A learning journey

A study on the development of interactions, trust and learning in a global climate network

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Summary

Networks are currently widely used as a way of tackling complex societal problems. The Meshwork is a recently developed form of multi-actor network to tackle global societal problems. This study investigates the processes of initiation and development of the 2020 Climate Solutions Meshwork in order to elaborate on central concepts of network theory and network management in complex multi-actor networks. The focus lies especially on processes of trust and learning development, which are considered important concepts in existing network literature. Using participant surveys as well as semi-structured interviews and observations, this study describes the processes of construction and interaction in the Meshwork in its first six months.

Findings show that the initial face-to-face Meshwork sessions in Copenhagen in December 2009 – joining the political United Nations climate momentum – gave a significant boost in number of participants in the Meshwork as well a significant increase in trust according to a majority of participants. As well, certain forms of learning increased including social learning and problem analysis learning. Afterwards, despite a small increase in number of participants and online content, online interactions remained scarce with the exception of only a handful of small discussion groups. By then in spring 2010, network management had become very passive in fostering interactions online. Data from participants show a relation between decreased number of interactions, decreased levels of trust in network management and decreased levels of learning among participants. After the first half year, the 2020 Climate Solutions Meshwork did not become a 'lively' network.

This study shows that the development of trust and learning are prerequisites for the blossoming of a complex multi-actor network. Especially due to the voluntary and non-committal character of the Meshwork, fostering interactions by network management proved of major importance. However, due to passive online facilitation after Copenhagen, participants became passive as well. This lack of fostering interactions also led to lower levels of trust and learning among actors. In general, unclarity on the identity of the Meshwork as well as on interaction rules to abide by was widespread among participants. These findings imply that in complex multi-actor networks, based on voluntary interdependencies, continuous emphasis by network management is absolutely crucial. This emphasis includes clarifying constituting structures and rules as well as fostering interactions. By fostering interactions, network management can stimulate ongoing network activity as well as help to increase levels of trust and learning among participants.

Prologue

As a student of Public Administration and Organizational Sciences, studying complex societal problems where many actors are involved has always caught my attention. As hierarchical control mechanisms of government have gradually changed into various more intertwined, multi-actor collaboration practices in the realm of the public sector, the ways of organizing society have seen a significant shift in the past decades. One of the most rapidly increasing trends is the rise of different types of networks and partnerships to tackle complex problems.

Through my solid conviction to have a positive impact on society through my actions, my eye caught a potentially successful innovation in the realm of network practices: the Meshwork. Many questions arose when I first discussed matters with Meshwork management: questions I was happy to gain more insight in. The perceived need to be more reflective on processes in Meshworks convinced me to be able to contribute not only in a theoretical way, but to help elucidate practical issues.

I feel we live in an exciting but in a way also alarming time in which many intertwined complex problems are facing humanity – or in a way, are caused by humanity. The Center for Human Emergence (CHE), the organization that invented Meshworks, shares this vision and even strives to be "a new vehicle for initiating action for global transformation for the enrichment and wellbeing of all" (CHE Global, website, 2010). Various well-known politicians, scientists and business leaders have argued convincingly for the Meshwork approach. When reading the quote of Herman Wijffels, Chair of the Social and Economic Advisory Council to the Dutch government and Dutch representative to the World Bank below, I was excited to analyze Meshworks:

> *"The Meshwork process is one of the most hopeful innovations I have seen for dealing with the complex global challenges humanity is facing today. The combination of face-to-face collaboration processes with leading-edge online technology enables stakeholders to self-organize cross-sector rapidly and effectively for large-scale impact."*
>
> — Herman Wijffels (November 17th, 2009)

On my journey exploring the workings and context of Meshworking, I have received support from various people. First of all, I would like to thank my supervisor Prof. Eric Hans Klijn and my second supervisor Prof. Sandra Schruijer for their guidance and constructive and solid input. Additionally, I would like to thank Anne-Marie Voorhoeve and all interviewees and participants of the 2020 Climate Solutions Meshwork who took the effort to let me gain insight in their world. Lastly, I want to thank Ellen van Dongen who enabled me to come into contact with Meshwork members; Steven Aaij, for his help with quantitative analyses and Famke Weerts and Minouche Hermans for their firm belief in my capabilities throughout the years. However, I am fully responsible for all said in this thesis. Whenever questions or remarks arise, please feel free to contact me for further information.

Dominique Hermans, August 2010

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1. Introduction to the research

1.1 How to tackle complex global problems effectively?

"To cope with uncertainties, learning is essential. For envisioning a sustainable society, learning our way out may seem the only path. [...] This does not simply imply gathering and processing information, but also creating institutions that provide capacity for continuous, long-term conceptual learning."

[O'Toole, 2002: 20]

As the quote above emphasizes, organizing effectively towards tackling complex problems demands specific institutions. These institutions should be able to foster sustainable societies – a well-known topic these days. Current global problems including ensuring international safety, financial stability and climate stability are termed as "*global public goods*". Global public goods are characterized by their cross-country character and in order to address them effectively, worldwide involvement and action are needed (Scientific Council for Governmental Policy in the Netherlands (WRR), Jan. 2010). Ensuring climate stability is such a complex and multifaceted problem area with global consequences and interlocks with economic, public health and safety problems worldwide (Boolen and Van Humbeeck, 2002).

Hence, dealing with climate issues is a difficult endeavour. Building appropriate institutions to organize effectively with regard to climate issues needs special attention. For example, merely gathering more information on the topic is insufficient. With regard to climate issues, clarity and consensus lack in many ways, such as towards the specific nature of the problem, the degree of human influence on climate change as well as agreement on desired solutions and cost sharing. This results in a lack of clear authoritative knowledge to come to an unambiguous and solid problem statement. Secondly, complexity arises due to the large number of actors involved worldwide, each with its own opinions and interests. Additionally, the absence of strongly developed frameworks for cooperation at an international level fuel ambiguity with regard to problem solving in a structured way. Seen together, these factors leave open how to deal effectively with the problem of climate change itself.

Nonetheless, the need to act quickly upon climate issues is emphasized in most scientific prognoses (e.g. United Nations Intergovernmental Panel on Climate Change (IPCC), 2007). These prognoses emphasize the need to foster *collective action* of organizations, citizens and institutions worldwide. To come to collective action, many scientists state that traditional ways of organizing through hierarchical relationships do not suffice.

Most authors agree that highly complex problems require similarly complex ways to cope with them (Slaughter, 2004; Hibbert, Huxham and Smith Ring, 2008). In the absence of a stable environment, managing complexity involves handling a large number of actors, fostering cooperation between these actors, creating dialogues on various perceptions of problem definitions and solutions of actors and being aware of ambiguity on information sources on the nature and width of the problem (Klijn, 2008). Therefore, utilization of expertise, experience, knowledge and a broad basis of several actors are important (Van Twist et al., 2009), combining knowledge and resources (Agranoff and McGuire, 2003; Edelenbos and Klijn, 2007). All these elements of complexity demand a multifaceted organizational structure. *Networks* then come to the forefront as potential institutional arrangements (Koppenjan, De Bruijn and Kickert, 1993).

1.2 The 2020 Climate Solutions Meshwork: a new global network

A recently developed type of network, the Meshwork, is especially aimed to tackle large-scale and complex societal problems (Beck, 2007). Just recently, a Meshwork around global climate issues emerged: the *2020 Climate Solutions Meshwork*. This initiation was during the political momentum of the United Nations Climate Conference held in Copenhagen in December 2009. Next to the international political negotiations, this Meshwork was initiated at the simultaneously organized civil society summit in Copenhagen.

The intended impact of Meshworks is to have the potential through accelerating learning to for foster large-scale collaboration and tackle complex societal problems (Janse, 2009). However, the workings of these new global large-scale networks have not been studied often as of yet, especially when it regards interactions, trust and learning development (Cropper et al., 2008a). Trust and learning receive special attention in this study as network literature has extensively emphasized the role of these concepts on network development. However, further exploration of these concepts in empirical cases is needed, as consensus lacks towards their specific position and role in networks (Bachman and Zaheer, 2008).

This study aims to reduce these knowledge gaps on network development processes in Meshworks. The following central question will be studied:

How does the 2020 Climate Solutions Meshwork develop from a network perspective, specifically with regard to interactions, network management strategies and the development of trust and learning?

This study is one of the first scientific studies ever conducted on a Meshwork (following Brouwers, 2008; Schipper, 2009). As it concerns a new type of network, the main research focus is *explorative*. This explains the mainly descriptive character of the research question. (Sub questions will be defined in Chapter 4, paragraph 4.5).

The explorative character of the study is reflected in its general research aims towards understanding the process development of the 2020 Climate Solutions Meshwork and understanding the perceptions and meaning making processes of its participants. As this Meshwork has only recently been set up, it is currently most meaningful to study interaction processes and network development and leave analysis of outcomes to a later date.

1.3 Raison d'être of this study: goals and relevance

This explorative study aims to create improved understanding in scientific terms as well as meeting practical needs. Furthermore, it aims to examine personal goals, based on an experiential knowledge base of the researcher. These three types of goals – scientific, practical and personal – will be addressed in detail.

Scientific goals

Firstly, several knowledge gaps remain in the field of organizational studies which need to be addressed. Especially with regard to network literature, only few scientific studies have been conducted on global, large-scale cross-sector networks. So far, national, regional or local networks mainly functioned as center of attention (for an overview, see: Cropper et al., 2008a: 25). This study aims to add insight in the current global multi-actor network, the 2020 Climate Solutions Meshwork. It hereby makes this new type of network empirical and tangible. Outcomes of this study can moreover be used as modest explorative evidence to illustrate the workings of this type of network as well as to help elucidate its initiation phase and early development stages.

Additionally, two concepts used to gain insight in network processes, trust and learning, are in need of further exploration as many contradictory approaches exist towards their position and role as predictor, process characteristic or outcome of networks (Bachman and Zaheer, 2008). The case under study can enlighten trust development among actors and between actors and the Meshwork management team. Trust is of special importance to be analyzed due to the large-scale and voluntary character of the Meshwork resulting in a complex and uncertain context for participants (Klijn, Edelenbos and Steijn, 2010). Lastly, governance of networks will receive special attention. Network management strategies in the Meshwork case are explored. The aim is to gain in-depth understanding in governance processes within global multi-actor networks.

Practical goals

Secondly, practical goals are strived for towards gaining insight in the practice of the 2020 Climate Solutions Meshwork and its development in the first half year. This study meets a need of the Meshwork management team to reflect upon ongoing processes in Meshworks, as they only recently – and scarcely – started with managing and facilitating this type of network. The study aims to provide a reflection on actual process development as well as on perceptions of actors and management members involved, including opportunities and difficulties arising from the concrete practices of the Meshwork. In the conclusion chapter, practical recommendations are included.

