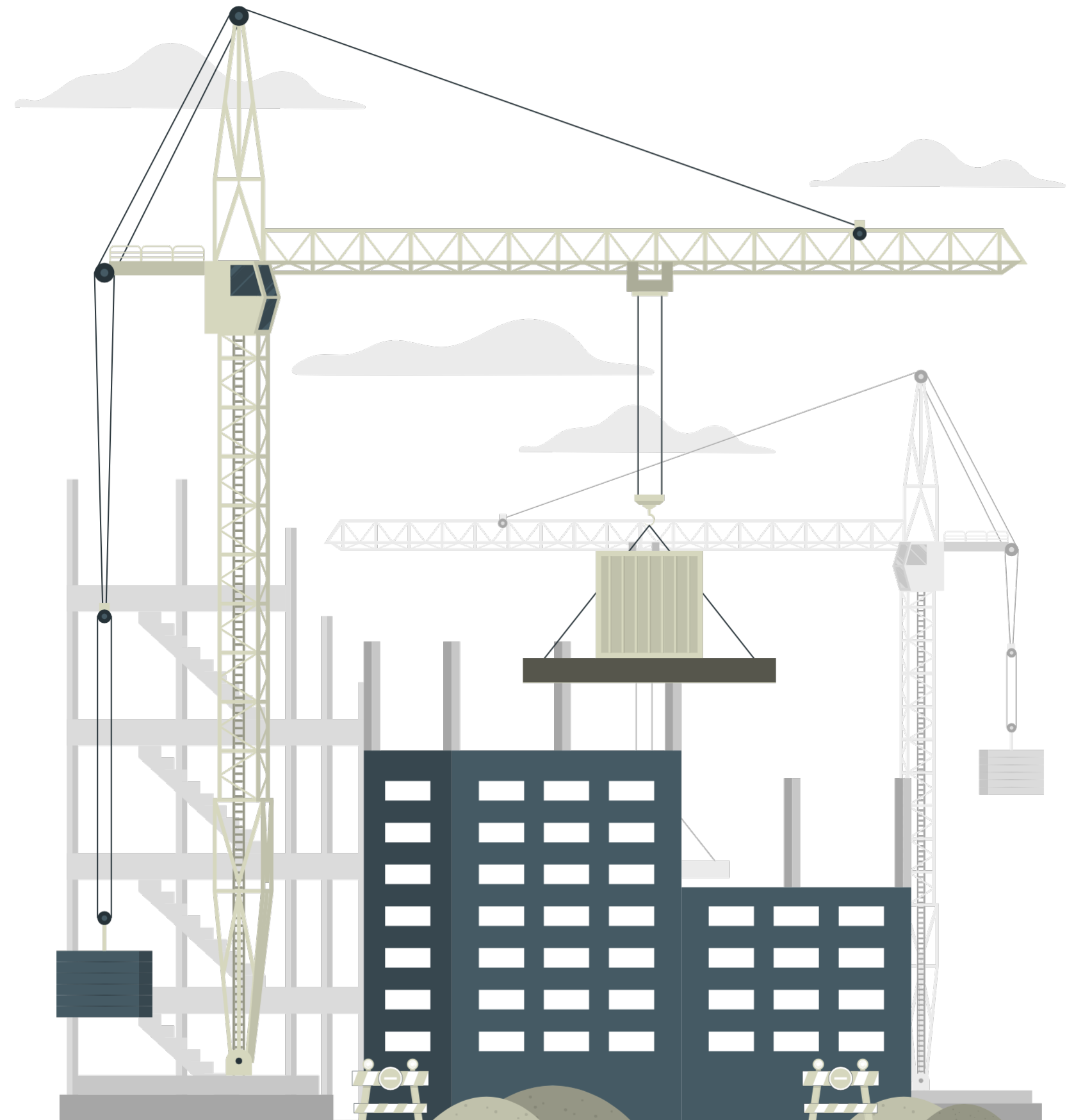
CIRCULAR BUILDING METHODS

A circular economy is an industrial system that is intended and designed to be restorative or regenerative. It replaces the idea of 'end-of-life' with restoration, moves towards circular (reduce, reuse, recycle, and recover) economic models.



SOLUTION

CIRCULAR BUILDING METHODS



i.

ii.

iii.

iv.

v.

SOLUTION

CIRCULAR BUILDING METHODS

reuse, recycle recover etc. materials

modular / adaptability



i.

ii.

iii.

iv.

v.

PROBLEM

HOWEVER, BUILDING DECISIONS ARE MADE BY



PROBLEM

THE REALIZATION OF CIRCULAR BUILDINGS IS LIMITED



organizational level



project level



individual level

PROBLEM

HOWEVER, THE REALIZATION OF CIRCULAR BUILDINGS IS LIMITED

- Conflict in ambitions
- A better individual financial position



organizational level



project level

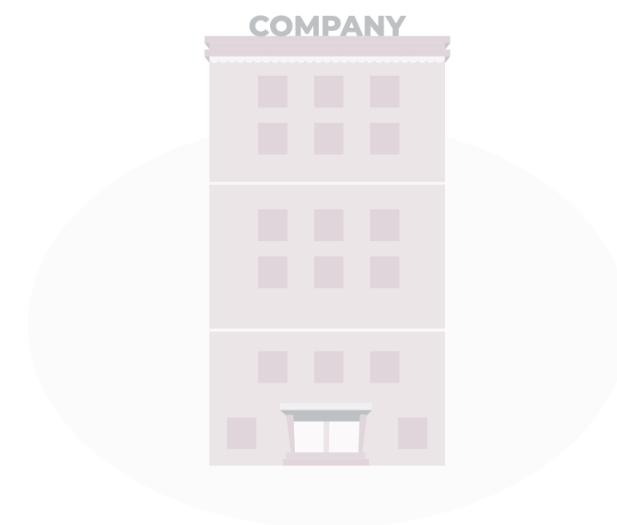


individual level

PROBLEM

HOWEVER, THE REALIZATION OF CIRCULAR BUILDINGS IS LIMITED

- Conflict in ambitions
- A better individual financial position
- Non successful deliverable
- Empowerment of the client
- Riskadverse



organizational level



project level



individual level

PROBLEM

HOWEVER, THE REALIZATION OF CIRCULAR BUILDINGS IS LIMITED

- Conflict in ambitions
- A better individual financial position
- Non successful deliverable
- Empowerment of the client
- Riskadverse
- Lack of stakeholder knowledge
- Lack of stakeholder commitment



organizational level



project level



individual level

HOW DO WE CHANGE THIS BEHAVIOR?



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What strategies can be implemented to individuals to encourage specific behavior?

HOW DO WE CHANGE THIS BEHAVIOR?

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LETS GO BACK...

HOW DO WE CHANGE THIS BEHAVIOR?

What strategies can be implemented to individuals to encourage specific behavior?

as a kid you get house arrest for being
home late
to ensure that you are home before dark

HOW DO WE CHANGE THIS BEHAVIOR?

What strategies can be implemented to individuals to encourage specific behavior?

a person gets a fine
to punish undesirable behavior and
to reduce criminal activities

as a kid you get house arrest for being
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HOW DO WE CHANGE THIS BEHAVIOR?

What strategies can be implemented to individuals to encourage specific behavior?

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as a kid you get house arrest for being
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reduce taxes on electric cars
to stimulate sustainable behavior

HOW DO WE CHANGE THIS BEHAVIOR?

What strategies can be implemented to individuals to encourage specific behavior?

**Educational grants and scholarships
based on academic achievement
to stimulate to achieve higher marks**

a person gets a fine
to punish undesirable behavior and
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HOW DO WE CHANGE THIS BEHAVIOR?

What strategies can be implemented to individuals to encourage specific behavior?

Educational grants and scholarships
based on academic achievement
to stimulate to achieve higher marks

**tax increase on alcohol and cigarettes
to reduce its use**

a person gets a fine
to punish undesirable behavior and
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as a kid you get house arrest for being
home late
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reduce taxes on electric cars
to stimulate sustainable behavior

HOW DO WE CHANGE THIS BEHAVIOR?

What strategies can be implemented to individuals to encourage specific behavior?

Educational grants and scholarships
based on academic achievement
to stimulate to achieve higher marks

puppy training; a dog receives a treat
to stimulate good behavior

tax increase on alcohol and cigarettes
to reduce its use

a person gets a fine
to punish undesirable behavior and
to reduce criminal activities

as a kid you get house arrest for being
home late
to ensure that you are home before dark

reduce taxes on electric cars
to stimulate sustainable behavior

ENCOURAGEMENT TECHNIQUE

INCENTIVES

An incentive is a motivating reward or penalty that encourages specific actions or behaviors

MAIN RESEARCH QUESTION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

RESEARCH QUESTIONS

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

i. Which project management stakeholders are involved in the decision-making processes and who affects the outcomes the most?

