Unraveling the governance of purpose-oriented collaborative networks for tackling grand challenges in the construction industry

Soltani, P.; Hermans, M.H.; Straub, A.

Publication date
2023

Document Version
Final published version

Citation (APA)
Soltani, P., Hermans, M. H., & Straub, A. (2023). *Unraveling the governance of purpose-oriented collaborative networks for tackling grand challenges in the construction industry*. Paper presented at 39th Annual ARCOM Conference
, Leeds, United Kingdom.

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

UNRAVELLING THE GOVERNANCE OF PURPOSE-ORIENTED COLLABORATIVE NETWORKS FOR TACKLING GRAND CHALLENGES IN THE CONSTRUCTION INDUSTRY

Pedram Soltani[1], Ad Straub and Marleen Hermans

Department Management in the Built Environment, Delft University of Technology, Julianalaan 134, Delft, 2628BL, the Netherlands

Purpose-oriented collaborative networks are a potential effective inter-organisational form to define and implement solutions for grand challenges in the construction industry. The governance of such networks must be designed ex-ante and adapted over time by considering the nature of grand challenges around which they are set up. Currently, there is limited understanding of the governance requirements resulting from different analytical dimensions of grand challenges. This study identifies these requirements through a review of grand challenge, wicked problem, and network governance literature. Based on the examination of three grand challenge characteristics (i.e., dynamic complexity, knowledge uncertainty and conflict), we present an overview of requirements across five governance dimensions (i.e., goal-setting, capability building, coordination, roles and decision-making, and monitoring and evaluation). This overview can be used to: (i) guide the formation and implementation of collaborative networks; (ii) explore to what extent the governance structure and processes of existing networks are organised from a problem-based perspective.

Keywords: grand challenges; collaborative networks; governance; requirement

INTRODUCTION

The terms "grand challenges" and "(super) wicked problems" have gained prominence in academia and practice to refer to urgent policy issues faced by our societies, such as climate change, resource scarcity and poverty (Brammer *et al.,* 2019; Rittel and Weber, 1973). These challenges call for fundamental social, technological, economic, institutional, and organisational change of different societal sub-systems, including the built environment and the construction industry (Hölscher, Wittmayer and Loorbach, 2018; Wanzenböck *et al.,* 2020). The built environment is "the manmade surroundings that provide the setting for human activity" and constitutes both buildings and infrastructure (Moffatt and Kohler, 2008, 249). Grand challenges surpass the competences, resources, and boundaries of individual organisations, requiring coordinated efforts from multiple and diverse actors toward a clearly articulated purpose (George *et al.,* 2016; Raab, 2022).

Various international policy frameworks, such as the UN 2030 Agenda for Sustainable Development and the European Green deal, refer to the construction industry as a contributing factor to grand challenges and an essential domain in which potential

[1] p.soltani@tudelft.nl

This paper was presented as a working paper at the ARCOM 2023 Conference, University of Leeds, Leeds, UK, 4-6 September 2023. Please contact the authors before citing.

solutions must be identified and implemented (Fei *et al.,* 2021). Public clients have been identified as an important actor for driving the necessary change in the construction industry, because of their active role in shaping the construction process and the final products (Hartmann *et al.,* 2008). As public sector organisations, clients have the social responsibility, legal mandate, and organisational objective to deliver public values and services in the built environment (Hermans, 2014; Kuitert *et al.,* 2019). There is a growing awareness in the public administrative and consulting practice that grand challenges impose new requirements on the internal structures and systems of public client organisations and how they interact with private and non-profit actors to tackle these problems (Head and Alford, 2015; Leendertse, 2016; Hermans, 2014; Pop, 2020).

Public administration and management literature indicate that public clients can potentially tackle grand challenges effectively through the formation and implementation of purpose-oriented collaborative networks (Dentoni *et al.,* 2018; Head and Alford, 2015; Raab, 2022). By bringing together actors across the public, private and/or non-profit sector, such networks allow for the pooling of fragmented and local knowledge, resources, and capabilities necessary to understand the nature and causes of grand challenges, identify, and agree upon provisional solutions and facilitate the implementation of those solutions (Bryson *et al.,* 2015; Head and Alford, 2015; Quayle, 2018). Furthermore, these networks can facilitate information exchange, knowledge sharing and creation, and learning opportunities necessary for innovative solutions to tackle grand challenges (Daviter, 2017).