Personal goals

Last of all, as Maxwell (2005) argues, I also want to be explicit about my own goals for reasons of transparency. From personal experience, the significance of connectivity of people, resilience of organisations and co-creation of various actors to come to authentic solutions for complex problems is repeatedly emphasized by a wide range of people, including peers and public managers. My conviction and motivation comes from feeling the urgent need to contribute to exploring how new collaborative practices can have a positive impact on the world, in providing more adequate answers when addressing current complexities.

1.4 What will follow

The next Chapter contains a case description of the 2020 Climate Solutions Meshwork. Afterwards, in Chapter three, a literature review elaborates on network studies, main lenses in network theories and the key lenses as used in the current study. Then, in Chapter four, a thematic framework is presented with three key themes: learning, trust and network management, resulting in an overview of sub questions. The Methods Chapter follows to elucidate the mixed methods approach and the flexible research design. The rationale behind triangulation of research methods is explained and research activities are presented in a time line in order to create an overview of the specific data collection steps and elements of this study.

Then, three empirical Chapters together form the results section, including empirical data, relations between key themes and explanations. Afterwards, the Conclusion Chapter will connect the empirical data, reflect upon limitations of the current study and discuss the implications of this study for current theoretical notions and further research. Lastly, practical recommendations are put forward. In the appendices, several data collection instrument tools are added for reasons of transparency and possible replication in future research.

2. Introducing the case: the 2020 Climate Solutions Meshwork

"The world is becoming more complex every day. It just does not work anymore to structure everything a priori and then when the whole picture is present, you start working. Instead, we need to centralize principles, focus on the way of working, instead of nailing up everything beforehand. Because while you will be finished structuring everything before acting, reality has changed and processes have changed. So, the global Climate Meshwork will be built around a central goal, to build an integral whole around various perspectives and see what is needed. It is about creating greater coherence and building functional relationships."

[Center for Human Emergence member, October 2009]

The 2020 Climate Solutions Meshwork is a recently developed type of multi-actor network. Its background and key elements will be shortly explained below to provide a foundation to start analysis from. Firstly, Meshworks are discussed in general and specific Meshwork principles are elaborated on. Then, the background and set up of the 2020 Climate Solutions Meshwork are described as well as the intended ideal achievements of Meshworks.

2.1 Meshwork: a recent phenomenon

The term Meshwork was developed by Dr. Don Beck, founder of the Center for Human Emergence (CHE), in the 1990's. He hereby aimed to specify the collaborative approach CHE was willing to develop with the focus of working on complex problems:

"Meshworks: the integration, alignment, and synergy of multiple elements, entities, interests and motives to weave them together to create healthy, dynamic and comprehensive solutions to complex problems within rapidly changing, complex environments." (Beck, 2007)

The term "Meshwork" is a trademark of the Center for Human Emergence (CHE) and has so far only been used by this organization. The CHE uses Meshworks in their aim to contribute to improved insight in and action towards a global transformation including a new level of human awareness and a new type of problem-solving (CHE, website, 2009). According to CHE, solutions nowadays should include "multi-stakeholder efforts to collaboration" and should "truly honour and integrate the diversity of interests and motivations of stakeholders" (CHE Synnervate, 2009).The CHE explicitly developed a new term, Meshwork, to distinguish their "multi-stakeholder efforts to collaboration" from other network types. The question then rises: what kind of collaboration is formed in a 'Meshwork' and how does this 'ideal-type' of collaboration differs from other networks or multi-actor practices?

2.2 What characterizes a Meshwork?

Meshworks both have a specific *form* and *approach*. In general, a Meshwork is defined by the CHE as:

A **Meshwork** is *"a structured collaboration across organizations and sectors for a common purpose, and aligned around shared principles"*.

− Beck, 2007

This definition is a normative explanation of the way a Meshwork *ideally* should look like, based on the perception of the CHE. The terms in the definition will be unravelled to clarify their meaning. First of all, the theoretical ideal type states a Meshwork to be a *structured collaboration*. The *structured* form of collaboration refers both to the specific Meshworking approach with its *shared principles* (see box 2.1) as well as to the concrete *common purpose* (see paragraph 2.2.2). The aim of the Meshwork is to involve multiple actors who interact with each other in a setting facilitated by a specific management team. This management team takes conscious efforts into aligning their actions with the Meshwork principles. Moreover, a wide variety of actors is strived for ideally, to achieve collaboration *across organisations and sectors*.

Box 2.1: Core principles of Meshworking

- We identify and engage the *whole system*
- We identify and engage the *diversity of underlying motivations and intentions*
- We uncover the *common interest* between stakeholders by identifying a shared goal
- We make explicit and honor the *unique contribution* of each stakeholder to the purpose of the Meshwork, and we clarify and enhance the *unique function* of each of the stakeholders in the Meshwork
- We identify, align and focus *existing resources* on systemic leverage points
- We identify and address *friction and conflicts of interest* in order to unblock innovation and co-creation
- We support and nurture the *sense of belonging* in and to the Meshwork
- We focus on *what is right* rather than *who is right*

− Janse, CHE Synnervate, May 2009

2.2.1 Making an effort to 'mesh'

The various people and organisations involved in a Meshwork ideally commit to the common purpose and proceed to collaborate by making an effort to '*mesh*'. This meshing has the meaning of integrating or aligning the variety of actors involved. Meshing is aimed to "synergize people and resources to make a greater impact than multiple individual actions with regard to the purpose" (Janse, 2009).

2.2.2 The common purpose

The leading element of the 'mesh'-process is the *common purpose*. The common purpose is ideally defined in collaboration with the Meshwork management team and *all* (initially) involved actors. This reflects its *common* character. The purpose then guides the initiation and structuring of the entire collaboration process. Hence, the common purpose ideally is the starting point of the Meshwork, both functioning as its raison d'être as well as the main frame of reference with regard to the workings and outcomes of the Meshwork.

Individual attention is drawn towards adding value to the common purpose, ideally to "make collaboration more successful than when every stakeholder is limiting itself to their own piece of the puzzle" (Synnervate, CHE, website). Consequently, instead of centralizing the relationships between the various actors, a Meshwork centralizes *the relation between the actor and the shared purpose*. This relation is ideally a congruent one, in which the actor can relate its own interests and actions to the overall common purpose.

The core principles as stated above again stress the centrality of the common purpose in the Meshwork. The common purpose, or *shared goal,* is identified by uncovering the common interest between stakeholders (core principle 3). This shared purpose is ideally constructed by the involved stakeholders together with the clarification of every stakeholder's *unique contribution* to the purpose (core principle 4).

2.2.3 How do networks and Meshworks differ?

According to CHE Meshwork theory, the centrality of the common purpose is the distinguishing feature between a network and a Meshwork. This *ideal-type* difference with regard to the presence or absence of a common purpose is described in the following way:

"In a network, the level of analysis is that of the individual partners and the connections between them are motivated by each partner's individual self-interest. In a Meshwork, the self-interest of each actor is situated in the context of the Meshwork's common purpose. An effective Meshwork differs from a network or group in that the beliefs, interests, behaviours and functions of the different members are aligned to serve a common purpose" (Beck, 2007).

It is to be studied here to what extent Meshworks actually differ from networks. In literature, networks are in many cases also characterized having an overall goal towards problem solving. However, not all scholars agree on this aspect of networks (see for example Raab and Kenis, 2009 and Klijn et al., 2010). Theoretical stances in network studies will be elaborated on in Chapter four.

2.3 The 2020 Climate Solutions Meshwork

2.3.1   Background and set up

The 2020 Climate Solutions Meshwork has been initiated in December 2009. However, this Meshwork has originated as a result from a national Meshwork set up for a climate campaign in Brazil. In August 2009, a conference was held in Belo Horizonte, Brazil, in which 225 people participated to come to a 'road map' to work on the common goal of reducing CO2 emissions with 80% in 2020 facilitated by Meshwork members.

In December 2009, with the occurrence of the United Nations Climate Conference (UN Conference of Parties, COP15) in Copenhagen, the global 2020 Climate Solutions Meshwork was launched at the simultaneously organized civil society summit, *Klimaforum09*.

The initiation of the global 2020 Climate Solutions Meshwork in Copenhagen included both face-to-face interactions inviting visitors of the civil society summit to face-to-face Meshwork sessions as well as the launch of the global online Meshwork platform, *www.2020climatesolutions.org* .

Figure 2.1 Logos of 2020 Climate Solutions Meshwork and Summit Copenhagen

2.3.2   The overall purpose: 80% CO_2 reduction

The 2020 Climate Solutions Meshwork has originated around an overall purpose with regard to counteracting climate change effects and fostering sustainability. The common purpose of this Meshwork is stated as:

Purpose of the 2020 Climate Solutions Meshwork**:**

Achieving an eighty per cent reduction of CO_2 emissions globally by the year 2020 [1]

− State of the World Forum, 2009

This purpose is based upon notions of various scientists who aim to mobilize people and institutions around the world to "achieve the official targets for reducing CO2 emissions currently being negotiated by politicians for 2050 by 2020. The purpose is not to duplicate other efforts but to achieve a breakthrough in results through collaboration, synergy and implementation" (Climate Leadership Campaign website, State of the World Forum, 2009). The aim is to change individual actions and collective organizational structures towards sustainability. Additionally, it includes the goal of changing lifestyles and fostering a culture of sustainability throughout the world. (See also box 2.2: theoretical foundation of the Meshwork - Integral theory.)

2.3.3   Three founding partners involved

The 2020 Climate Solutions Meshwork has originated from a partnership between three parties: Gaiasoft, The State of the World Forum and The Hague Center for Global Governance, Innovation and Emergence.

- *Gaiasoft* is a software development organization, developing software products that empower people to work easily and collaboratively towards change that is positive, meaningful and enduring. The product lines address green transition, lasting and flourishing resilience, organizational and operational performance and innovation. Gaiasoft develops the online platform for the 2020 Climate Solutions Meshwork and is in close contact with The Hague Center (the third initiating partner).

- *The State of the World Forum* is a global network, founded in 1995 by Jim Garrison and Mikhail Gorbachev, to function as a global leadership network with eminent individuals from various sectors across the world. The State of the World Forum has initiated a 10-year Climate Leadership Campaign in August 2009, at the conference in

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[1] The eighty per cent reduction number is based upon the reduction with regard to the level of CO_2 emissions in the year 1990.

Brazil. The 2020 Climate Solutions Meshwork is a concrete manifestation of the Climate leadership Campaign.

- *The Hague Center for Global Governance, Innovation and Emergence (The Hague Center).* This center is a manifestation of the Center for Human Emergence (CHE) – an international organization in support of a global transition, which has created the term 'Meshworks'. The Hague Center explicitly aims to align, activate and support Meshworks.

2.4 Potential and promises

CHE states that Meshworks have a large potential with regard to three areas: collaboration, learning and impact.

Ideal achievements of Meshworks:

"A Meshwork improves collaboration, accelerates learning and impact."