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RESEARCH QUESTIONS

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

- i. Which project management stakeholders are involved in the decision-making processes and who affects the outcomes the most?
- ii. How do decision-making processes currently operate between these project management stakeholders?
- iii. Which incentives can have an influence on the pro-circular strategic decision-making processes of project management stakeholders?

RESEARCH METHODS

SYSTEMIC DESIGN TOOLKIT

RESEARCH METHODS

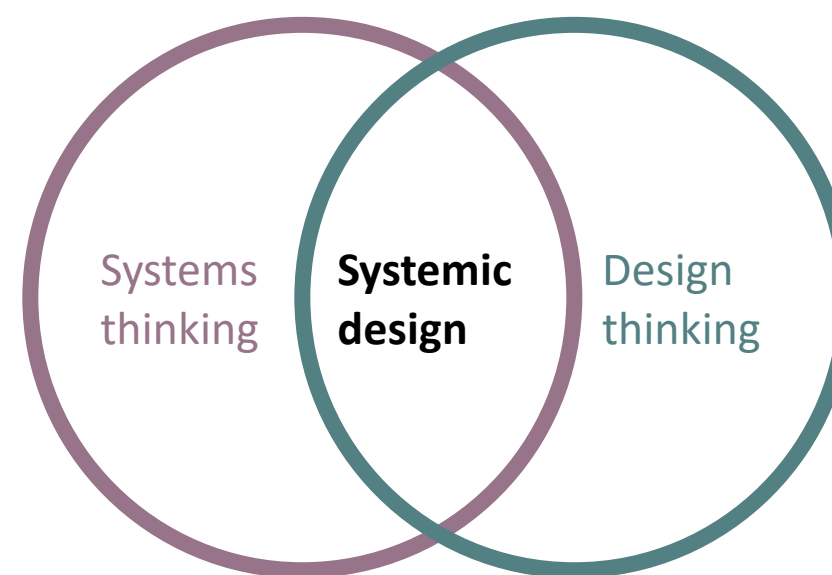
SYSTEMIC DESIGN TOOLKIT

The systemic design toolkit is a comprehensive set of methods and tools used to address complex challenges and create holistic solutions by considering the interconnections and relationships within a system

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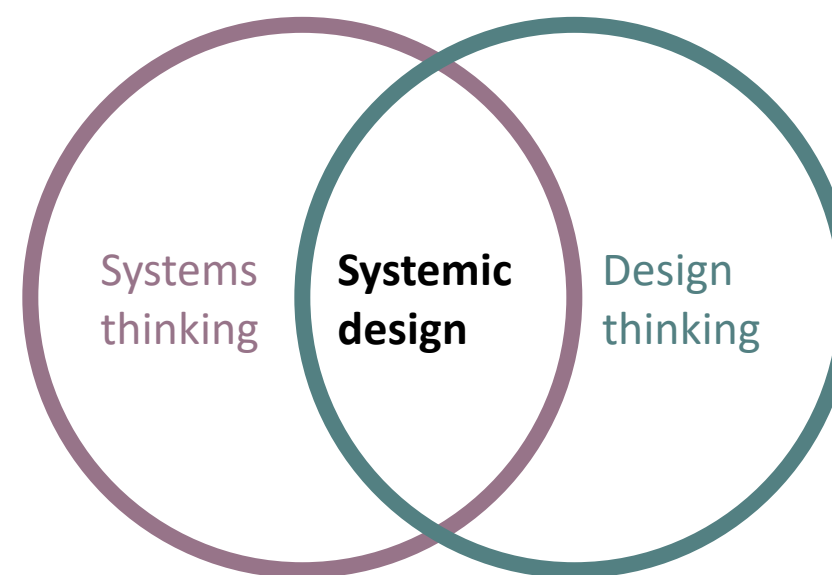


RESEARCH METHODS

SYSTEMIC DESIGN TOOLKIT

The systemic design toolkit is a comprehensive set of methods and tools used to address complex challenges and create holistic solutions by considering the interconnections and relationships within a system

System thinking is the process of **understanding and analyzing the interrelationships** and **dynamics** within a system to address complex challenges.

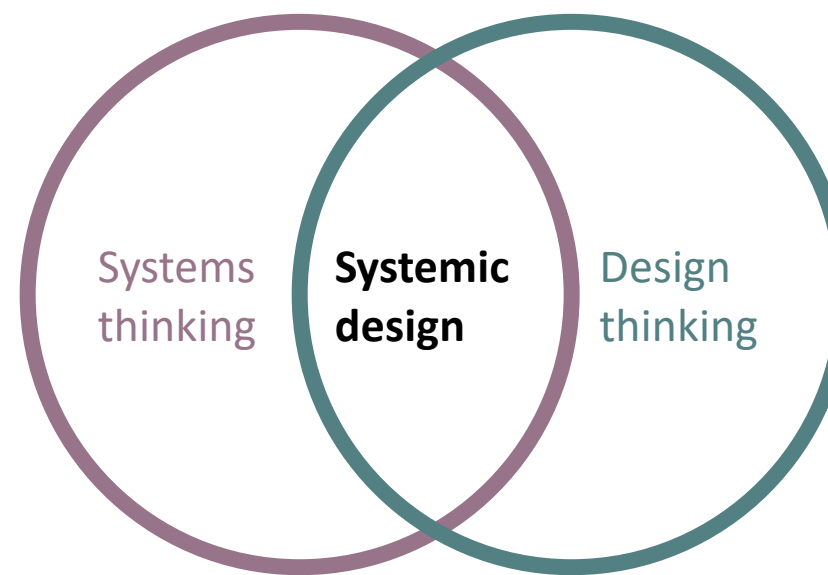


RESEARCH METHODS

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System thinking is the process of **understanding and analyzing the interrelationships** and **dynamics** within a system to address complex challenges



Design thinking is a **human-centered** approach to problem-solving that emphasizes empathy, **creativity**, and iteration to develop **innovative solutions**

RESEARCH METHODS

Emperical study I

Emperical study II

RESEARCH METHODS

Emperical study I

explorative interviews

base-line: current behaviors

systemic design toolkit 1 - 4

Emperical study II

RESEARCH METHODS

Emperical study I

explorative interviews

base-line: current behaviors

systemic design toolkit 1 - 4

Emperical study II

validation & brainstorm interviews

exploring effective incentives

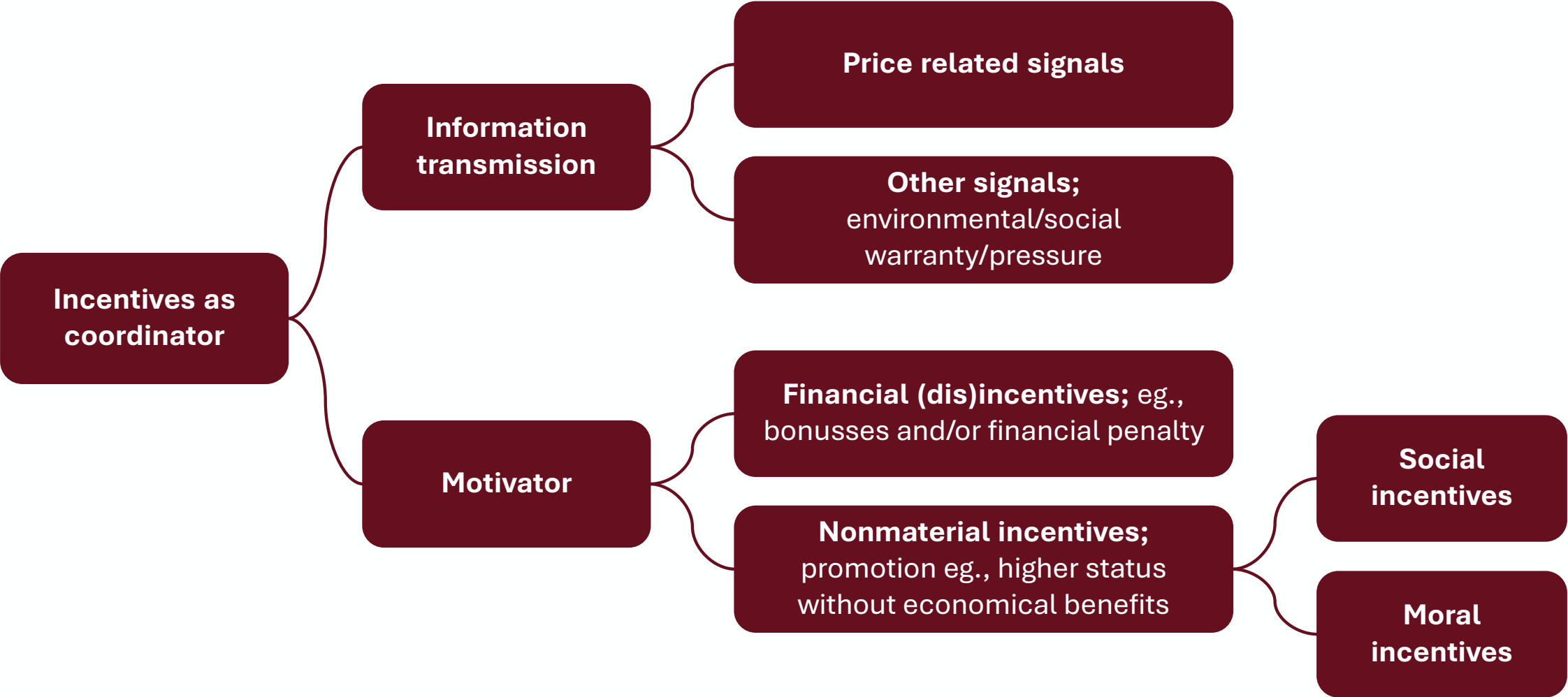
systemic design toolkit step 5 - 6

ii. THEORETICAL

i.