Despite their potential, collaborative purpose-oriented networks are not a panacea. They require more resources, effort and coordination by the actors involved compared to markets and hierarchies (Head and Alford, 2015; Raab, 2022). Engaging multiple actors from different institutional contexts, sectors and organisational cultures with diverse interests, goals, values, and power adds complexity to the problem situation and makes collaborative networks conflict-laden (Bryson *et al.,* 2015; Raab, 2022). Furthermore, the governance of collaborative networks may not be suitable to the nature of the grand challenge they seek to address (Alford and Head, 2017; Dentoni *et al.,* 2018). Consequently, collaborative networks may experience collaborative inertia, i.e., slow progress or terminate without triggering systemic change and achieving tangible outcomes (Dentoni *et al.,* 2018; Huxham and Vangen, 2004).

With this paper, we aim to contribute to the debate on how purpose-oriented collaborative networks can help tackling grand challenges in the construction industry. In doing so, we respond to the calls of Seelos, Mair and Traeger (2021) and Termeer *et al.,* (2019) to move beyond the labelling of phenomena as ‘grand challenges’ for rhetorical purposes and to use the concept in an analytically more precise way by identifying underlying dimensions. We are specifically interested in the identification of requirements for the governance of purpose-oriented collaborative networks from a grand challenge perspective, which is currently an underexplored topic in the literature (Alford and Head, 2017; Dentoni *et al.,* 2018). To achieve our aim, we present an overview of requirements in this paper that can be used to assess to: (i) guide the formation and implementation of collaborative networks; (ii) explore to what extent the governance structure and processes of existing networks are organised from a problem-based perspective. The guiding research question is: What requirements can be derived from the underlying dimensions of grand challenges for the governance of purpose-oriented collaborative networks in the construction industry?

METHOD

To address the research question, we conducted a literature review in a four-step approach. In the first stage, we identified papers on grand challenges and wicked problems that explicitly distinguish and discuss different characteristics of these problem classes. For the scope of this paper, we selected the three most frequently mentioned characteristics for further examination. In the second stage, we identified papers that conceptualise purpose-oriented collaborative networks and operationalise their governance across different dimensions. In the third stage, we identified papers that discuss approaches towards dealing with different characteristics of grand challenges in the public policy domain and in the context of collaborative networks. In the fourth stage, we clustered the approaches for dealing with different characteristics of grand challenges (i.e., governance requirements) (stage 3) across the governance dimensions of purpose-oriented collaborative networks (stage 2) based on their thematic resemblance. The resulting overview includes specific indicators reflecting whether and how the collaborative network fulfils the specific governance requirement derived from a grand challenge dimension. These indicators are based on a synthesis of the literature.

Scopus was used as the main database for the literature search. Keywords were searched for in the article title and abstract. The literature search encompassed English language peer-reviewed journal papers, scholarly books, and doctoral dissertations during the period 1970 - 2022. The keywords used were grand challenges, wicked problems, characteristics, dimensions, network governance and collaborative project delivery. The first search returned a total of 1281 research papers. From this, we read the abstracts to determine whether their content fell within the defined scope. On completing this process, we identified a total of 30 papers that were considered relevant for our analysis.

FINDINGS

Understanding the Nature of Grand Challenges

To understand how collaborative purpose-oriented networks could deal with the nature of grand challenges, we first review the concept of grand challenges. There is no consensus regarding precisely what constitutes a complex grand challenge (Brammer *et al.,* 2019). The notion has been conceptualised and operationalised heterogeneously by scholars using different theoretical concepts including 'grand societal challenges', '(super) wicked problems' (Pop, 2020). This has resulted in the conflation of different types of phenomena, levels of analysis and scales/scopes of issues (Brammer *et al.,* 2019; Termeer *et al.,* 2019; Pop, 2020). Our focus is on what Brammer *et al.,* (2019) refer to as complex grand challenges: problems that are ''national or subnational in their scale and scope but relatively broad and complex in relation to the communities of stakeholders; the scientific, economic, and environmental issues encompassed; and the complexity and multiple logics at play.'' (p.525). The three most frequently mentioned dimensions in the literature include: dynamic complexity, uncertainty, and conflict.