– Beck, Center for Human Emergence Global, 2007

Collaboration

Ideally, a Meshwork improves collaboration by taking into account each individual's intentions and interests and simultaneously aligning these intentions in the form of a common purpose. This element is intended to be fuelled by a high-quality group process design and facilitation of face-to-face interactions, in which the Meshworking principles are central. The alignment of each actor's individual goals with the higher goal is said to "[...] improve collaboration significantly" (Meshwork product document, Janse, 2009).

Learning

Accelerating learning processes is the second aim of CHE in Meshworks. Firstly, Meshworks are aimed to foster diversity. This (ideally) gives rise to a variety of perceptions, ideas and information sources. This variety of input is explicitly aimed to be shared and is seen as valuable, since sharing the unique input of each actor can help the larger whole (see also box 2.1, Meshworking principles). Fostering diversity is said to fuel learning experiences among actors. Participants can reflect upon their own view points, gain new insights from others and have a wide range of others to work with. This notion of complementary ideas and actors is especially emphasized due to the *knowledge character* of the Meshwork, in which further content-wise exploration and explanation of complex problems is seen as central.

Additionally, the CHE has defined a so-called *"learning infrastructure"* in Meshworks. The management team of Meshworks ideally takes efforts to harvest lessons learned in the

Meshwork and use story-telling to grasp the outcomes of the interactions between actors (Meshwork product document, Janse, 2009). This learning infrastructure aims to make the results of the interactions tangible, whether they are connections among participants, distribution of documents or sharing of successful climate projects.

Lastly, the CHE has briefly defined the notion of leadership in Meshworks. It states that leadership is intended to be characterized by "individual openness, commitment and capacities" (Janse, 2009). In this process, the management members of the Meshwork aim to guide processes in an "organic way" that leaves much room for "feedback from the current context" (ibid). The reasoning for this approach is that by centralizing flexibility and adaptability learning processes can more easily take place.

Impact

As a goal on the longer term, the CHE aims for Meshworks to have a large impact towards the societal problems they are addressing. The aim is to be effective together with a variety of actors worldwide within the Meshwork.

2.5 Ongoing development

The Meshworking approach is still 'under construction' when practical implementations are regarded. CHE is explicitly stating to continue exploring the various elements, facilitation aspects, usefulness, added value and other practical implications of Meshworks. This exploration aligns with the intended notion of leadership in Meshworks as organic guidance of processes leaving much room for flexibility and adaptability (Janse, 2009). Importantly, implementing Meshworks has only scarcely been done. The CHE is explicitly focussing on gaining more experience in implementing Meshworking. However, a limited theoretical foundation of Meshworks has been defined already, which guides all Meshworks undertaken: integral theory (box 2.2).

Box 2.2 Theoretical foundation of Meshworks

Integral Theory

The Meshwork approach to collaboration is based upon an *integral view* on reality and collaboration. Integral theory stresses the need to view reality, or a specific case, from multiple angles at the same time. Reality then, in the eyes of integral theorists, consists of various elements to be studied. The main focus is on quadrants, which are different perspectives or terrains of human experience with which cases can be described. Four quadrants are distinguished: individual 'inner' experiences (intention), individual 'outer' behavior (behavior), collective 'inner' culture (culture) and collective 'outer' systems (structure), as shown in Figure 2.2 below. Accordingly, in addressing complex problems, a major change in values and norms is needed as well as a change in concrete behavior and structures. Meshworks are seen as powerful social processes that are able to address and effectively tackle current complex global problems by emphasizing all four quadrants.

Ideally, all four quadrants are involved in the Meshwork process. The process intends to start by focusing on the intentions (upper left quadrant) of management team and involved parties, bringing alignment and unity towards by defining the overall *shared purpose*. With this purpose set, structures and systems (lower right quadrant) are designed for face-to-face and online interactions. (Center for Human Emergence and Gaiasoft, 2008: 39).
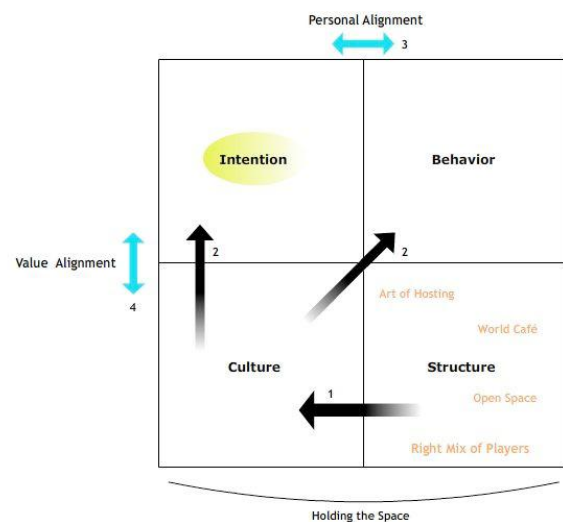
Figure 2.2 Integral theory quadrant

2.6 Conclusion

Meshwork is a recently created term by the Center for Human Emergence to indicate a network type of structured collaboration across organizations and sectors for a common purpose and aligned around shared principles. The common purpose is central to the Meshwork, as all (actions of) actors are intended to align with the overall purpose. The 2020 Climate Solutions Meshwork centralizes the overall purpose of 80% CO_2 reductions in 2020 globally. Three founding partners are initiating the Meshwork and they intend to use regular conferences for interactions as well as an online Meshwork platform. Ideal achievements include improved collaboration and increased learning levels among participants.

PART I
THEORY AND
METHODOLOGY

3. Reviewing network literature

The clarification of the Meshworking approach and the case description of the 2020 Climate Solutions Meshwork in Chapter two functioned as a starting point from which to initiate understanding of the characteristics of a Meshwork. This Chapter functions as a description of key concepts from current network studies and other studies on multi-actor and inter-organizational collaboration. First, a helicopter view is used to describe the differences between simple and complex problems which demarcate the field of the type of networks under study. Then, the context is sketched in which many networks have arisen in the last decade. Furthermore, the characteristics of multi-actor networks are explained. Afterwards, in Chapter four, several key themes arising from the review are presented. These themes function as central analytical lenses in this study.

3.1 Context of networks: 'wicked problems' are complicating matters

Large-scale developments of increasing intertwinement of organizations, deterritorialization and globalization, value pluralism and rapid developments in knowledge and technology have led to changed contexts of networks worldwide (Koppenjan and Klijn, 2004). Greater dependencies are created between organizations due to increased specialization and dynamics in knowledge and product development. As well, traditional relationships of individuals and organizations within large communities are declining in certain ways, especially as stressed by Putnam (2000) with regard to social capital. Lastly, with regard to rapid developments in knowledge and technology, many new ICT-fostered networks have developed. A shift has been observed in which clear and authoritative insights are not desirable neither achievable with regard to global problems. Rather, the aim is to open up a wide variety of knowledge development and changing routines and approaches to come up with creative and innovative solutions (Homan, 2001). How to organize collaboration to tackle complex problems is of special importance. Therefore, the start of the exploration of network literature is on defining complex problems – the work field of networks and on gaining insight in how these so-called wicked problems are tackled in networks.

3.1.1   Tame and wicked problems: a comparison

In general, two groups of problems can be distinguished: tame and wicked problems. A 'tame problem' is simple in the sense that it is definable, understandable and consensual: both problems and solutions can be clearly demarcated. In most cases, one organisation or entity is able to solve a tame problem within a fixed time period. Additionally, objective evaluation criteria of tame problems make it possible to choose the one best solution in a traditional

"linear process of problem solving" (Stone, 2002: 8, see also: Rittel and Webber, 1973: 162), when all alternatives are known and considered (Conklin, 2001).

A complex problem on the contrary, has multiple intricate dynamics that transcend linear ways of problem solving. Complex global problems are the central context in this study, as the 2020 Climate Solutions Meshwork centralizes the complex global problem of climate change. This requires a deeper look into the field of complex problems. How does 'complexity' show? Organizational literature often refers to complex problems as "*wicked problems*" (Rittel and Webber, 1973). The 'wickedness' hereby does not point to the ethically deplorable character of these problems, but to its nature of being "tricky and vicious" (ibid: 160).

Table 3.1 indicates the differences between tame and wicked problems in order to create understanding of the various complex elements that can be incorporated in wicked problems. The table does not depict a strict typology of wicked problems. Rather, it is an overview of the various *potential* elements of wicked problems: it portrays a continuum of 'degree of wickedness' according to the number of complex characteristics they incorporate.

Table 3.1 Differences between tame and wicked problems

Characteristics:	Tame problems	Wicked problems
Problem statement	Relatively well-defined and stable problem statement	No definite problem formulation possible
Type of problem addressed	Belonging to a class or family of similar problems	An essentially unique problem
Number of alternative solutions	Limited set	No exhaustively describable set
Type of solution / end-point	Definite end point and clarity on point when solution is reached	No final, complete or fully correct solution possible
Evaluation criteria	Objective evaluation criteria	No objective evaluation criteria

Derived from: Rittel and Webber, 1973: 161-167

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Hence, wicked problems can include various forms of complexity: both with regard to the nature of the problem, the possible solutions and the evaluation criteria.

3.1.2 Uncertainties surrounding wicked problems

The various complex characteristics of wicked problems can be related to various types of uncertainty. Uncertainty arises when parties are confronted with complex societal problems and they do not exactly know how to handle the problem or what the effects of their behaviour will be in addressing these wicked problems. Koppenjan and Klijn (2004) have distinguished three manifestations of uncertainty surrounding complex, or wicked, problems: substantive, strategic and institutional uncertainty. These will be elaborated on below.

- *Substantive uncertainty*

Firstly, there is uncertainty about the nature of complex problems. This s*ubstantive uncertainty* includes the (timely) "availability of information" (ibid: 6). Hence, information is not completely at hand for the actors to take unambiguous decisive action on the problem. Additionally, simply collecting more information does not lead to reducing this uncertainty: the information itself often has an ambiguous character. Multiple sources of information exist, with different lenses of analysis and opposing conclusions to tackle the problem effectively. Additionally, differences in insights do not only concern various problem formulations; they also concern different *perceptions* towards information. Various actors have different interpretations of information. Consequently, various actors have a different sense of urgency to address the problem. To cite Rittel and Webber:

> "The formulation of a wicked problem *is* the problem. [emphasis in original text]
> The process of formulating the problem and of conceiving a solution (or re-solution) are identical, […] one cannot first understand, then solve."
>
> − Rittel and Webber, 1973: 161-162

- *Strategic uncertainty*

Apart from knowledge uncertainty, a second type of uncertainty arises due to the involvement of multiple actors: s*trategic uncertainty*. The strategies of one actor to address the problem(s) may differ from the strategies of other actors, based on various perceptions of the problem and solution of which diverging strategies are the result (Van Bueren, Klijn and Koppenjan, 2003). These diverging or even conflicting strategies of actors can cause stagnation or difficulties in interaction and collaboration processes in networks. Moreover, actors respond to and anticipate each other's actions in this process, which results in a highly complex and undetermined process of actions that are difficult to predict and control.