INCENTIVES

ii. Literature review iii. iv. v.



i.

ii. Literature review

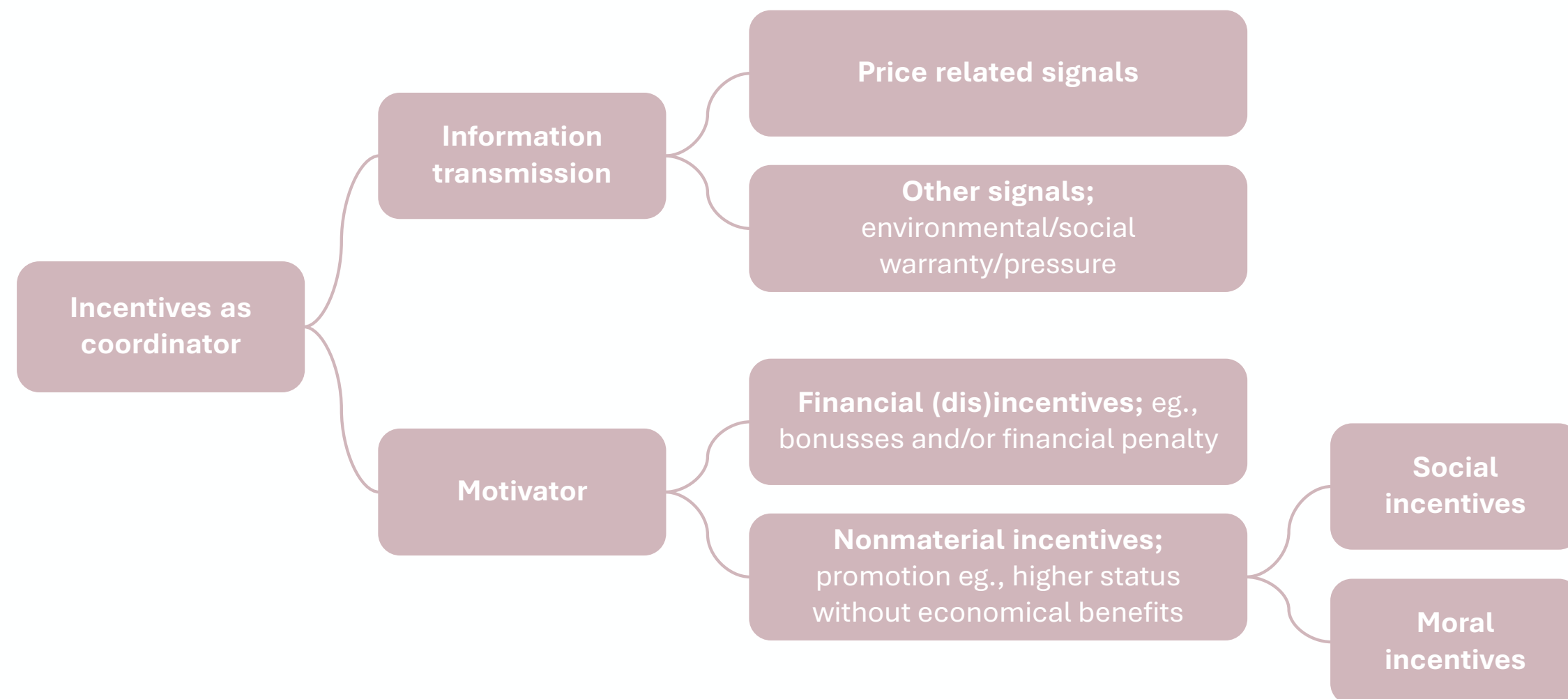
iii.

iv.

v.

INCENTIVES

financial incentive acting in the best financial interest



i.

ii. Literature review

iii.

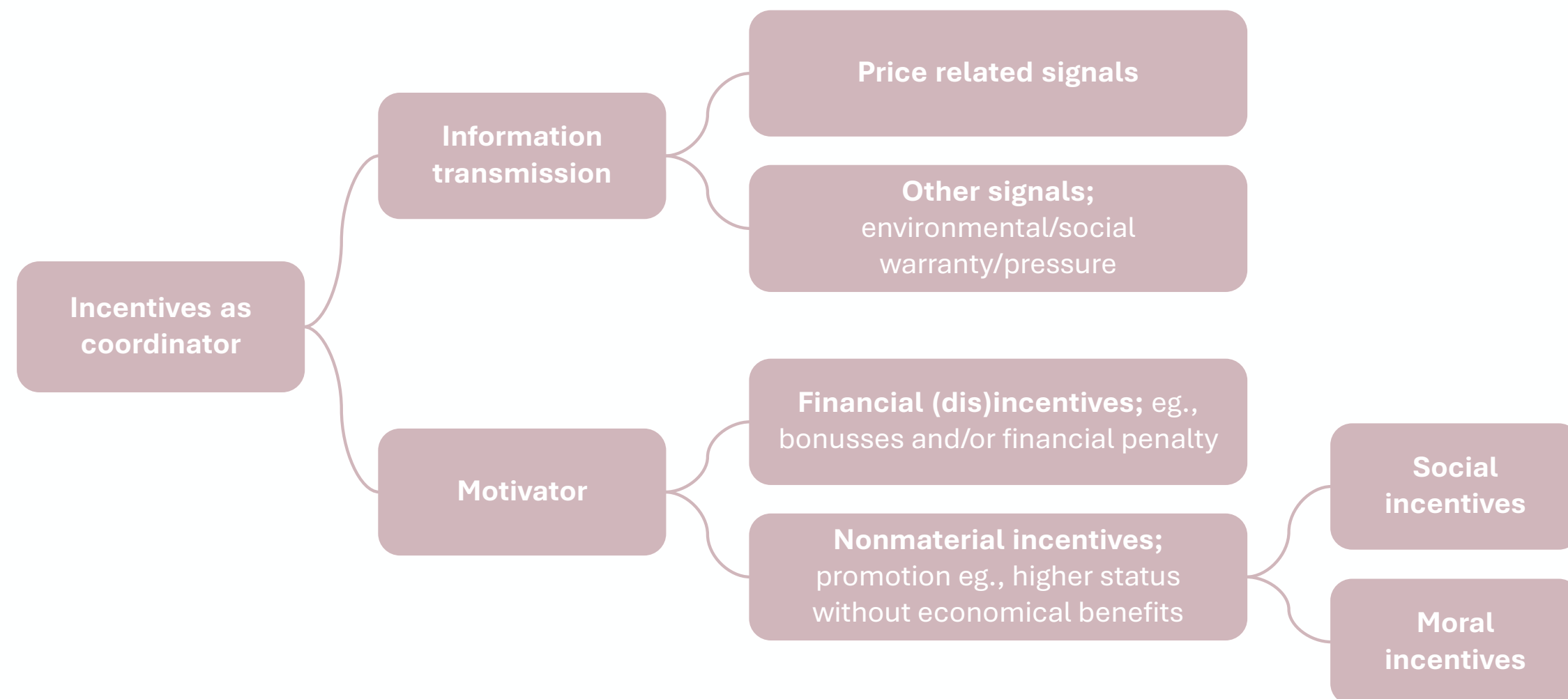
iv.

v.

INCENTIVES

financial incentive: acting in the best financial interest

social incentive: operating in a manner that will get social approval/acceptance



i.

ii. Literature review

iii.

iv.