Dynamic complexity

Grand challenges are complex in terms of the number of interrelated technical and social (sub)-systems that interact with each other and evolve unpredictable over time through non-linear dynamics (Alford and Head, 2017; Bannink and Trommel, 2019; Dentoni *et al.,* 2018; Ferraro *et al.,* 2015; George *et al.,* 2016; Klijn and Koppenjan,

2016; Rittel and Weber, 1973). Grand challenges can be considered as a symptom or consequence of another challenge, i.e., they ‘’are entangled among each other in an ill-defined set of causes and effects.’’ (Rittel and Weber, 1973). Complex grand challenges have no stopping rule (Rittel and Weber, 1973). This means that the process of exploring and addressing the complex grand challenges ends in practice when actors have exhausted their resources into the process and not because the problem has been solved permanently (Dentoni *et al.,* 2018). Additional investment of effort could lead to better solutions (Rittel and Weber, 1973). Any response to a grand challenge fails to completely cover the entire problem and is therefore imperfect (Bannink and Trommel, 2019).

Uncertainty

Grand challenges are characterised by substantive and institutional uncertainty. Substantive uncertainty refers to the absence of complete data, information, and knowledge on the causes of grand challenges and the set of possible and desirable solutions and their effects (Alford and Head, 2017; Bannink and Trommel, 2019; Dentoni *et al.,* 2018; Dewulf and Biesbroek, 2018; Ferraro *et al.,* 2015; Klijn and Koppenjan, 2016; Rittel and Webber, 1973). There is neither a definitive formulation of a complex grand challenge nor an exhaustively describable set of potential solutions (Rittel and Weber, 1973). Consequently, sudden changes, surprises and irreducible uncertainties are fundamental aspects of complex grand challenges (Termeer *et al.,* 2015).

Institutional uncertainty refers to uncertainty about the formal and informal rules of the game that apply in a purpose-oriented collaborative network to address grand challenges (Dewulf and Biesbroek, 2018). Institutions are ‘’systems of rules that structure the course of actions that a set of actors may choose.’’ (Scharpf, 1997, 40). Formal rules are described and made explicit in written texts, such as contracts and plans. Informal rules are more difficult to pin down and are hardly made explicit. They refer to shared logics between actors about what counts as appropriate or inappropriate behavior in their relationship and how certain work is conducted (Dewulf and Biesbroek, 2018)

Conflict

Actors influenced by and willing to tackle grand challenges come from different sectoral, cultural, and ideological backgrounds and therefore have divergent characteristics, interests, goals, values, criteria of worth, frames, preferences, and motivations (Alford and Head, 2017; Bannink and Trommel, 2019; Dentoni *et al.,* 2018; Dewulf and Bieisbroek, 2018; Ferraro *et al.,* 2015; George *et al.,* 2016; Klijn and Koppenjan, 2016). Framing is the process by which actors assign different meanings to problems and events from diverse perspectives, based on their background, position and the interactional setting in which they operate (Schön and Rein, 1994; Termeer *et al.,* 2015).

Due to frame differences, actors may disagree about what the core problem is, and potential solutions should be (Ferraro *et al.,* 2015; Dentoni *et al.,* 2018). Divergent frames and other actor differences can lead to misunderstandings, disagreement, stagnation, and conflict between actors in a purpose-oriented collaborative network (Termeer *et al.,* 2015). Furthermore, stakeholders may oppose complex grand challenges by undermining its foundational claims or responses towards resolving the problems (Brammer *et al.,* 2019).

Understanding the Governance of Purpose-Oriented Collaborative Networks

A purpose-oriented network is "a network comprised of three or more autonomous actors who participate in a joint effort based on a common purpose.'' (Carboni *et al.,* 2019, 210). What makes collaboration in these networks distinct from cooperation and coordination is that actors have relationships of reciprocal interdependence in which they help each other voluntarily, i.e., take over some of the agreed-on tasks of other actors, to achieve collective and/or one or more of their private goals under the common purpose (Castañer and Oliveira, 2020). The governance of these networks refers to ''the design and use of a structure and processes that enable actors to direct, coordinate, and allocate resources for the collaboration as a whole and to account for its activities" (Vangen, Hayes and Cornfort, 2015, 1246).

Kujala *et al.,* (2021) synthesizes concrete governance dimensions for project networks, which are a subset of purpose-oriented networks that exist in the construction industry. Their governance dimensions that are considered in this study include: goal setting, capability building, coordination, roles, and decision-making, and monitoring and evaluation.