- *Institutional uncertainty*

Lastly, wicked problems are characterized by *institutional uncertainty*. As mentioned before, in most cases many actors are involved. These actors are used to work from different institutional backgrounds, such as various organizations. As actors have these different types of institutional backgrounds – each organization with its own set of tasks, opinions, rules and language – it is difficult to 'mix' these ways of working when collaborating in networks. To act upon the wicked problem however, actors come together and need to step 'out' of their familiar ways of working, into collaboration with a different set of rules. Uncertainty hereby is mostly caused by "unclarity about the question how the process will be handled and how the interaction with other actors will develop" (Koppenjan and Klijn, 2004: 6-7).

3.2 How to tackle wicked problems?

As shown above, tame and wicked problems can differ quite drastically. Problem solving with regard to tame problems and wicked problems also differs highly according to a large body of organizational researchers (Rittel and Webber, 1973; Homan, 2001; Koppenjan and Klijn, 2004; Coenders, 2008; Van Twist et al., 2009). Tame problems can be tackled with the use of a linear process in a structured, solid and consensual way. Wicked problems however neither have the structured character nor the unambiguous nature of tame problems. Due to the various types of uncertainty surrounding wicked problems, it is not possible to create linear mono-cyclic strictly separated phases. Information ambiguity, the unpredictable behaviour of many involved actors and the various institutional backgrounds of the actors hinder an unambiguous assessment of the nature of the problem and the possible alternatives (Koppenjan and Klijn, 2004). The question then becomes: what is a *suitable* way of tackling wicked problems characterized by seemingly difficult elements as complexity, diversity and rapid dynamics?

3.2.1   Complex problems demand complex problem solving structures

Fortunately, several authors have shed their light on suitable ways of organizing problem solving processes to address wicked problems. The key assumption of most scholars studying complex problem solving is based upon the work of Conant and Ashby. This study is also explicitly based on their work. Ashby initially developed the *Law of Requisite Variety* in 1956 as a fundamental law of organizational cybernetics: "Only variety can absorb variety" (Ashby, 1971, in: Schwaninger, 2001: 1213). When translated to solving complex problems, this means that the variety present around the complex problem at hand demands variety and complexity of the problem solving methods to deal with the problem (Homan, 2001). In other words, actors who want to solve complex problems should develop complex ways which are able to tackle these problems.

This principle of '*complexity congruence*' between problem and solution is emphasized by multiple organizational scholars since (Slaughter, 2004; Hibbert et al., 2008). In general, when complex problems are dealt with, based on Ashby's assumption, joint action is important. Actors must cooperate to achieve mutually satisfactory outcomes. This means that cooperation is needed since goals cannot be achieved by a single actor: actors are dependent upon one another. The goals strived for can be seen as motives of actors to be involved in cooperation. Galaskiewicz (1985) distinguished four motives for actors to initiate involvement in (inter-organizational) cooperation: to acquire resources, to reduce uncertainty, to enhance legitimacy and to attain collective goals.

3.3 An abundance of networks

As the assumption above asks for complex ways to solve complex problems, the question becomes: how can complex problems be tackled? It is often argued that *networks* are, compared to hierarchies, a better solution to solving non-routine, non-standardized or wicked problems because of their multi-actor character towards collaboration (Raab and Milward, 2003). In correspondence with the increasingly complex environment, networks are currently widely applied as functional collaboration practices, both in private and in public domains. In this trend, two major developments are distinguished: a development towards a 'network society' and towards a 'society of networks'.

- *A "network society"*

Leading sociologist Castells labeled Western societies in the 1990s "network societies" due to the sudden increase in much web-shaped collaborations as a result of rapid societal developments such as globalizing markets, value plurality and extra-ordinary improvements in information and communication technologies (Castells, 2003). These collaborative forms of decision making on societal problems include policy networks as well as public-private partnerships but also supply chain networks. These networks sometimes even transcend boundaries between the public and private sector, including collaboration between various societal players (Bovens, 't Hart, Van Twist, Rosenthal, 2001).

- *Towards a "society of networks"*

However, the rapid developments stated above have changed the character of networks in the last decades. The type of networks as described by Castells above is characterized by increasing linkages between people, organizations and even societies on a global scale, with geographic space becoming less important. Raab and Kenis (2009) claim that after this trend in the 1990s, from the 2000s on, "networks für sich" (network for itself) have become more and more important resulting in a "*society of networks*" instead of a network society (Raab and Kenis, 2009: 199). Networks are then formed as consciously created organizational entities, within which the focus is no longer on individuals and organizations and their ties in

networks – as emphasized by Castells – but on the characteristics, position and identity of the whole network. The defining difference is "the ability [of the upcoming 'networks for itself'] to form a separate identity and to act collectively" (ibid: 200). Other scientific research conducted about networks resembles this history of changing networks forms. Studies have hereby seen a shift away from earlier individualist, essentialist and atomistic explanations toward more relational, contextual and systemic understandings of networks as cooperation mechanisms (Borgatti and Foster, 2003).

However, when drawing this historical picture of networks and their changed character, the most fundamental question still needs addressing: what is a 'network' essentially?

3.4 Analyzing networks: where to start?

As seen from the above, networks have a long history and are currently present in abundance as functional cooperation mechanisms addressing various complex problems. Consequently, the rise of Meshworks is not a process in solitude. It then is of importance to *describe* and *analyze* networks: what elements do networks have and which perspectives are used so far by scientific studies to analyze networks? And additionally, what makes networks so special that they can enable a variety of actors to jointly tackle complex problems? Describing networks however is far from straightforward. The term 'network' has become a container concept that includes various meanings and consequently, various elements. Therefore, this study narrows down its definition of networks to "*more or less stable patterns of social relations between mutually dependent actors which form around a problem*" (Koppenjan and Klijn, 2004). In line with this study, emphasis in the definition is on dependency relations between actors and problem focused collaboration. This definition excludes "serendipitous networks". These networks, including social networks, are "not goal directed and come into being as emergent entities through the dyadic interaction of actors" (Raab and Kenis, 2009: 198).

3.5 Multi-actor networks

This study focuses on networks with a certain functional purpose towards tackling a complex problem. As mentioned above, complex problems often need a wide variety of actors to be involved, beyond the boundaries of a single organization, in order to be tackled. Hence, this thesis focuses on networks with many actors, ranging from a dozen to several thousand actors. The field of these multi-actor networks is large, as it includes civil society networks as well as other networks such as supply chain networks, alliances, joint ventures and policy and implementation networks. These networks are sometimes referred to as multi-stakeholder collaborations but this study will center the term *multi-actor networks*. Importantly, these networks do not necessarily have to be comprised of only *organizational* actors. Moreover, these networks can include *individuals* and *project teams*.

> **Multi-actor networks** are:
>
> *"...consciously created groups of three or more autonomous but interdependent actors with different [organizational] backgrounds that strive to achieve a common goal and jointly produce an output."*
>
> – Raab and Kenis, 2009: 198

Multi-actor network studies can be categorized in two ways: network studies per discipline and network studies based on a specific type of network theory. That is, studies often centralize a specific type of network occurring in their *discipline*, for example a policy network as described by a scholar of public administration (Klijn, 2008) or a supply chain network, as studied in the context of business administration studies (Harland and Knight, 2001, in: Cropper, 2008a). Secondly, networks are studied with specific *lenses,* with the use of certain *theories*. These theories might overlap with disciplinary boundaries but in general it can be said that different network theories are present throughout scientific disciplines. These lenses will be discussed in the coming paragraph.

3.6 Key lenses in network studies

Without striving to be exhaustive, a short overview will be given on the key lenses used in network theories as developed in the past decades. This general overview can clarify the various elements studied when networks are concerned. Three different lenses used in various network theories will be elaborated on: firstly, actors and their 'ties', then an economic lens on networks and lastly, an institutional view. These three lenses will be described and connected to key network theories that have one of the three specific lenses as their main focus in studying networks.

3.6.1   Variety of actors and perceptions

The first lens emphasizes the diversity of actors present in a multi-actor network, which all have their own perceptions and actions that guide the process of interactions and the formation of relationships. As described by Wassenberg, a network can be seen as a whole of relations between actors, comprised of a mixture of intentional and unintentional conflict and collaboration approaches of actors (Wassenberg, 1980: 32). The actors within a network are also called *nodes* or *vertices.* They can be persons or teams, organizations, countries, regions and even international agencies. (For a detailed description of these concepts, see: Kenis and Oerlemans, in: Cropper et al., 2008a: 290.) Additionally, the various actors differ with regard to their *perceptions* towards the problems at hand. Consequently, the assumption of this lens is that each actor chooses its actions on the basis of their own perceptions of the world. These perceptions can be characterized as different "frames" on problems and solutions (Schön and

Rein 1994, in: Klijn, 2008b). These individual frames do not originate in solitude but they arise in processes of social interactions and meaning constructions with other involved actors and they are grounded in previous interactions, experiences and knowledge as well (ibid).

3.6.2   Relations based on interdependencies

In the second lens, focus is on mutual dependencies between actors. Actors are said to join the network as they need others to achieve desired goals. Various network theories explicitly focus on ties between actors in networks. Social network analysis for example is a type of analysis used in this regard to gain insight in the presence, frequency and intensity of ties, as well as the type of ties between actors. This social network approach has originated from a combination between ideas from the structuralist network tradition and notions of *embeddedness* from Granovetter and *social capital* perspectives (Kenis and Oerlemans, in: Cropper et al., 2008b). The most important concept within the social network perspective is the system of relationships among actors of a network. These relationships are types of interactions between actors in the network, varying in terms of length and intensity. With regard to the intensity of relationships, Granovetter's (1985) distinguished strong and weak ties between actors. Actors are in the social network analysis not examined in isolation but as related entities with a specific position and 'niche' embedded within the network (Brass, Galaskiewicz, Greve and Tsai, 2004).

Regarding the way in which these interdependencies are formed, interdependencies can be divided into natural, voluntary and artificial interdependencies (Chisholm, 1989). Interdependence occurs *naturally* "when a variety of forces beyond the control of the organizations immediately involved come together to cause them to become connected" (ibid: 59). This type of interdependence is in a sense straightforward and directly links actors without interference of another (regulating) actor. *Artificial* interdependence is caused by deliberate efforts of an outside party to link various organizations. Organizations can also *voluntarily* enter into arrangements to realize some form of mutual benefits (ibid: 60). Additionally, the kinds of interdependencies between actors can change over time, during the dynamic process of the network (Doz, Olk and Ring, 2000).

These mutual dependency relations between actors are based on *availability of resources*. Different kinds of resources include (among others) finances, regulatory power, social contacts, knowledge and expertise, power and hindrance resources. The overall level of dependency of an actor is based on the range of resources available to the actor as well as the ways in which the actor is dependent upon resources of a single actor or various other actors (Scharpf, 1997). Additionally, and importantly, dependency relations can also be based upon *previous* ties between actors, prior to or outside the network realm.