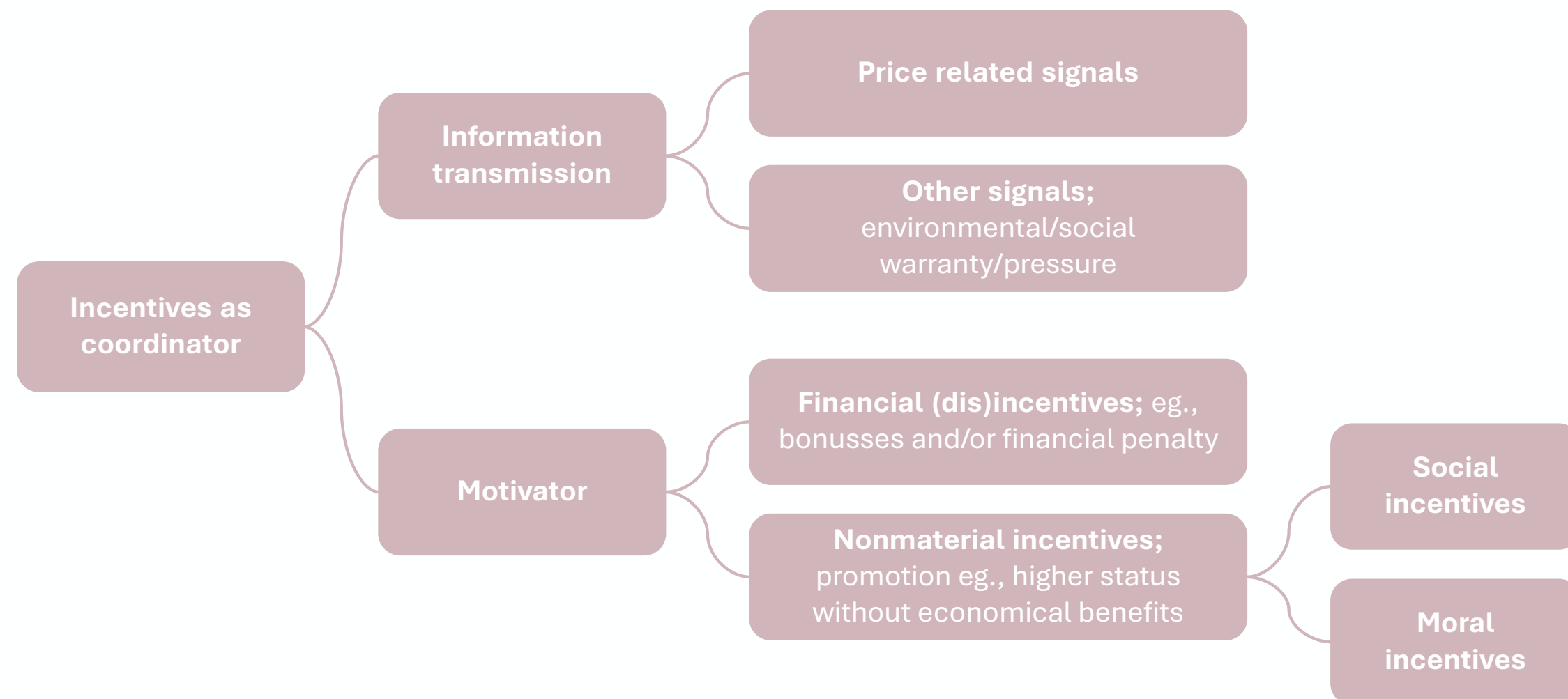
v.

INCENTIVES

financial incentive: acting in the best financial interest

social incentive: operating in a manner that will get social approval/acceptance

moral incentive: behaving in accordance with what is seen as the correct action



PROJECT MANAGEMENT STAKEHOLDERS

Project management stakeholders refer to individuals, groups, or organizations that have an **interest or involvement** in the project and can affect or be affected by its outcomes

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Project management stakeholders	
Demand (formal)	Supply (informal)
Client	Architect
(Property owner)	Designers
(Financers / shareholders)	Engineers
Client's employees	Contractor(s)
Client's suppliers	Other consultants
Project manager	

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formal stakeholders

make final project decisions for the development of constructions

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Project manager	

informal stakeholders

offer information to enhance the other members' decision-making processes

iii. EMPIRICAL STUDY

explorative interviews results

i.

ii.

iii. Explorative interviews

iv.

v.

RESEARCH METHODS

Emperical study I

explorative interviews

base-line: current behaviors

systemic design toolkit 1 - 4

i.

ii.

iii. Explorative interviews

iv.

v.

PROJECT CASES

Emperical study I explorative interviews
base-line: current behaviors
systemic design toolkit 1 - 4

23 participants

3 project cases

i.

ii.

iii. Explorative interviews

iv.

v.

PROJECT CASES

Emperical study I

explorative interviews

base-line: current behaviors

systemic design toolkit 1 - 4

Case A

public organization (N=10)

circular commitment due close relationship government

i.

ii.

iii. Explorative interviews

iv.

v.

PROJECT CASES

Emperical study I

explorative interviews
base-line: current behaviors
systemic design toolkit 1 - 4

Case A

public organization (N=10)
circular commitment due close relationship government

Case B

private organization (N=8)
high intrinsic motivation for circular economy

i.

ii.

iii. Explorative interviews

iv.

v.

PROJECT CASES

Emperical study I

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Case A

public organization (N=10)
circular commitment due close relationship government

Case B

private organization (N=8)
high intrinsic motivation for circular economy

Case C

private organization (N=5)
obligated to respond to circular economy

i.

ii.

iii. Explorative interviews

iv.

v.

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high intrinsic motivation for circular economy

Case C

private organization (N=5)
obligated to respond to circular economy

traditional contract

i.

ii.

iii. Explorative interviews

iv.

v.

FINDINGS I STAKEHOLDER INFLUENCE

i. Which project management stakeholders are involved in the decision-making processes and who affects the outcomes the most?

i.

ii.

iii. Explorative interviews

iv.

v.

FINDINGS I STAKEHOLDER INFLUENCE

i. Which project management stakeholders are involved in the decision-making processes and who affects the outcomes the most?

- client (*project initiator*)
 - real estate director
 - real estate portfolio director
- project manager
- cost manager
- architect
- consultants
 - structural engineer
 - installations
 - sustainability
 - ... and others

i.

ii.

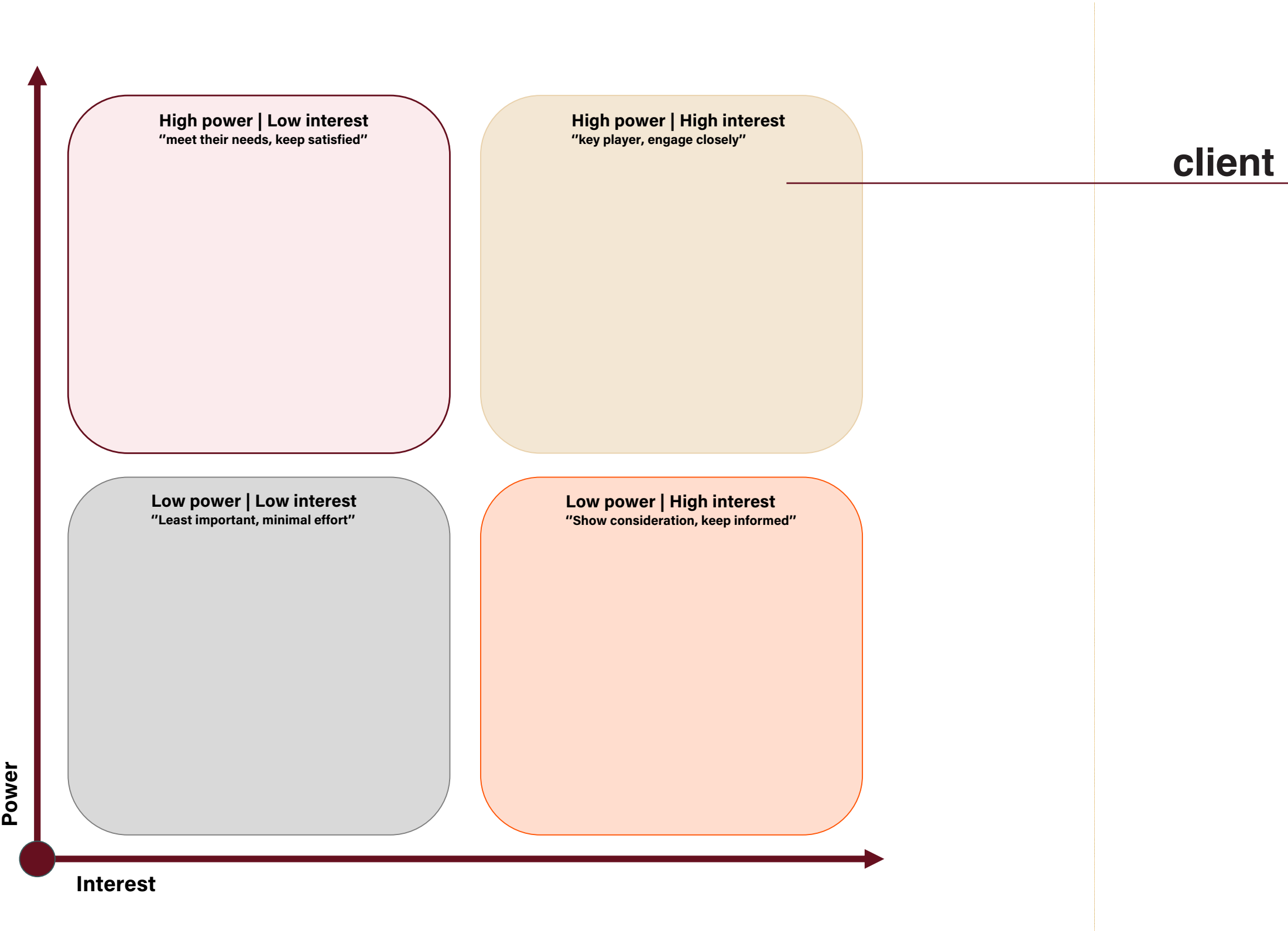
iii. Explorative interviews

iv.

v.