Goal setting refers to the development of a common purpose and shared performance goals for the network that are understood by all involved actors (Carboni *et al.,* 2019; Kujala *et al.,* 2021). Purpose is a ''collective cognitive construct to close the gap between an observed and a desired condition or satisfy the unrealised needs.'' (Carboni *et al.,* 2019, 212). Coordination aligns the behaviour of network actors, so they can work together in an effective way (Kujala *et al.,* 2021). Capability building ensures that the right network actors are selected to achieve the purpose and network goals, through procurement procedures and appropriate selection criteria (Austin and Seitanidi, 2012; Kujala *et al.,* 2021; Pauna *et al.,* 2021). Beyond procurement, capability building includes the systematic training and continuous learning of network actors (Kujala *et al.,* 2021; Pauna *et al.,* 2021). Capability building partly determines the governance structure of the collaborative network, which refers to ''the totality of network actors and their formal interconnections for the purpose of the collaboration (Vangen *et al.,* 2015, 1246). Roles and decision-making refer to the authority assignments for each network actor, the deliverables expected of them, the lines of communication and the decision-making procedures (DeFillippi and Sydow, 2016; Kujala *et al.,* 2021). Monitoring and evaluation are conducted to assess the progress of the joint effort, the achievement of the purpose and goals, and facilitate performance-based rewarding (Kujala *et al.,* 2021; van Tulder *et al.,* 2016).

Key Governance Requirements for Dealing with Grand Challenge Characteristics

This section discusses the key governance capabilities, concerted strategies and management mode identified in the literature for dealing with the three grand challenge characteristics. We refer to the capabilities, strategies, and management mode collectively as governance requirements. The requirements are presented per grand challenge characteristic, with each requirement being annotated in parentheses to indicate its specific relation to the governance dimensions proposed by Kujala *et al.,* (2021).

Termeer *et al.,* (2015) refer to the notion of governance capability as: ''the ability of policy makers to observe wicked problems and to act accordingly, and the ability of the governance system to enable such observing and acting.'' (p.680). In the context of this study, a governance capability refers to the ability of collaborative network

actors to observe grand challenge characteristics and to act accordingly, and the ability of the governance structures and processes to enable such observing and acting. Concerted strategies are ‘’how to do’’ action strategies that network actors can choose to address uncertainties in coordination with others (Dewulf and Biesbroek, 2018). A management mode is a public management approach for dealing with grand challenges (Joosse and Teisman, 2021).

Dynamic complexity

A necessary condition for the emergence of a grand challenge is the articulation of a problem in a specific form (Brammer *et al.,* 2019). To deal with grand challenge complexity, network actors should first come to a shared analysis and scoping of the problem, operating context and relevant stakeholders being part of the problem and solutions (Req#1: goal setting) (van Tulder and Keen, 2016). Thereafter, the intended change of the network can be formulated in terms of the purpose and underlying goals. The network purpose and goals should target important societal problems and/or future societal needs, which require technological, institutional, and behavioural change (Req#2: goal setting) (Carboni *et al.,* 2019; Wanzenböck *et al.,* 2020). An example is the adoption of United Nations Sustainable Development Goals (SDGs), through which global needs can be translated into solutions (Fei *et al.,* 2021).

To deal with the interconnected, unpredictable, and dynamic nature of complexity, collaborative networks need to adapt flexibly to the changing flow of problem definitions, solutions and context conditions surrounding grand challenges (Dentoni *et al.,* 2018; Joosse and Teisman, 2020; Termeer *et al.,* 2015). These networks need to steer away from strictly bounded problems and solution, linear processes, and hierarchical relations, as these provide little flexibility when contextual conditions change (Joosse and Teisman, 2020). Termeer *et al.,* (2015) introduce the governance capability of resilience to adapt flexibly to change.