A large group of network studies has this resource-based *economic focus* towards networks. Resource dependency theory and transaction cost theory are two main economic theories on networks, building upon notions of interdependencies within networks. *Resource dependency theory* assumes that actors are mutual dependent upon each other for the network to exist.

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Networks are formed since actors need each other to achieve their goals. Processes in the network are seen from the view of resource games between actors.

Additionally, *transaction cost theory* focuses on another economic aspect. This aspect concerns the costs that are involved in interacting with other actors. The analysis focuses on gains and costs from interactions: capitalization on interdependencies is called "rents" (Hennart, in; Cropper et al., 2008a: 341) but these will only be achieved "if the gains from exchanging and pooling capabilities are greater than the costs of doing so" (ibid: 341, see also: Gilles and Sarangi, 2003). Costs go beyond finances, covering time, effort, knowledge and trust investments. Many of these costs are intangible and complicated to relate to future outcomes or benefits. Benefits to cooperate in networks include a variety of knowledge, innovation and survival of (a single) organization (Cropper et al., 2008b). Additionally, with regard to synergy outcomes, Huxham has come up with the notion of *collaborative advantage* which requires that "something unusually creative is produced – perhaps an objective is met – that no organization could have produced on its own and that each organization, through the collaboration, is able to achieve its own objectives better than it could alone. It may also be possible to achieve something for wider society that is beyond the remit of any of the participating organizations themselves" (Huxham, 1996: 14).

Transaction cost theory mainly focuses on the individual actors in the network and their behavior, based on their expected rents flowing from certain interdependencies. Actors are seen in this theoretical perspective as individuals with a *bounded rationality* and a certain degree of *opportunism.* As Simon (1957) stated: humans are "intendedly rational, but only limitedly so" and as a consequence, full information gathering and rational decision making is only partly possible. Additionally, opportunism causes actors to be uncertain as well about the height of transaction costs, as they cannot expect beforehand that all actors will always live up to their promises (Hennart, in; Cropper et al., 2008a).

3.6.3   Institutional rules

The third lens views networks as an *institution*, providing organizing principles in a complex reality. An institution is seen as "*a system of rules that structures the courses of actions that a set of actors may choose*" (Scharpf 1997: 38, see also: Koppenjan and Klijn, 2004).

The institutional rules of networks include both constituting or arena rules and regulating or interaction rules (Koppenjan and Klijn, 2004; Searle, 1995: 27). *Arena rules* create the very possibility for a network to function at all: they define the reality or setting of the network. These reality defining rules include determining the nature of the network and its position. *Interaction rules* have a more procedural character and they inform actors what is and what is not allowed in the network. These regulations of interactions include rules on communication channels (information), rules concerning access and exit of actors (boundaries), the kinds of issues and outcomes strived for (scope) and authority to act and decide in particular positions (authority). This second type of rules is often explicitly constituted by the network management. The various types of network rules are visualized in table 3.2.

Table 3.2 Types of rules in networks

	Character:	**Aspects:**
Arena rules	Constituting, bringing into being	-Position rules -Identity rules
Interaction rules	Procedural, regulating	-Information rules -Boundary rules -Scope rules -Authority rules

(Derived from combining Searle, 1995 and Koppenjan and Klijn, 2004)

Rules regulate the behavior of actors in the network. Rules structure the behavior of actors, but simultaneously, they are formed in interactions by these same actors (Scott, 1995). This notion has been stated by Giddens (1979) as "*duality of structure*". Giddens idea of "*duality of structures*" states that structures are necessary for action but they are simultaneously changed during action. Giddens grounds this duality notion in a division between *system* and *structure*. This way, he aimed to "transcend the seemingly unbridgeable gap between deterministic and voluntaristic notions on the relation between structure and interaction" (Klijn, 1996: 44). *Systems* are integrated entities of social practices, incorporating patterns of interaction. *Structures* include rules and resources, which are the structural properties (Giddens, 1979: 65-66). These rules are both the *precondition* to enable functioning of systems as well as the *outcome* of interactions, as rules are changed and redefined within the interactions. Importantly, rules are not "isolated formulae" (ibid: 65): the assumption is that they can only be grasped in the context of the historical development of social practices. Hence, the assumption of this study is that rules and practices only exist in conjunction with one another.

3.7 Key lenses of this study

This study aims at relating various perspectives and levels of analysis with regard to the 2020 Climate Solutions Meshwork. In fact, this study hereby follows the majority of recent network studies, underscoring the importance of combining several network theory perspectives when analyzing networks (see for example: Chisholm, 1989; Koppenjan et al., 1993; Koppenjan and Klijn, 2004). The importance of so-called 'triangulation' of lenses is underscored especially due to the complex processes arising in multi-actor networks. Using several lenses in the analyses can add considerably to the depth of analysis. All in all, the center of attention is on network processes. For this purpose, this study uses the *institutional structure* and the *relations based on interdependencies* between actors as an aid to be able to provide an in-depth understanding of the process developments in the network case under study.

Firstly, this study analyses *relations based on interdependencies* between actors in the 2020 Climate Solutions Meshwork. It hereby shares the assumption with economic network theories that networks are characterized by mutual dependencies between actors. Emphasis

will be placed on the type(s) of interdependencies between actors, as distinguished by (Chisholm, 1989). Additionally, availability and exchange of resources is a focus in the analysis, especially towards information exchange and trust investments.

The second key lens of this study is the *institutional structure* of the Meshwork. This lens includes a focus upon institutional rules, including both arena and interaction rules, as defined by network management (see Chapter four for elaborate explanation). Importantly, the initiation and development of network rules will be analyzed as well. As "rules originate in a process of institutionalization" (Klijn, 1996: 60), it is relevant to gain insight in this institutionalization processes in which rules are defined and carried out, relating it to Giddens' notion of *duality of structure* between rule formation and rule adjustments through interactions in the Meshwork. In addition to rules, *interaction patterns* are studied. Regularity of contacts between actors and the type of these interactions are included as well as the dynamics of these patterns throughout the development of the network. Interaction development of the Meshwork will later on be related to development of institutional rules of the Meshwork.

4. Thematic framework

The network literature review in Chapter 3 has resulted in insight in the key lenses used in network theories and the various ways in which network theories have analyzed networks so far. Key elements of networks include involvement of a variety of actors, mutual dependency relations and institutional characteristics of the network. Additionally, key lenses used in this study were elaborated on, including analysis of interdependencies and institutional rules. Key assumption used is the notion of *duality of structure* as noted by Giddens (1979), in which social systems and structures of rules are mutually influencing each other. Development of interactions in the Meshwork is hereby related to development of institutional rules of the Meshwork.

This Chapter will elaborate on the key *themes* of analysis in the current study. In other words: which themes are important to look at when actors, interdependencies and institutional analysis are regarded? Three themes are central to analyze these processes of networks: network management practices, trust development and learning. These themes are chosen in relation to the intentions of Meshwork towards improving collaboration and accelerating learning. The themes will serve as searchlights with which processes in the 2020 Climate Solutions Meshwork are studied. Additionally, interconnectedness of the various themes will be elaborated on with the use of a conceptual model. Lastly, sub questions are defined, as aligned with the relationships to be studied between the three key themes.

4.1 Network management

4.1.1   Shifting away from traditional management activities

Many studies indicate that complex organizational structures such as networks are in need of a specific kind of managing. From the mid-1980s with the development of network studies in the public management discipline, network management and network performance have received increasing attention (Berry et al., 2004). The management activities as proposed in network literature differ significantly from traditional managerial roles in organizations. Traditional management with its ex ante formulated objectives, linear planning and top-down decisions is inadequate when managing networks surrounded by elements of uncertainty and complexity (Koppenjan and Klijn, 2004; Cropper et al., 2008b).

Networks are not directly associated with strict control mechanisms. As Kenis and Provan (2006) state: "networks are by design built around collaboration and the idea of formal control mechanisms is typically viewed as inconsistent with the whole point of having a network". However, not addressing the issue of network control is undesirable since some form of

steering or control, whether formal or informal, is necessary to coordinate network activities and to ensure that network level goals – and not just organizational level goals – are achieved. Control then is an essential aspect to come to overall effectiveness of networks (ibid, in: Brouwers, 2008: 8).

4.1.2   Actively managing to collaborate

> *"Managing to collaborate involves actively managing (in order) to collaborate".*
>
> – Huxham and Vangen, 2005: 4 (emphasis in original text)

Collaboration does not shape itself, as emphasized by Huxham and Vangen in the quote above. The importance of initiation of collaboration by network management is also focused upon in the current study. This study subscribes to an "*entanglers approach*" towards network management (Koppenjan and Klijn, 2004: 244). In the entanglers approach[2], the central effort of network management is *to bring and keep parties together* as to discover opportunities and intertwine objectives in a process of mutual learning. It hereby takes the multi-actor and multi-purpose nature of processes of complex problem solving as a starting point. This leads to a focus on "*managing* uncertainty instead of *reducing* uncertainty" (ibid: 244). Other authors have associated managing collaboration[3] in this regard with specific management roles such as mediator, process manager or facilitator (Klijn, 2007; O'Toole 2002; Hibbert, Huxham and Smith Ring 2008). These roles also actively stimulate cooperation between actors.

4.1.3   Network management: coping with three types of uncertainties

In general, three kinds of managerial elements are stressed when addressing network management: *content* management, *process* management and *institutional* management (Kickert et al., 1997; Agranoff and McGuire 2001; Koppenjan and Klijn, 2004). These forms of management intend to effectively tackle three types of uncertainties faced in networks:

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[2] The entanglers approach is contrasted with the disentanglers approach by Koppenjan and Klijn (2004). Disentanglers focus on simplifying and accelerating decision making in societal processes. These management activities have received wide attention and concrete implementation in many New Public Management reforms.

[3] Various terminologies exist to characterize management of complex problems through collaboration. Klijn argues for "complexity management" with its focus on various forms of uncertainties that need to be addressed and managed (Klijn, 2007) whereas other researchers in the field of environmental issues and sustainable development have developed the notion of "transition management" as a process-oriented approach framed explicitly around the challenge of building coherent longer-term fundamental change when uncertainty and complexity are inevitably central (Rotmans et al. 2001, Verspagen et al. 2002; in: O'Toole, 2002). These differences in terms resemble a wide variety of approaches and assumptions towards the breadth of network management activities and notions on how to achieve effective network management. (See also: Koppenjan and Klijn, 2004; Hibbert, Huxham and Smith Ring, 2008).

substantive uncertainty, strategic uncertainty and institutional uncertainty. (For a detailed description of these forms of uncertainties, see paragraph 3.2).