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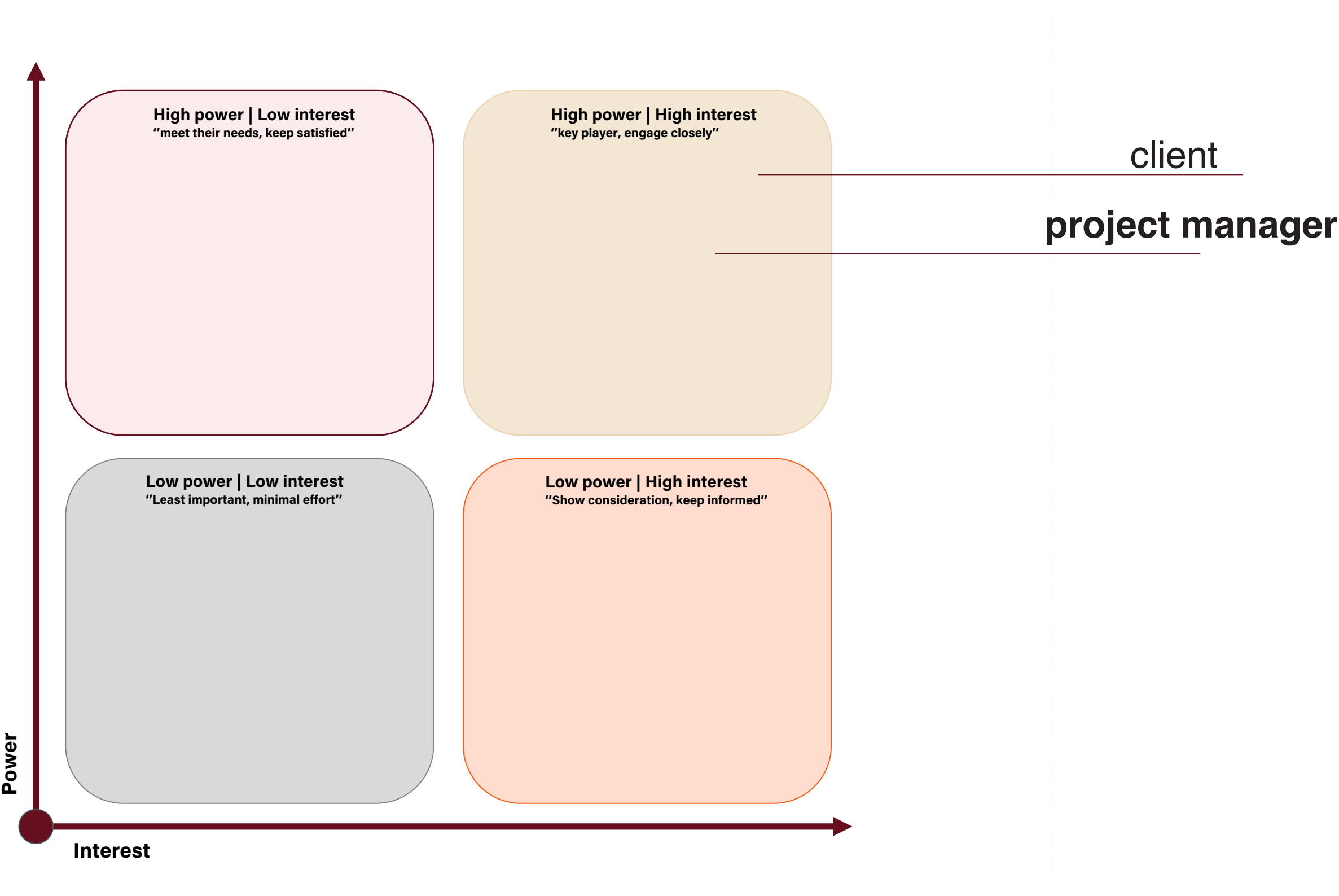
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- iv.
- v.