Resilience requires the presence of structures and processes for the joint monitoring and (re-)assessment of (re-)emerging issues within and outside the collaborative network (Req#3: coordination, monitoring and evaluation) (Dentoni *et al.,* 2018; Termeer *et al.,* 2015). The governance structures and processes should be adjusted accordingly according to the nature of the issue (Req#4: all governance dimensions) (Dentoni *et al.,* 2018; Termeer *et al.,* 2015) The monitoring of emerging issues includes a learning component to feedback new insights to the collaborative network (Req#5: monitoring and evaluation) (Dentoni *et al.,* 2018). Emerging issues are explored and framed from different perspectives based on the participation of diverse actors, leading to continuous knowledge co-production (Req#6: coordination) (Dentoni *et al.,* 2018)

Resilience requires a culture that tolerates unpredictable change, encourages actors to continuously reflect on their daily practices and facilitates learning-by-doing through the parallel implementation and evaluation of actions (Req#7&#8: coordination; Req#9: capability building) (Dentoni *et al.,* 2018; Bannink and Trommel, 2019; Termeer *et al.,* 2015). It can be enabled through the interaction and learning of actors across different levels, and the design of robust solutions that are functional under different scenarios or can be adjusted as needed (Req#10: coordination; Req#11: capability building; Req#12: goal setting) (Termeer *et al.,* 2015). Work division flexibility and decentralisation of decision-making authority are also noted as measures to enhance the flexibility of collaborative networks (Req #13 and #14: roles and decision-making**)** (Lahdenperä, 2017; Termeer *et al.,* 2015).

Joosse and Teisman (2020) introduce the management mode of complexification to deal with dynamic complexity, which is an approach that mirrors the complexity of the grand challenge in the structure, content, and process of the collaborative network. Complexification increases the scope of possibilities and creates favourable conditions for change. It can have the form of introducing new or non-traditional actors who can support change (Req #15: governance structure), the combination and integration of different problems and solutions (Req#16: goal setting) and the replacement of linear processes by non-linear and adaptive ways of working (Req #17: coordination) (Joosse and Teisman, 2020). In line with the complexification of the governance structure, Ferraro *et al.,* (2015) argue for a participatory architecture to tackle grand challenges organisationally: "a structure and rules of engagement that allow diverse and heterogeneous actors to interact constructively over prolonged timespans." (Req#15: governance structure) (Ferraro *et al.,* 2015, 373).

Uncertainty

Substantive and institutional uncertainty can be dealt with through different concerted strategies (Dewulf and Biesbroek, 2018; Klijn and Koppenjan, 2016). Substantive uncertainty can be addressed by involving actors in the collaborative network who cut across different knowledge domains, information and knowledge sharing activities between them, and more coordinated activities like knowledge co-creation and joint fact finding (Req #18: governance structure; Req#19&#20: coordination) (Dewulf and Biesbroek, 2018; Dentoni *et al.,* 2018). Institutional uncertainty can be dealt with in two ways. First, legal experts can be involved in the network to build collective knowledge about the formal and informal rules (Req#21 capability building). Second, by the design of processes and introduction of norms for joint reflection about the rules in use (Req#22: coordination) (Dewulf and Biesbroek, 2018).

Conflict

The presence of different frames about the nature of the grand challenge or the potential solutions requires a combination of learning and negotiation strategies (Dewulf and Biesbroek, 2018). Termeer *et al.,* (2015) refer to the capability of network actors and the governance system to deal with different frames as reflexivity. From this perspective, it is important to include local knowledge of problems and consider other problem and solution definitions than those suggested by administrative reason only (Req#23: coordination) (Bannink and Trommel, 2019).

Reflexivity requires a culture that tolerates ambiguity and the individual skill to look at situations from different perspectives (Termeer *et al.,* 2015) (Req#24: coordination; Req#25: capability building). Furthermore, reflexivity can be enabled by an impartial process manager or facilitator who organises reflexive activities (Req#26: capability building) (Termeer *et al.,* 2015).

Termeer *et al.,* (2015) refer to the governance capability of revitalisation to unblock to unproductive patterns, such as conflicts, between network actors. To constructively deal with conflict, there should be a conflict resolution process that invites network actors to reflect on possible values and assumptions underlying the conflict (Req#27: coordination) (Dentoni *et al.,* 2018; Klijn and Koppenjan, 2016; Termeer *et al.,* 2015). The shared culture tolerates conflict and encourages reflectiveness (Req#28: coordination) (Termeer *et al.,* 2015). In addition to the enabling factors of reflexivity, revitalisation can also be achieved through an adjustment of governance structure and processes (Req 4: all governance dimensions). Examples include a change of network actors, goal setting and decision rules (Klijn and Koppenjan, 2016).