- *Managing substantive uncertainty*

Managing the content and information sources in networks is *not* focused on the ex ante creation of an objective problem formulation that guides the process of problem solving. Namely, this formulation can lead to "too early substantive fixation" (Koppenjan and Klijn, 2004: 183). This fixation early on in the network process is not desirable as it excludes alternative perceptions, values and avenues to come to solutions. Hence, substantive variety is needed to tackle uncertainty and ambiguity of information and perceptions. The aim is not to search for the objective solution but rather, to stimulate forming an *authoritative* solution, in the sense that it is convincing or acceptable for all or most actors involved. Organizing gradual substantive selection can be guided through "*crystallization points*" (De Bruijn, Ten Heuvelhof and in 't Veld, 2007: 108). These crystallization points are content-wise notions that stimulate parties to discuss certain themes around the problem. Additionally, network management should only be involved to a limited extent on content. Otherwise, it can significantly diminish "support towards the management and learning processes among actors" (Koppenjan and Klijn, 2004: 244). The assumption is then that a "well-structured process as facilitated by the network manager results in a good solution with regard to content" (De Bruijn et al., 2007: 88). Consequently, in the words of Rittel and Webber:

A need for substantive variety

"Part of the art of dealing with wicked problems is the art of not knowing too early which type of solution to apply."

–Rittel and Webber, 1973: 164

Cognitive learning is needed to address the contested problem definitions and knowledge. Additionally, Schruijer (2008, in: Cropper et al., 2008) states, from a psychological perspective, that the introduction of a super-ordinate goal can help in solving intergroup conflict (on knowledge). In networks where many groups or actors are involved, the introduction of a goal that is shared by all groups can only be achieved through the joint efforts of all actors.

- *Managing strategic uncertainty*

A second type of management activities forms around the *regulation of interactions* in the network. In general, most authors agree on the assumption that actors face difficulties to achieve effective interactions and cooperation among themselves when a (wide) variety of

actors is involved (Koppenjan and Klijn, 2004)[4]. Therefore, network management can come in to improve these interaction processes by activation of actors and regulation as well as facilitation of interactions in various ways (ibid: 244).

- *Managing institutional uncertainty*

Lastly, network management also literally involves *managing* the network. This element of managing is characterized by making organizational arrangements and structures, within which interaction and problem solving can take place. This way, an institutional setting is built to ensure a safe and clear network environment in which actors can start and continue collaborating to solve complex problems. Managing institutional uncertainty involves enforcing rules and promoting institutional links between actors (Koppenjan and Klijn, 2004: 244).

4.1.4   Network management strategies: constitution and interaction management

The network manager needs to manage three types of uncertainties: content, process and institutional management to come to effective network management, as several previous studies have emphasized (Kickert et al., 1997; Agranoff and McGuire 2001; Koppenjan and Klijn, 2004). Core management activities hereby involve network constitution and interaction management (Klijn, 1996), as visualized in table 4.1. *Network constitution* involves all durable changes in the network, including initiation and change of institutional rules with regard to selection and positioning of actors. *Interaction management* is focussed on the processes within the network instead of changing the character of the network. It includes initiation of interactions and selection of actors in specific interactions as well as facilitation of interactions.

Table 4.1 Network management strategies: network constitution and interaction management

	Network constitution	**Interaction management**
Character	Focus on durable changes of the network	Focus on initiation, facilitation and organization of interactions
Aspects	-Network selection of actors -Change of positioning of actors	-Initiation of interactions and selection of actors per interaction -Facilitation of interactions

(Derived from Klijn, 1996)

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[4] An exception to this view is Ostrom (1990) who challenges the assumption that actors are unable to voluntarily achieve cooperation, as they can communicate and come to consensus building. However, in this study, Ostrom's view is perceived to overestimate the capacity of actors to achieve cooperation themselves. (This perception is in congruence with Koppenjan and Klijn, 2004: 182).

4.2 Trust

4.2.1 A promising horizontal coordination mechanism

Trust matters to collaboration, as stated by a wide variety of organizational scholars. Whether trust is seen as "the key*"* to successful collaboration (Schruijer and Vansina, 2007: 222), "one of the important success factors" of inter-organization collaboration (Edelenbos and Klijn 2007: 26) or acting as "lubricant" (Williams, 2002: 116) smoothening effective collaboration: trust is perceived as *significant* to make collaboration work.

Trust is especially important when actors are dealing with "unpredictable and risky situations" (Klijn, Edelenbos, Steijn, 2010; see also: Van de Ven and Smith Ring, in: Bachmann and Zaheer, 2006). In these situations, which are often the setting of networks, actors are not sure on what to expect and how other actors will behave. Hence, trust facilitates making risky choices (Gambetta, 1988; Lane and Bachmann, 1998). The assumption in most of the literature on trust is that actors will refrain from action (and cooperation) if trust is absent (Schruijer and Vansina, 2007; Klijn et al., 2010). Trust becomes more important when complexity, resulting from dynamics, uncertainty and risk, is higher. Since uncertainty and complexity in networks is high, trust can function as a promising concept to examine the network case under study. Box 4.1 elaborates on the relationship between uncertainty and trust.

Box 4.1 Interdependency of uncertainty and trust

The relationship between uncertainty and trust is a two-way street. Gambetta stated that for trust to exist, there must be some form of uncertainty – a source of trust– about the behaviour of a partner. That is to say, "*if uncertainty does not exist at all, trust is not necessary*" (Gambetta, 1988, in: Koppenjan and Klijn, 2004). This notion of uncertainty as precondition for trust helps in understanding trust levels in networks.

Literature on multi-actor networks has acknowledged the importance of trust too (for an elaborate overview, see: McEvily and Zaheer, 2006: 280-302). Trust then is seen as a *horizontal coordination mechanism* that is of importance when coordinating networks. Since networks are essentially horizontal practices, vertical coordination mechanisms such as hierarchy rules, direct supervision and detailed contracts are perceived as less suitable (Bovens et al., 2001). The concrete added value of trust in tackling uncertainties surrounding complex problems in networks will be addressed in the coming paragraphs, after defining the notion of trust in general.

4.2.2   Relational trust: a definition

This study concerns *relational trust*[5] in networks. Relational trust is "*the expectation [of an actor] that the other person will behave in a reliable, predictable, and fair manner, particularly when the potential for opportunism is present*" (Zaheer, McEvily and Peronne, 1998: 143).

Relational trust concerns individual perceptions of actors with regard to the degree to which other (involved) actors are reliable. Relational trust is based on the assumption that trust arises as a result from interactions between parties. In this process, parties use information from prior interactions to judge each other's reliability. Accordingly, in line with Hardy, Phillips and Lawrence (1998), this study assumes that trust exists 'in' individuals as a set of perceptions about others, resulting from interactions and previous trusting relationships. That is, trust is partly seen as an *antecedent* of a network, as it is already (partly) present *before* the initiation of a specific network. The importance of trust in initiating and building inter-organizational networks has been emphasized (Brass et al, 2004). Moreover, trust perceptions are based upon knowledge of other actors' competences and actions. With regard to competencies, actors can for example have an excellent reputation or they can be perceived as having important functional competences or interpersonal competencies (Gabarro, 1978, in: Edelenbos and Klijn, 2007).

It is assumed in this study that relational trust has both a rational foundation and a social foundation. The rational aspect of trust is visible in the elements that concern forms of predictability of other's behavior: agreement trust and reliability trust. On the other hand, trust has a social foundation as well, visible in the other elements of goodwill, the absence of opportunistic behavior and giving others the benefit of the doubt (Klijn et al. 2010; see also Huxham and Vangen, 2005; Ring and Van de Ven, 1994). As Dasgupta states: "You do not trust a person to do something merely because he *says* he will do it. You trust him because, knowing what you know of his disposition, his available options and their consequences, his ability and so forth, you expect that he will *choose* to do it" (Dasgupta, 1988 in: Bachmann and Zaheer, 2008: 550, emphasis in original text). Consequently, trust is seen as congruent with economic rationality, even though it includes a much wider range of social considerations and appearances.

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[5] Rousseau, Sitkin, Burt, and Camerer (1998) have made a division between various forms of trust, including deterrence, calculative, institutional and relational trust (Rousseau, Sitkin, Burt, and Camerer, 1998, in: Brass et al, 2001). For a detailed description, please read their (elaborate) work on various forms of trust.

4.2.3   Added value of trust in multi-actor networks

The importance of trust for inter-organizational networks can be divided in four main categories: facilitating cooperation, solidifying cooperation, stimulating learning and enhancing performance of cooperation (Edelenbos and Klijn, 2007).

- *Facilitating cooperation*

Trust can reduce the transaction costs in decision making, which include the costs involved in effective interaction. This way, trust is both making cooperation possible as well as providing a "cheaper alternative" (ibid: 30) than when setting up formalized contracts. This includes enhancing the chances for cooperation: it increases the predictability of actions of other actors and reduces possibilities of opportunism (ibid).

- *Solidifying cooperation*

Secondly, trust also can enhance stability and durability of collaboration in networks. Trust enlarges the robustness of multi-actor cooperation as it promotes ongoing interaction among actors and the continuation of cooperation (Klijn and Teisman, 2000 in: Edelenbos and Klijn, 2007). Additionally, trust encourages actors to invest in collaboration with their available resources to create (new) knowledge and innovations. This investment of resources also creates a stimulus for actors to stay involved in the collaboration: it solidifies collaboration.

- *Stimulating learning*

Additionally, trust can enhance the functioning of the collaboration process itself. It is said to stimulate *learning* and the *exchange of knowledge* between actors in networks (Koppenjan and Klijn, 2004). Trust can stimulate learning in networks, especially when innovative knowledge is asked for (Nooteboom, 2008). Since knowledge is often only tacitly and incompletely available to all actors, it can only be acquired by exchange and intensive cooperation (Klijn et al., 2010). As learning is tightly intertwined with knowledge exchange, trust also plays an important role in fostering learning in networks. When new knowledge can be acquired by an organization or individual, content-wise learning takes place. In addition, most of the literature on governance networks also "emphasizes the importance of learning processes in which actors not only exchange information but also learn from each other particular new solutions that satisfy their interests" (ibid). The key theme of learning will be elaborated on in paragraph 4.3.

- *Enhancing performance of cooperation*

As shortly mentioned above already, resources of actors are often invested to create (new) knowledge and innovative solutions in networks. Trust can particularly fuel this information

exchange between actors and innovation. Especially knowledge-exchange networks are a fine example in which the specificity, uniqueness and difficult marketability of knowledge makes it hard to regulate interactions through contracts. Trust can be of importance here as a coordination mechanism since contracts are often absent due to many unexpected circumstances arising in networks, such as changing actor strategies and strategic complexity of interactions (Nooteboom, 2000). Trust then is mainly needed to fuel the willingness of actors to share information to contribute to new innovative solutions for complex problems (Edelenbos and Klijn, 2007; Nooteboom, 2008). Subsequently, trust also enhances the problem solving capacity of a network in which innovative solutions and knowledge creation are central. Particularly innovation is in need of trust, as involvement in innovation is often seen as a "risky and uncertain activity" (Chiles and McMackin, 1996 in: Edelenbos and Klijn, 2007: 34).