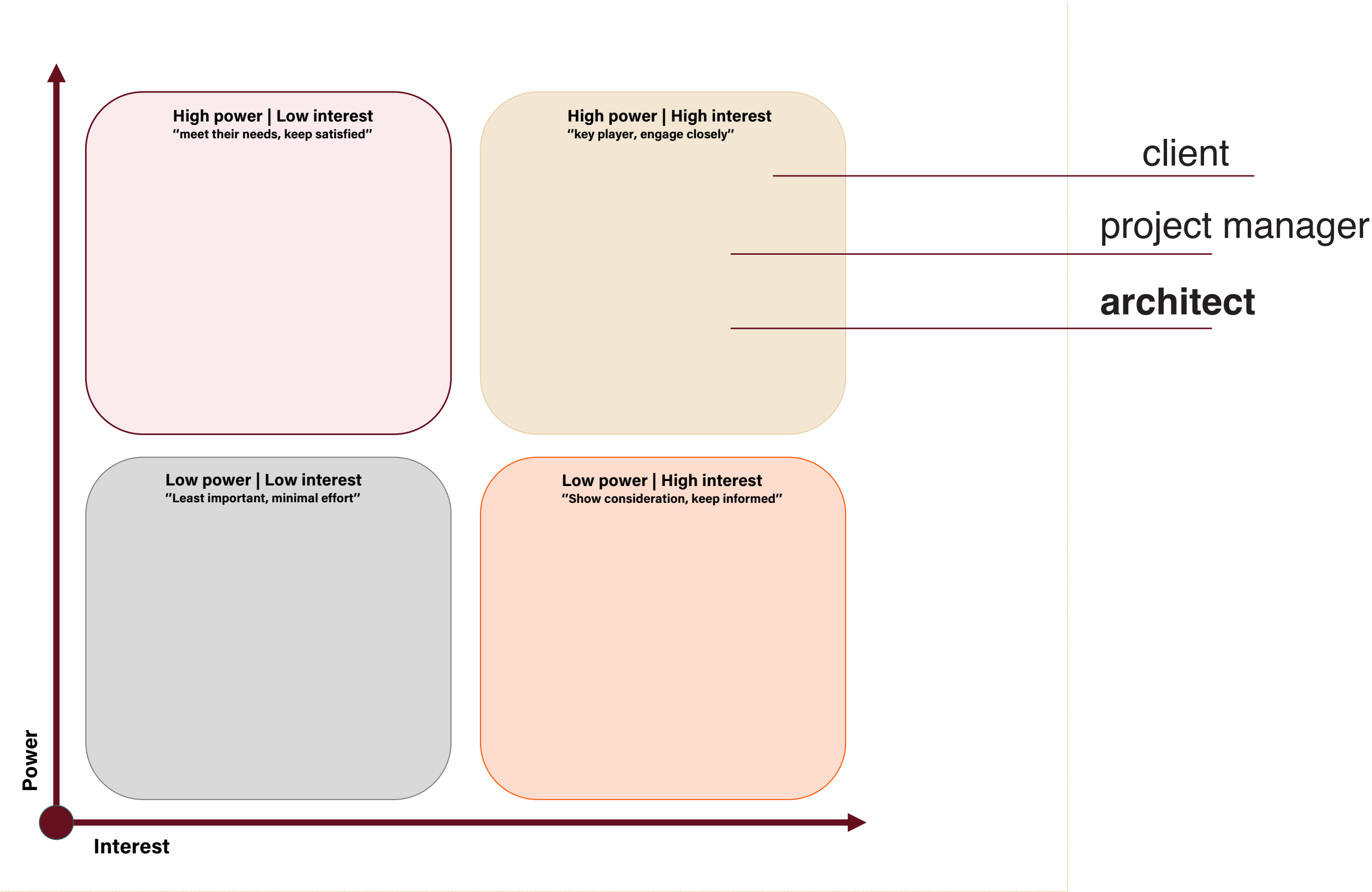
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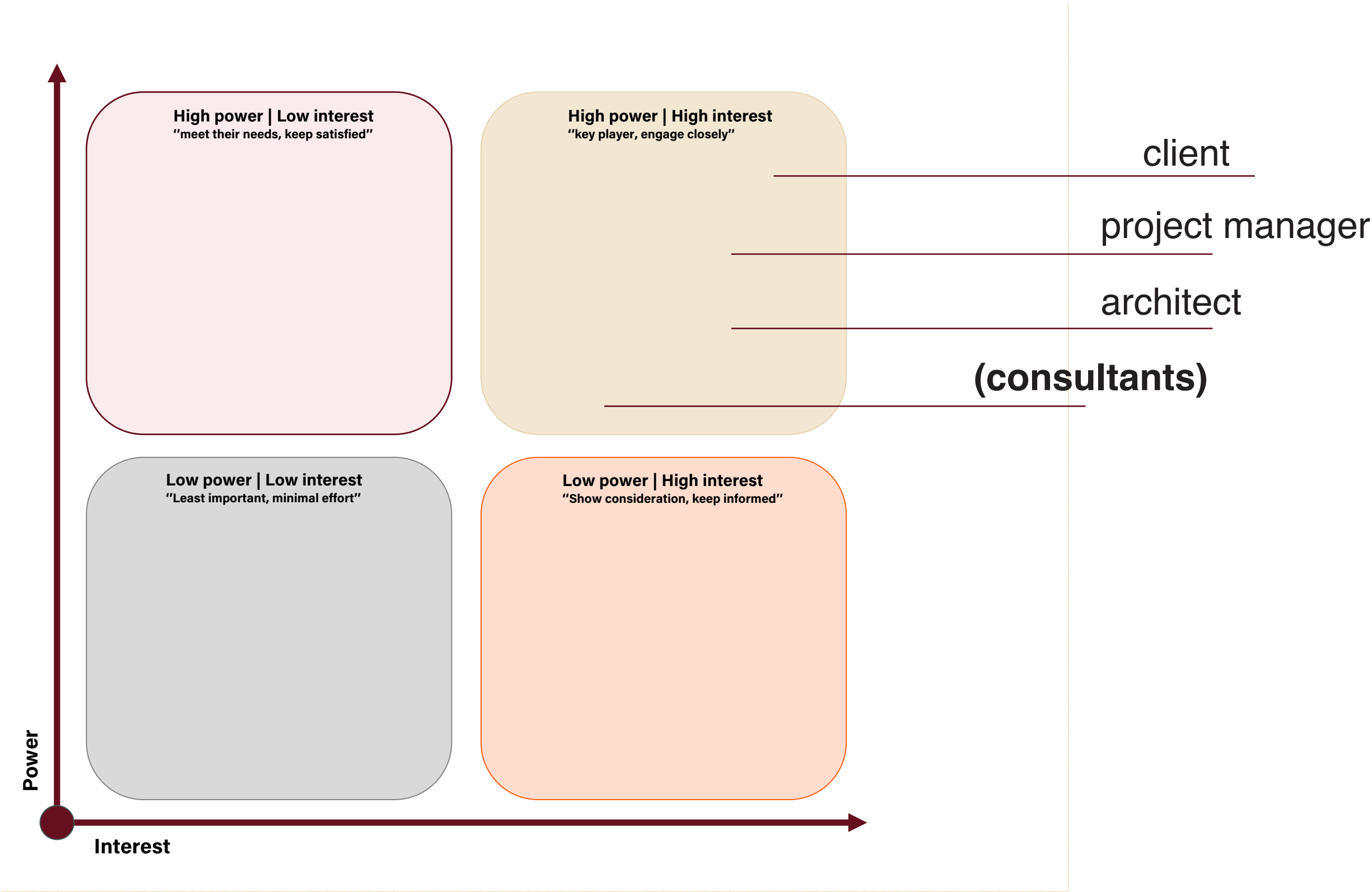
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- ii.
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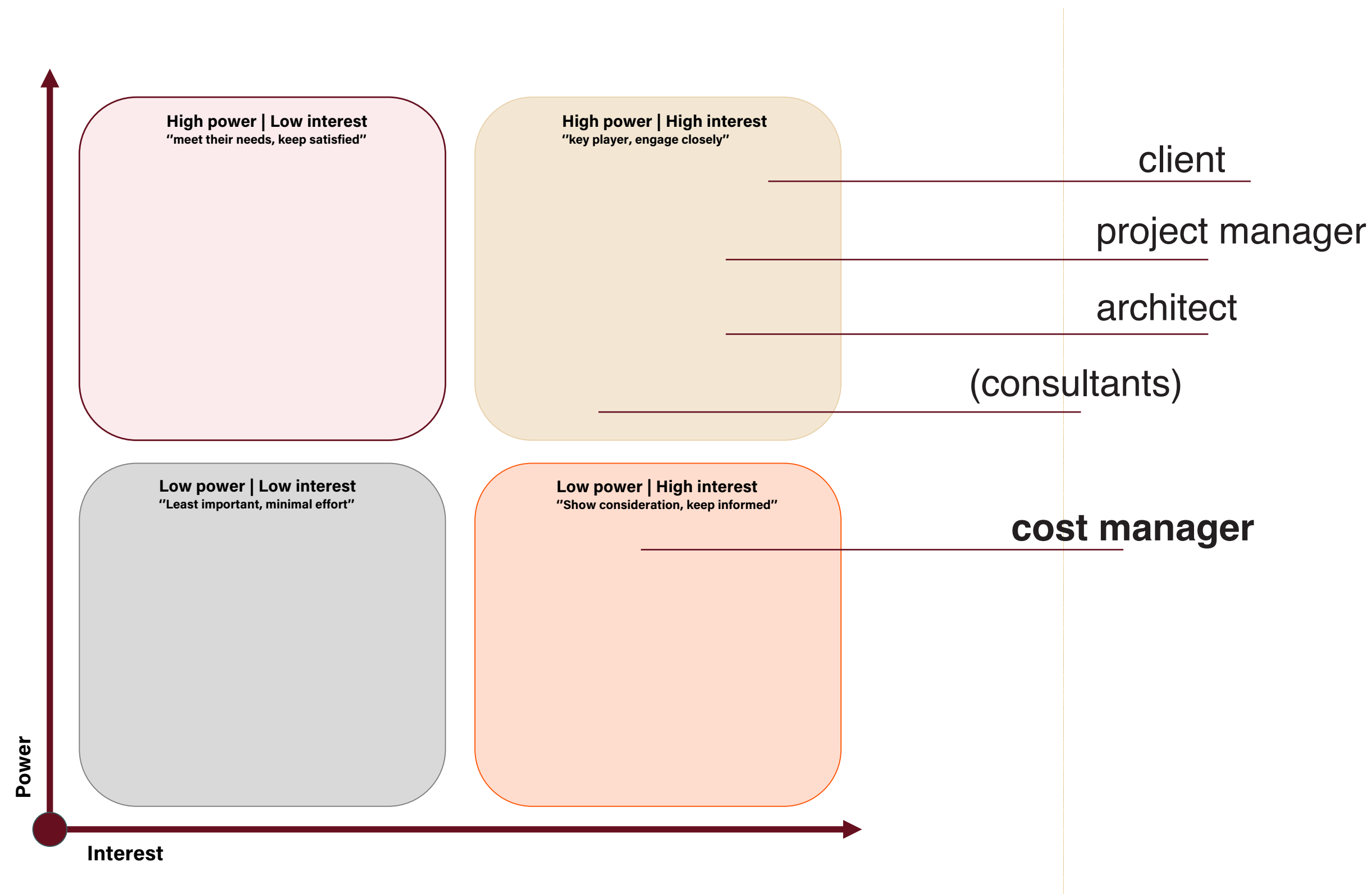
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FINDINGS | STAKEHOLDER INFLUENCE