CONCLUSIONS

Our study has provided insight into the nature of grand challenges and the governance requirements for purpose-oriented collaborative networks to tackle these problems. As such, we contribute to the debate on how purpose-oriented collaborative networks can help tackling grand challenges. We present an overview of requirements based on the examination of three grand challenge characteristics (i.e., dynamic complexity, knowledge uncertainty, conflict) across five governance dimensions (goal setting, capability development, coordination, roles and decision-making and monitoring and evaluation). From a practitioners' perspective, this overview can be used to guide the formation of collaborative networks and to explore the extent to which the governance structure and processes of existing networks are organised from a problem-based perspective. Furthermore, application of this framework can provide insight in how and why the governance of collaborative networks changes over time from a life-cycle perspective.

Within the construction industry, this overview of requirements could be used to empirically investigate the problem-based nature of public-private collaborations, including project-, multi-project- and programmatic settings. The unit of analysis in the empirical application of the framework can be both the collaborative network core as well as the periphery. The core network actors include the public client and the consortium of main contractors or system integrators. They have the decision-making power for the key governance choices and possesses the knowledge, resources and capabilities that are critical for the achievement of the network purpose and goals. The network periphery actors carry out the subcontracting work and hold the resources that can be acquired through market transactions. Besides the focus on governance dimensions and requirements, the networks actors can also be asked about their perceptions of the grand challenge characteristics in particular contexts. To guide the empirical application of the overview, the governance requirements should be further operationalised into clear interview questions or survey items.

The nature of grand challenges suggests restraint in finding universal prescriptions on how to address them. The tackling of grand challenges cannot be achieved through a one-size-fits-all approach, as each grand challenge is unique and evolves over time. Therefore, the overview of requirements invites the study of the governance of collaborative networks in a grand challenge context from a contingency perspective. The characteristics of grand challenges should be considered on a continuum, to be able to distinguish grand challenges with different degrees of complexity, uncertainty, and conflict. This enables to study which governance requirements are relevant in different problem contexts and what the optimal mix of requirements is for specific contexts.

Another point of discussion is the question of whether the fulfilment of governance requirements enhances the effectiveness of purpose-oriented collaborative networks in tackling grand challenges. Grand challenge and wicked problem literature points towards the moderation of interventionistic ambitions and expectations of solving these challenges completely. Based on the nature of grand challenges, it is more reasonable to expect that collaborative networks can achieve small wins or incremental changes rather than radical ones. Considering the nature of grand challenges for the design and reorganisation of governance structure and processes is not sufficient for creating these small wins. Future research should for example focus on the intra-organisational dimension of enabling structures and processes of public

client organisations to tackle grand challenges. Moreover, we cannot claim that we obtained an exhaustive overview of governance requirements. Since we mostly focused on conceptual papers from wicked problem literature to derive these requirements, future research could focus on empirical studies from grand challenge literature.

REFERENCES

Alford, J and Head, B W (2017) Wicked and less wicked problems: a typology and a contingency framework, *Policy and Society*, **36**(3), 397-413.

Austin, J E and Seitanidi, M M (2012) Collaborative value creation: A review of partnering between nonprofits and businesses Part 2: Partnership processes and outcomes, *Nonprofit and Voluntary Sector Quarterly*, **41**(6), 929-968.

Bannink, D and Trommel, W (2019) Intelligent modes of imperfect governance, *Policy and Society*, **38**(2), 198-217.

Brammer, S, Branicki, L, Linnenluecke, M and Smith, T (2019) Grand challenges in management research: Attributes, achievements and advancement, *Australian Journal of Management*, **44**(4), 517-533.

Bryson, J M, Crosby, B C and Stone, M M (2015) Designing and implementing cross-sector collaborations: Needed and challenging, *Public Administration Review*, **75**(5), 647-663.

Carboni, J L, Saz-Carranza, A, Raab, J and Isett, K R (2019) Taking dimensions of purpose-oriented networks seriously, *Perspectives on Public Management and Governance*, **2**(3), 187-201.

Castañer, X and Oliveira, N (2020) Collaboration, coordination and cooperation among organisations: Establishing the distinctive meanings of these terms through a systematic literature review, *Journal of Management*, **46**(6), 965-1001.

Daviter, F (2017) Coping, taming or solving: Alternative approaches to the governance of wicked problems, *Policy Studies*, **38**(6), 571-588.