4.2.4   Postscript on trust: risks

The above mentioned model tends to see trust as inherently functional and beneficial and ignores issues of asymmetrical power and conflicting interests that can arise from certain trust levels among actors in networks (Hardy et al. 1998: 64). There are two major risks when trust is concerned: too little trust and too much trust. Both aspects represent a certain type of vulnerability.

Firstly, too little trust is problematic. Building trust is a delicate, gradual process. The fragility of this process especially comes to the forefront in the initiation stage of collaboration because trust is mainly based on a foundation of anticipated profits (Edelenbos and Klijn, 2007). As actors (often) have not worked together beforehand, trust has to be built gradually during collaboration in a network. Moreover, not all actors need to strategize on trust building. Scharpf states this dilemma as follows: "Being able to trust is an advantage—but exploiting trust may even be more advantageous" (Scharpf, 1997: 89, in: Edelenbos and Klijn: 34). The difference between a trusting and a naïve actor can sometimes be very small in this regard. Misuse of trust can lead to very low levels of trust among actors in networks.

Secondly, trust levels among actors can also increase *too much*. In this situation, "overly relaxed attitudes" arise, leading to risky and unhealthy situations. For example, too much trust can be one of the factors leading to groupthink. Groupthink emerges when the pressure for conformity within a group or network becomes high (Janis, 1971, in: Rainey, 2003). When trust is very high, actors become overly embedded in their networks, become risk averse, and continue to work with others (only) because of the strong ties. Over-embedded actors may miss cost-effective opportunities with other actors: blind trust hinders seeing these opportunities (Brass et al, 2004). Trust then has become too powerful[6]. So a critical note is in

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[6] There seems to be diffuse relation between power and trust. Some authors regard them as substitutes; other scholars state that their relationship is much more complicated in inter-organizational networks. As power is outside the scope of this study, it would take too far to elaborate on this point here. For a detailed description of this discussion, see: Edelenbos and Klijn, 2007: 33.

place towards the exclusive reliance upon trust. Even though parties may be confident of each other's trustworthiness, they may be uncertain whether to rely *exclusively* upon it. However, reliance on trust may be conditioned by legal systems or (organizational) role responsibilities, mitigating the ability of the parties to rely on trust as a matter of first preference (Ring and Van de Ven, 1994).

4.3 Learning

The importance of exchanging information in networks has already been emphasized. Learning is essentially the development of these knowledge elements and patterns of action. Here, a short overview will be given on learning in networks, stating the most important aspects and context elements. Afterwards, the types of learning aimed at in complex networks are elaborated on. Lastly, hindrances to learning are discussed.

4.3.1 Definition of learning

Learning *is a primary cognitive process, with additional affective elements, which can be individual or collective. The central purpose of learning is changing current mental models.*

– Derived from Homan, 2001 and Koppenjan and Klijn, 2004

This definition already states various forms of learning, both towards the level of learning and with regard to kind of learning. With regard to the level, learning can take place individually and collectively. This means that learning in networks both includes actor learning and inter-actor learning or whole network learning. With regard to the type of learning, learning involves both cognitive aspects as well as affective, or emotional, aspects. The purpose of learning is to change current mental models or frames of references, which are "a set of memory traces which form a certain structure and which are helpful in understanding the world to humans" (Homan, 2001: 31).

4.3.2 Central notions to learning in networks

Learning can take place in various ways. First, it is important to sketch the most important notions surrounding learning in networks: learning domain, learning trajectory, level of learning and learning impact. After description of the four notions, a learning impact graph is presented, which will be central to the analysis of learning in this study.

A *learning domain* is the "formal agenda of the network" (Homan, 2001: 28). This is the official subject or the key area from which the network has originated. The learning domain can be made explicit through the formulation of the central purpose of the network. More or less fundamental changes can occur in the learning domain of the network, as a result of the dynamics and complexity of the problems at hand.

The *learning trajectory* refers to the methods of working of a network (Homan, 2001). This is the way the learning domain is 'tackled' by the actors: it concerns frequency of interactions and meetings, management and facilitation and usage of specific approaches and techniques. The learning trajectory can have a more structured or a more emerging character. The character of the learning trajectory will differ with regard to the *level of learning* that takes place.

Levels of learning can differ with regard to the areas in which learning takes place. Several authors have made a typology of levels of learning. The most well-known is Argyris and Schön's *first (single)* and *second (double) loop learning* (1978, in: Homan, 2001). Both types of learning are formed when learning domains are complex and diffuse. The starting point of these two types of learning is also the same: both start with *diverging*, to collect information and explore the context. However, then differences occur. *Single loop learning* is the single movement from diverging to converging. The aim is to come to a new set of ideas, starting points and perceptions and develop this new set. It includes one cycle of renewal, towards one new cognitive frame. This new frame is the end-point of the learning process. (Homan, 2001: 244). *Double loop learning* is described by March (1991) as a more far-reaching process of learning, where radical breakthroughs develop into new dominant designs. Double loop learning results in a cyclical alternation of diverging (collecting information) and converging (concrete experiments) by the group of actors, to come to "dynamic understandings" (Homan, 2001: 245, see also: Dechant, Marsick and Kasl,1993) which are constantly developed and redeveloped.

These different learning levels on various aspects together form the *learning impact*. The learning impact will differ for all actors involved but some learning experiences can be shared by a group of actors, or even the whole network. Learning impact can be visualized in a *"learning impact graph"* with four axes (Homan, 2001): the social axis, problem analysis axis, problem solving axis and growth and development axis, as visualized in figure 4.1.

Firstly, the social axis represents learning in and from interactions with other actors. This type of learning is sometimes called strategic learning as well, as it includes developing skills and competencies on interaction and collaboration. The problem analysis axis focuses on learning concerning the problems at hand and their underlying mechanisms. The problem solving axis shows the level of learning with regard to solution building and practical outcomes and lastly, the growth and development axis contains learning about the methods of working. Each axis

has three distinguished phases, starting from the center, in which learning levels gradually increase.
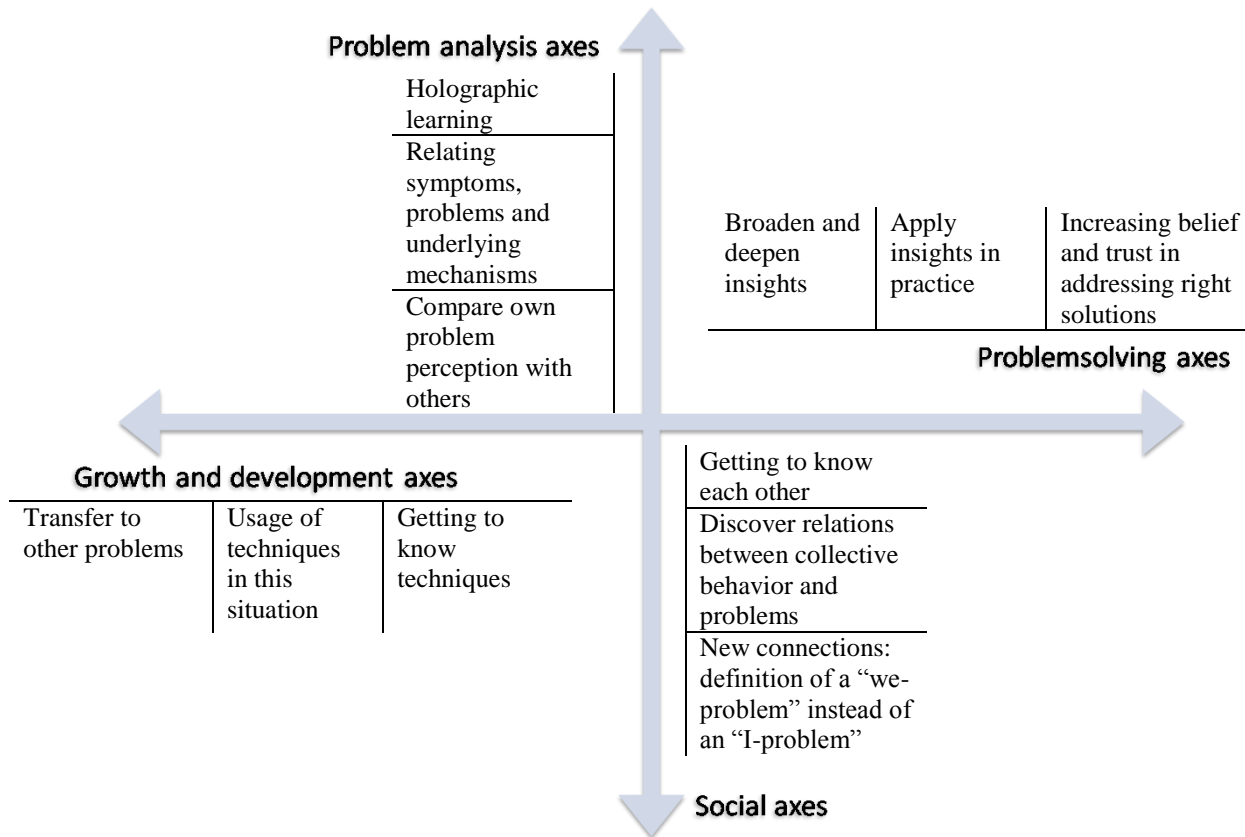
Figure 4.1 Learning impact axes (Homan, 2001: 15)

When centralizing the assumption that the complexity and type of learning need to align with the complexity and type of problem addressed, learning in multi-actor networks focused around complex problems makes for a *high level* of learning given the substantive, strategic and institutional uncertainties. That means: to tackle the uncertainties, new insights or practices need to be developed on quite a high level on various learning axes.

4.3.3 Postscript on learning: resistance and diversity

Learning is not a straightforward outcome of networks. This has three main reasons: resistance or hindrances to certain consequences of learning, a lack of management focus on learning and a lack of diversity among actors.

Resistance to learning occurs mostly in relation to resistance towards future change as a result of learning processes. The normal human tendency to resist change due to certain potential negative effects in a new situation especially applies to innovations. These have certain

characteristics that can be costly, troublesome, unfamiliar, threatening or difficult to understand and accomplish (Rainey, 2004: 367).

Furthermore, the absence of learning can be caused by a lack of management focus on various types of learning in networks. The assumption hereby is that especially deeper levels of learning need active fostering by management in order to occur. (See also network management, paragraph 4.3).

Lastly, a *lack of diversity* in cognitive frames of actors in multi-actor networks is a hindrance to learning. When there is a lack of variety in this sense, which means that the actors are too much alike to come to new mental models, deeper levels of learning cannot take place. Additionally, and more importantly, this often implies that the complex problem cannot be tackled, as current dominant designs are insufficient in tackling the problem at hand. In this regard, Nooteboom has concluded that there is a certain degree of "cognitive distance"[7] needed between people (Nooteboom, 1999). With regard to complex problems, there is a trade-off between cognitive proximity, needed for mutual understanding and agreement, and cognitive distance, needed for variety and novelty of cognition (ibid). Cognitive proximity is needed to a certain extent to assure a certain focus of actions within the network, but cognitive distance can prove highly valuable as well, as it enables variety and novelty especially when knowledge creation and exchange are concerned. This notion of Nooteboom needs to be kept in mind when addressing the 2020 Climate Solutions Meshwork with its focus on knowledge creation and exchange.