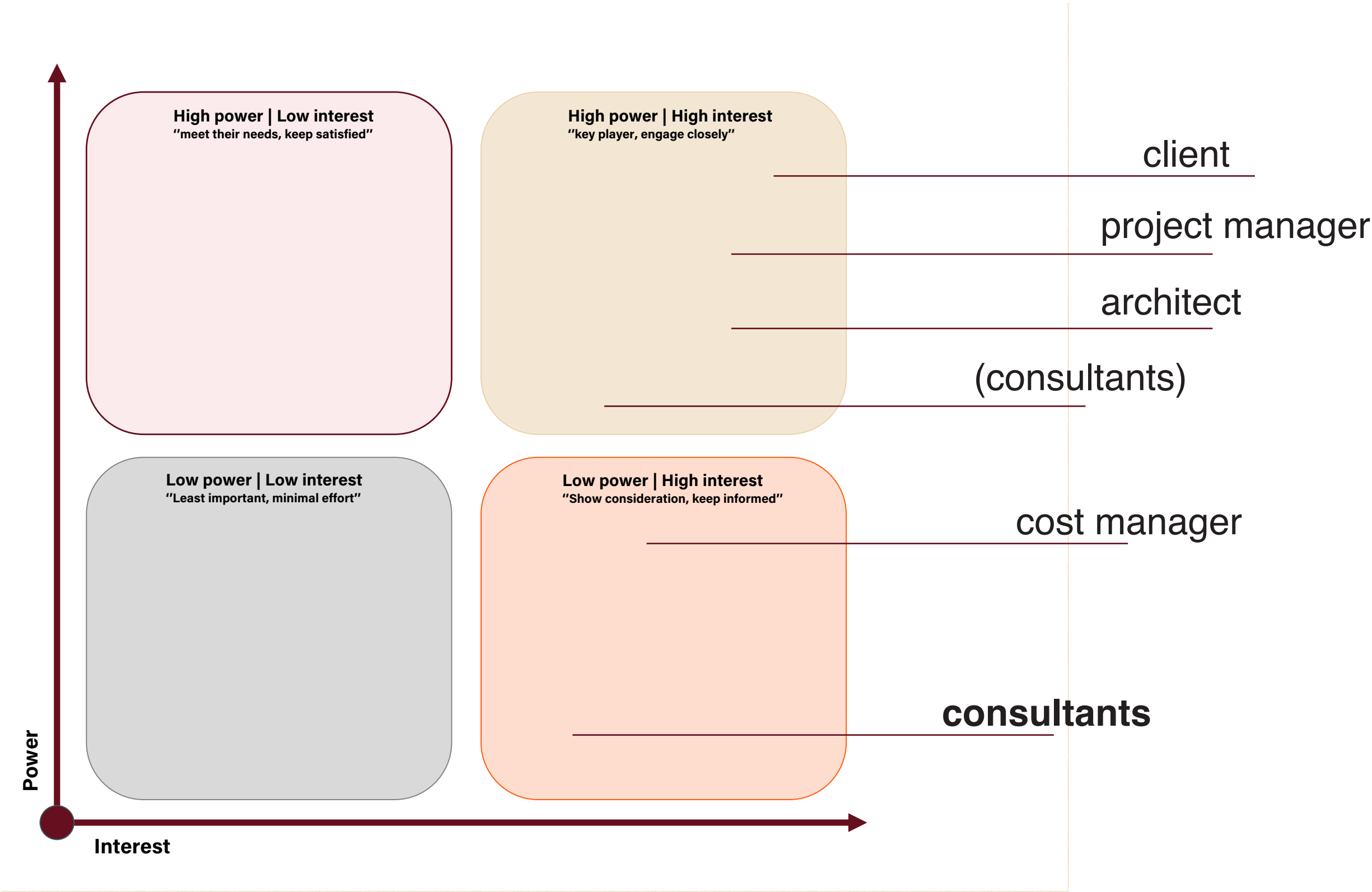
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i. Which project management stakeholders are involved in the decision-making processes and who affects the outcomes the most?



i.

ii.

iii. Explorative interviews

iv.

v.

FINDINGS I STAKEHOLDER INFLUENCE

POWER DETERMINED BY PROCESSES

i.

ii.

iii. Explorative interviews

iv.

v.

FINDINGS I STAKEHOLDER INFLUENCE

POWER DETERMINED BY PROCESSES

Case A

client develops strategy

design developed by architect with consultants

client has effective and close design governance via control documents

FINDINGS I STAKEHOLDER INFLUENCE

POWER DETERMINED BY PROCESSES

Case A

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extensive design knowledge and close design check: high ambitions

FINDINGS I STAKEHOLDER INFLUENCE

POWER DETERMINED BY PROCESSES

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Case B

architect team develops both strategy and design

process governance via project manager

client only involved when 'large' decisions needs to be made

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fragmented design strategies, opportunities, and ambitions

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Case C

client develops strategy
design developed by architect with involvement of the project manager
client gives high authority to project manager to even make decisions

FINDINGS I STAKEHOLDER INFLUENCE

POWER DETERMINED BY PROCESSES

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Case C

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design developed by architect with involvement of the project manager
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lack of circuler expertise client and pm results in decrease creativity

v.

iv.

iii. Discussion

ii.

i.

DISCUSSION

IMPACT OF INFORMAL STAKEHOLDERS

DISCUSSION

IMPACT OF INFORMAL STAKEHOLDERS

formal stakeholders

make final project decisions for the development of constructions

Project management stakeholders	
Demand (formal)	Supply (informal)
Client	Architect
Project manager	Designers
	Engineers
	Contractor(s)
	Cost manager
	Other consultants

informal stakeholders

offer information to enhance the other members' decision-making processes

DISCUSSION

IMPACT OF INFORMAL STAKEHOLDERS

have significant influences over the circular outcomes of projects
cost manager, architect, and some consultants

formal stakeholders

make final project decisions for the development of constructions

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	Engineers
	Contractor(s)
	Other consultants

informal stakeholders

offer information to enhance the other members' decision-making processes

i.

ii.

iii. Explorative interviews

iv.

v.

FINDINGS I DECISION-MAKING PROCESSES
















ii. How do decision-making processes currently operate between these project management stakeholders?

PROJECT AMBITIONS

FINDINGS I DECISION-MAKING PROCESSES

ii. How do decision-making processes currently operate between these project management stakeholders?

PROJECT AMBITIONS

Case A	<div></div> <div>1. Functionality</div>	<div></div> <div>2. Financial</div>	<div></div> <div>3. Planning</div>	<div></div> <div>4. Quality</div>	<div></div> <div>5. Circularity + sustainability</div>
Case B	<div></div> <div>1. Financial</div>	<div></div> <div>2. Architecture</div>	<div></div> <div>3. Planning</div>	<div></div> <div>4. Function</div>	<div></div> <div>5. Circularity + sustainability</div>
Case C	<div></div> <div>1. Quality</div>	<div></div> <div>2. Architecture</div>	<div></div> <div>3. Planning</div>	<div></div> <div>4. Circularity + sustainability</div>	<div></div> <div>5. Financial</div>

DISCUSSION

LOW CIRCULAR COMMITMENT PRIVATE ORGANIZATIONS

only willing to incorporate circular building decisions if it has a financial advantage

to move they need governmental ‘forces’

i.

ii.

iii. Explorative interviews

iv.

v.

FINDINGS I DECISION-MAKING PROCESSES

ii. Why are non circular decisions chosen instead of circular ones?

FINDINGS I DECISION-MAKING PROCESSES

ii. Why are non circular decisions chosen instead of circular ones?

7 in conflict with the desired architecture and aesthetic

3 in conflict with the technical requirements

3 in conflict with the budget

2 in conflict with the safety measurements

2 in conflict with the desired functionality of the building

1 in conflict with the planning

1 required more stakeholders workload time

v.

iv.

iii. Explorative interviews

ii.

i.

HOWEVER...

i.

ii.

iii. Explorative interviews

iv.

v.

EFFECTIVE IMPLEMENTED INCENTIVES

drive and exert pressure on project management stakeholders by
exercise control over design phases through regular reporting to the client

i.

ii.

iii. Explorative interviews

iv.

v.

EFFECTIVE IMPLEMENTED INCENTIVES

drive and exert pressure on project management stakeholders by
exercise control over design phases through regular reporting to the client

social pressure

i.

ii.

iii. Explorative interviews

iv.

v.

EFFECTIVE IMPLEMENTED INCENTIVES

drive and exert pressure on project management stakeholders by
exercise control over design phases through regular reporting to the client social pressure

**stimulate project stakeholders to create circular building opportunities by
incorporating a circular expert/ team during the design processes**

i.

ii.

iii. Explorative interviews

iv.

v.

EFFECTIVE IMPLEMENTED INCENTIVES

drive and exert pressure on project management stakeholders by
exercise control over design phases through regular reporting to the client

social pressure

stimulate project stakeholders to create circular building opportunities by
incorporating a circular expert/ team during the design processes

desire to proof

i.

ii.

iii. Explorative interviews

iv.

v.

EFFECTIVE IMPLEMENTED INCENTIVES

drive and exert pressure on project management stakeholders by
exercise control over design phases through regular reporting to the client

social pressure

stimulate project stakeholders to create circular building opportunities by
incorporating a circular expert/ team during the design processes

desire to proof

**Emphasize the financial advantage gained through
increased circular experiences compared to competitors**

i.

ii.

iii. Explorative interviews

iv.

v.

EFFECTIVE IMPLEMENTED INCENTIVES

drive and exert pressure on project management stakeholders by
exercise control over design phases through regular reporting to the client

social pressure

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Emphasize the financial advantage gained through increased circular experiences compared to competitors	marketing strategy
Encourage employees in the adoption of circular practices by providing public organizational recognition through “Employee of the Month,” attention, and merit awards	

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social recognition

iv. EMPIRICAL STUDY

validation and brainstorm

i.

ii.

iii.

iv. Brainstorm interviews V.

RESEARCH METHODS

Emperical study II **validation & brainstorm interviews**
exploring effective incentives
systemic design toolkit step 5 - 6

i.

ii.

iii.

iv. Brainstorm interviews V.

RESEARCH METHODS

Emperical study I validation & brainstorm interviews
exploring effective incentives
systemic design toolkit step 5 - 6

22 participants

i.

ii.

iii.

iv. Brainstorm interviews V.

INCENTIVE SCHEME



i.

ii.

iii.

iv. Brainstorm interviews V.

INCENTIVE SCHEME

Incentives		
FINANCIAL	SOCIAL	MORAL
Financial bonus: via a set percentage of higher circular ambitions are achieved or increased project participation		
Financial penalty: if circular regulations and/or targets are not met		
Financial governmental help: via subsidies and/or tax breaks		
Marketing strategy: leverage circular expertise as a marketing strategy to secure additional projects		
Reciprocal: attain future alliances or win-win deals through the achievement of additional circular targets		
Contractual: develop contractual agreements which highlights the circular targets, ambitions, and benchmarks		

i.

ii.