DeFillippi, R and Sydow, J (2016) Project networks: Governance choices and paradoxical tensions, *Project Management Journal*, **47**(5), 6-17.

Dentoni, D, Bitzer, V and Schouten, G (2018) Harnessing wicked problems in multi-stakeholder partnerships, *Journal of Business Ethics*, **150**, 333-356.

Dewulf, A and Biesbroek, R (2018) Nine lives of uncertainty in decision-making: strategies for dealing with uncertainty in environmental governance, *Policy and Society*, **37**(4), 441-458.

Fei, W, Opoku, A, Agyekum, K, Oppon, J A, Ahmed, V, Chen, C and Lok, K L (2021) The critical role of the construction industry in achieving the sustainable development goals (SDGs) Delivering projects for the common good, *Sustainability*, **13**(16), 9112.

Ferraro, F, Etzion, D and Gehman, J (2015) Tackling grand challenges pragmatically: Robust action revisited, *Organisation Studies*, **36**(3), 363-390.

George, G, Howard-Grenville, J, Joshi, A and Tihanyi, L (2016) Understanding and tackling societal grand challenges through management research, *Academy of Management Journal*, **59**(6), 1880-1895.

Head, B W and Alford, J (2015) Wicked problems: Implications for public policy and management, *Administration and Society*, **47**(6), 711-739.

Hölscher, K, Wittmayer, J M and Loorbach, D (2018) Transition versus transformation: What's the difference? *Environmental Innovation and Societal Transitions*, **27**, 1-3.

Joosse, H and Teisman, G (2021) Employing complexity: complexification management for locked issues, *Public Management Review*, **23**(6), 843-864.

Kuitert, L, Volker, L and Hermans, M H (2019) Taking on a wider view: public value interests of construction clients in a changing construction industry, *Construction Management and Economics*, **37**(5), 257-277.

Klijn, E H and Koppenjan, J (2016) The 11 shift toward network governance, *Theory and Practice of Public Sector Reform*, **27**, 158.

Kujala, J, Aaltonen, K, Gotcheva, N and Lahdenperä, P (2021) Dimensions of governance in interorganisational project networks, I*nternational Journal of Managing Projects in Business*, **14**(3), 625-651.

Leendertse, W, Arts, J, Verhees, F and Busscher, T (2016) Van project naar opgave Samenwerking als motor van de planning van infrastructuur en ruimte, *Bestuurskunde*, **70**(4), 70-81.

Moffatt, S and Kohler, N (2008) Conceptualising the built environment as a social-ecological system, *Building Research and Information*, **36**(3), 248-268.

Quayle, A, Grosvold, J and Chapple, L (2019) New modes of managing grand challenges: Cross-sector collaboration and the refugee crisis of the Asia Pacific, *Australian Journal of Management*, **44**(4), 665-686.

Pop, M (2020) *Organising Spaces for Inter-Organisational Strategising in the Context of Grand Challenges - The Case of Smart Cities*, PhD Thesis, Aarhus Unversity School of Business and Social Sciences.

Raab, J (2022) *Organisational Networks for Sustainable Development in Organising for Sustainable Development*, Abingdon: Routledge. 117-140

Rittel, H W and Webber, M M (1973) Dilemmas in a general theory of planning, *Policy Sciences*, **4**(2), 155-169.

Seelos, C, Mair, J and Traeger, C (2022) The future of grand challenges research: Retiring a hopeful concept and endorsing research principles, *International Journal of Management Reviews*, **25**(2), 251-269.

Termeer, C J, Dewulf, A, Breeman, G and Stiller, S J (2015) Governance capabilities for dealing wisely with wicked problems, *Administration and Society*, **47**(6), 680-710.

Termeer, C J, Dewulf, A and Biesbroek, R (2019) A critical assessment of the wicked problem concept: relevance and usefulness for policy science and practice, *Policy and Society*, **38**(2), 167-179.

Vangen, S, Hayes, J P and Cornforth, C (2015) Governing cross-sector, inter-organisational collaborations, *Public Management Review*, **17**(9), 1237-1260.

Wanzenböck, I, Wesseling, J H, Frenken, K, Hekkert, M P and Weber, K M (2020) A framework for mission-oriented innovation policy: Alternative pathways through the problem-solution space, *Science and Public Policy*, **47**(4), 474-489.