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INCENTIVE SCHEME

Incentives		
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Financial bonus: via a set percentage of higher circular ambitions are achieved or increased project participation	Promotion: receive social recognition for implementing circular building ideas	
Financial penalty: if circular regulations and/or targets are not met	Social warranty: developing a culture in which everyone becomes socially accountable	
Financial governmental help: via subsidies and/or tax breaks	Social pressure: Actively communicate the supporters of each project decision and provide underlying justifications	
Marketing strategy: leverage circular expertise as a marketing strategy to secure additional projects	Desire to proof: add a circular expert, organize circular rehearsals, or use a competitive tendering procedure	
Reciprocal: attain future alliances or win-win deals through the achievement of additional circular targets	Reputational value: give organizational recognition or publicity acknowledgements during project meetings	
Contractual: develop contractual agreements which highlights the circular targets, ambitions, and benchmarks	Lacking behind: develop an organizational circular culture via trainings, seminars, lectures etc.	
	Actively monitoring: discuss quarterly design reports and actively monitor and evaluate the decision-making processes	

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INCENTIVE SCHEME

Incentives		
FINANCIAL	SOCIAL	MORAL
Financial bonus: via a set percentage of higher circular ambitions are achieved or increased project participation	Promotion: receive social recognition for implementing circular building ideas	Self-justification: attend workshops on the negative effects of linear building methods
Financial penalty: if circular regulations and/or targets are not met	Social warranty: developing a culture in which everyone becomes socially accountable	Self-interest: have innovation or brainstorm days with the project management team
Financial governmental help: via subsidies and/or tax breaks	Social pressure: Actively communicate the supporters of each project decision and provide underlying justifications	Self-transcendent: start believing that the circular built environment is the new "norm"
Marketing strategy: leverage circular expertise as a marketing strategy to secure additional projects	Desire to proof: add a circular expert, organize circular rehearsals, or use a competitive tendering procedure	Intrinsic motivation: focus on the positive environmental impact of circular building decisions
Reciprocal: attain future alliances or win-win deals through the achievement of additional circular targets	Reputational value: give organizational recognition or publicity acknowledgements during project meetings	
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i.

iii.

iii.

iv. Brainstorm interviews

USERS / STAKEHOLDERS / AUDIENCES

SANKEY

Supplied by

EU Union

Government

Organization

Client

Circular expert

Project management stakeholder(s)

Project manager

Targeted on

Client

Employees within organization

Project management stakeholder(s)

Stakeholders' organizations
Architectural firm

Project manager

Project management team

i.

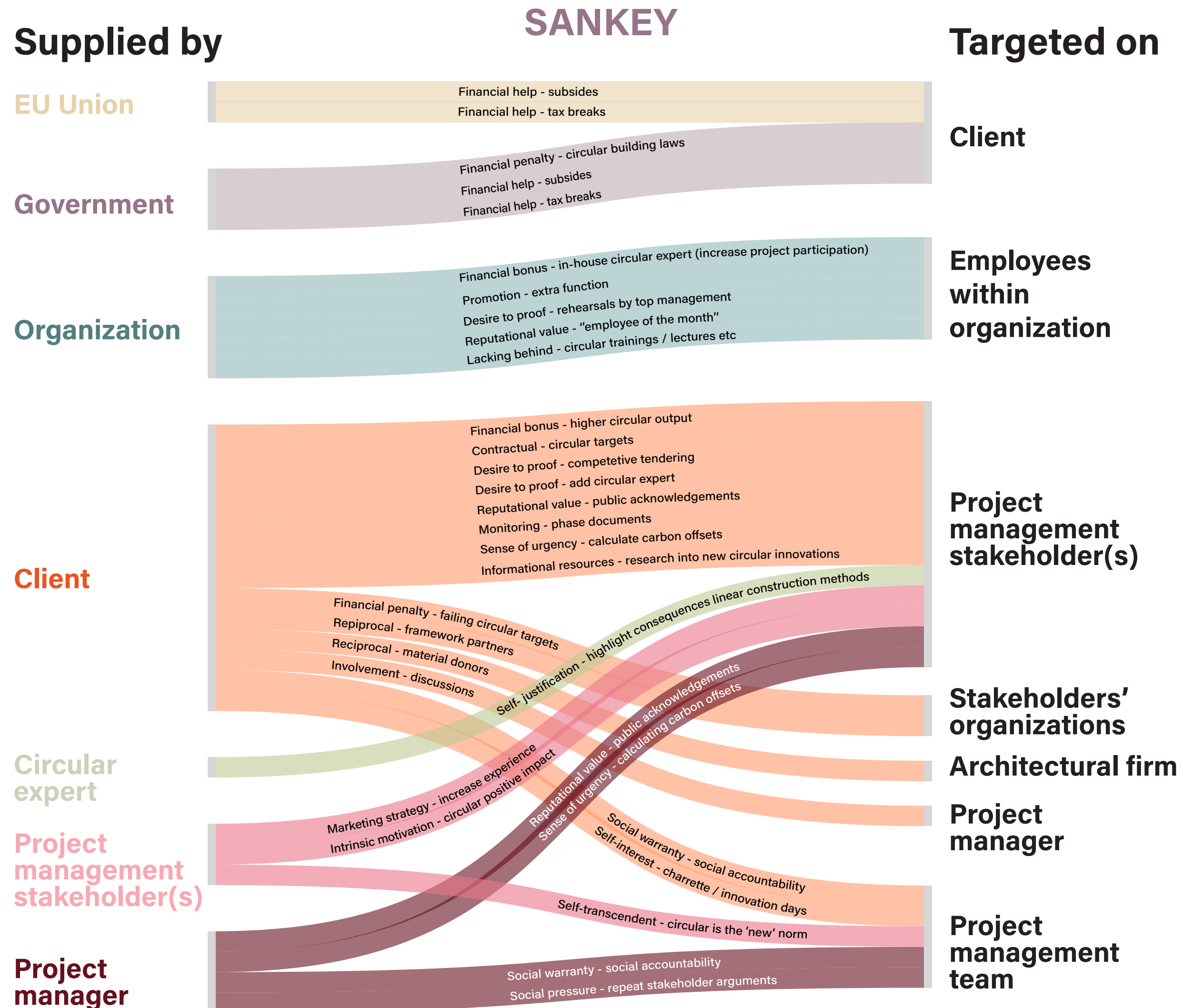
ii.

iii.

iv. Brainstorm interviews

v.

USERS / STAKEHOLDERS / AUDIENCES



v. CONCLUSION

i.

ii.

iii.

iv.

v.

CONCLUSION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

CONCLUSION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

this research supports that the effective use of incentives can positively influence the decision-making processes of project management stakeholders

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iii.

iv.

v.

CONCLUSION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

nonetheless...

CONCLUSION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

- i. proper supplying and targeting is essential to achieve desired effect

i.

ii.

iii.

iv.

v. Conclusion

CONCLUSION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

- i. proper supplying and targeting is essential to achieve desired effect
- ii. align with reasoning to reject circular building decision

i.

ii.

iii.

iv.

V. Conclusion

CONCLUSION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

i. proper supplying and targeting is essential to achieve desired effect

ii. align with reasoning to reject circular building decision

in conflict with budget

financial incentives

in conflict with architecture, aesthetics

**self-interest, self-justification
marketing strategies**

requires extra time/ effort

social recognition

i.

ii.

iii.

iv.

V. Conclusion

CONCLUSION

How can incentives be an effective method for the pro-circular strategic decision-making processes of project management stakeholders?

- i. proper supplying and targeting is essential to achieve desired effect
- ii. align with reasoning to reject circular building decision

Additionally, consider the power dynamics and influence ability

RECOMMENDATIONS

FOR PRACTICE

- i. educate project management stakeholders
- ii. visit reference projects
- iii. offer clients comprehensive information about the circular economy
- iv. use a competitive tendering procedure with circular requirements
- v. add extra design phase “opportunity framing”

RECOMMENDATIONS

FOR FUTURE RESEARCH

- i. the role of the contractor
- ii. contract type
- iii. effects, risks and outcomes of the incentives identified in this research
- iv. use a competitive tendering procedure with circular requirements
- v. long-term behavioral change towards circular decision-making processes

*“Circulaire economie vraagt een daadwerkelijk echte toepassing van **circulaire economie**. En dit vraagt naar een gedragsverandering en die **gedragsverandering** komt niet op het moment dat men blijft zeggen:*

“Ja, Ik wil gewoon alles kunnen blijven doen en realiseren, zoals we dat nu ook al doen (op het gebied van architectuur, comfort, planning, kosten en functionaliteit), alleen dan op een circulaire manier.

*Dat is gewoon vragen naar een soort **magie**.”*

THE CIRCULAR INFLUENCER

A research into the impact of incentives in the circular strategic decision-making processes within project management stakeholders