4.4 Relations between the key themes: a conceptual model

Based on the concepts elucidated above in the thematic framework, the conceptual model for this study is visualised below in figure 4.2. The relationships between the three key themes of network management strategies, trust and learning are visualized as interconnected gears. In contrast to causal relations in conventional research models, this study centralizes the *interconnectedness* of the key themes through a *conceptual model*. Hereby, focus is on analysis of the proximity of the key themes: to what extent are these themes a tight system of gears or a loose system that only limitedly relates the themes to each other?

Trust and management are the two key notions looked at when *interaction processes* are concerned, arising amidst these processes, and learning is viewed as a *process outcome* which

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[7] Here, cognition – including competence and knowledge development – is viewed as "situated action", in which knowledge and meanings are embedded in specific contexts of actions that yield background knowledge as part of absorptive capacity of people (Nooteboom, 2008: 609). Actors in collaborative practices are viewed to construct their cognitive categories in interaction with other actors and their environment. As people have developed their cognition in different backgrounds, they interpret, understand, and evaluate the world differently (Berger and Luckmann, 1967). This also influences the question to what extent an actor receives information and is able to understand it, in the sense that it is able to turn it into knowledge that may lead to different viewpoints or concrete actions.

results from the network processes. The relationships between the concepts will be elaborated on with the use of current network studies.
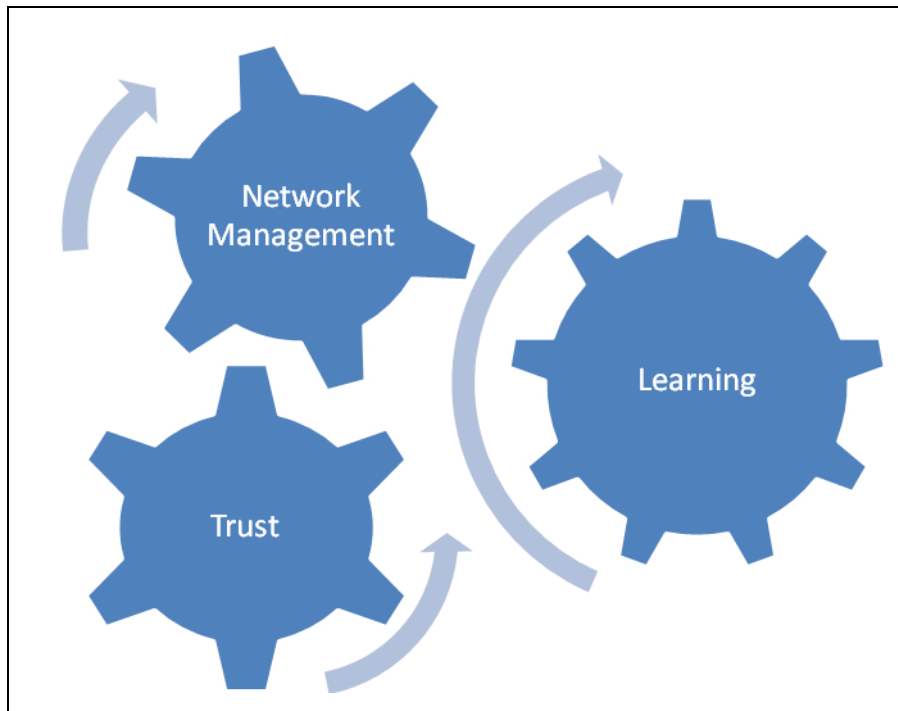
Figure 4.2 Conceptual model

- **Network management and trust**

Literature on inter-organizational networks has acknowledged the importance of trust (for an overview, see: McEvily and Zaheer, 2006: 280-302). This acknowledgement also includes the notion that trust needs to be fostered by network management. Namely, the management of a network requires more reliance on trust and collaboration than management of programs within the hierarchy of one organization, as these often include formalized contracts (O'Toole, 2002). Network management is hereby advised to foster trust among actors to come to coordination. Especially, in networks such as Meshworks, in which voluntary interdependencies arise between actors, network management is stated to be crucial in initiating collaboration among actors. Network management can create the conditions for trust to arise by defining institutional rules and facilitate interactions between participants (Edelenbos and Klijn, 2007).

Moreover, the trust level can also rise as a result from the perceptions of the actors towards the network management. The manager's competences and actions, including perceptions on reputation and interpersonal competencies can foster trust in network management (Gabarro, 1978, in: Edelenbos and Klijn, 2007). When the management is seen as trustworthy, this can 'spill over' to general trust levels in the network among actors. Namely, management

competencies can result in a reliable and predictable form of collaboration and clear process rules, which stimulate actors to enter interactions and increase the chance that actors 'open up' to others and build trust bonds, functioning as a stabilizing factor (Klijn, 2007: 252). However, with regard to fostering trust, authors caution that building trust is a difficult and long term process for network management: it can be broken easily, it takes a lot of time to establish and it is difficult to enforce for network management (ibid: 269). However, it is seen as the "lubricant" (Williams, 2002: 116) of effective collaboration, smoothening interactions. Therefore, the majority of trust studies conclude that network management –in its role of process manager or facilitator – needs to attempt fostering this lubricant to be more effective in networks.

Management should not only foster trust however, many studies also indicate that trust levels have an influence on network management activities and performance. Just as management can foster trust, trust can foster management. Trust relations are seen as "stabilizing factors in complex decision making processes in networks" (Klijn, 2007: 252). These trust relations diminish the complexity somewhat and can cause the management to better perform their process-oriented goal, as actors have to take less 'collaboration risks' because of trustworthy partners and they are stimulated more to share insights and collaborate.

- **Network management and learning**

In general, many studies have recognized that for learning and innovation to take place, people are in need of others (Chesbrough, 2003, in: Nooteboom, 2008). As networks bring organizations and actors together, and network management encourages actors to interact with each other in the network setting, it is perceived to help in improving learning and innovation (ibid). Network management can foster specific types of learning, addressing the three types of uncertainties as mentioned above. Firstly, *managing substantive uncertainty* includes managing information processing, stimulating substantive variety and knowledge exchange in the network which increases learning of actors on problem analysis and problem solving (Homan, 2001).

Through *managing strategic uncertainty*, network management can foster social learning and learning with regard to methods (growth and development axis of Homan, 2001). Concrete management strategies hereby include supporting interactions and cooperation (Crozier and Friedberg, 1980) and counteracting opportunistic behaviour.

Additionally, by *managing institutional uncertainty*, network management aids to various learning processes among actors. Making organizational structures and rules can foster interactions and problem solving to take place. This can ensure a reliable and safe network environment in which actors can start and continue collaborating (social learning) and exchange knowledge (problem analysis and problem solving learning).

However, network management will not only *cause* learning experiences with actors as described in the paragraph above, it will also *itself* learn along the way. By experiencing to what extent their management strategies for fostering interactions and collaboration have

worked towards the participants, they can learn and possibly change their management strategies in order to better facilitate learning opportunities.

- **Trust and learning**

Trust is important for actors to engage in interaction and collaborative behavior in networks. Trust will encourage actors to exchange information, to engage in interaction and take risks and trust is a positive factor for engaging in innovations (Ring and Van de Ven, 1992; Edelenbos and Klijn, 2007; Nooteboom, 2008). These consequences of trust can all be seen as major forms of learning: trust fosters social learning (on interacting) and problem analysis and problem solving learning (on content). Arentsen, Bressers and O'Toole (2000) also emphasize the importance of trust on learning. They relate these concepts to the field of sustainable development in which *new institutions* and an *open exchange* are needed to tackle current global problems. Trust is stated to be "essential" for learning to occur:

> *"To cope with uncertainties, learning is vital. Mutual trust and respect are essential [...] as they empower rather than frustrate the inputs of all."*
>
> — Arentsen, Bressers and O'Toole (2000: 598)

Lastly, learning levels can also feedback into trust levels. When actors have learned from interacting in the network, they can potentially change their level of trust in the other actors. This can for example reflect in a higher level of trust towards the other actors after a successful collaboration in an earlier stage. This way, the increased level of learning in the network can further foster levels of trust. This process of tightening of the 'gears' of trust and learning can lead to mutual enforcement. However, this cyclical process can also turn out the other way around, when trust and learning levels are influencing each other to decrease both.

4.5 Sub questions of this study

Based on the above mentioned central themes in the research, sub questions are needed to analyze the main research question in a systematic and precise way. When combined, the sub questions form a structured framework to answer the central research question, enabling both an empirical and theoretical analysis.

To recall, the central question of this study was:

How does the 2020 Climate Solutions Meshwork develop from a network perspective, specifically with regard to interactions, network management strategies and the development of trust and learning?

The following sub questions will systematically answer the central question:

1. How is the Meshwork constructed and which rules are initially dominant in the Meshwork?

2. How do interactions evolve in the Meshwork and how does this development relate to trust building processes?

3. Which network management strategies are visible in the Meshwork and how do these strategies relate to interaction development and trust building?

4. To what extent do various types of learning occur in the Meshwork?
   a. To what extent does learning develop among participants and between management and participants?
   b. To what extent is learning related to trust levels?
   c. To what extent is learning related to network management activities?

5. Methodology

The methodology for this research is based on the central question and sub questions of this study, as stated in paragraph 4.5. Firstly, the mixed methods approach and semi-longitudinal research design are elaborated on, supported by a timeline of methods. Then, the systemic research model is explained, with its focus on flexibility and interactions between the various aspects of the study. Afterwards, types of analysis in the current formative process evaluation are described. Then, the operationalisation of the three key concepts follows: trust, learning and network management are unravelled. The operationalisation creates grounding for the conceptual model to be analysed in detail. Lastly, issues around reliability and validity are elaborated on as well as the choice for specific data analysis tools, aimed to process all data collected.

5.1 Concurrent triangulation in semi-longitudinal design

The research design used, the *case study*, fosters a close look at the processes within the 2020 Climate Solutions Meshwork. In congruence, a semi-longitudinal design is chosen to be able to gain in-depth insight in developments in the Meshwork in its first half year of existence.

This study uses "*concurrent triangulation*" (Boeije, 2009: 159) of research methods, which includes various simultaneously used research methods to come to perception- and behaviour-based analysis and cross-validation of methods. The various data collection instruments include open interviews and semi-structured interviews with management parties and actors, two online actor surveys, observations of face-to-face interactions and management behaviour, observations of management meetings and content analysis of the online Meshwork platform.

This triangulation of research methods is conducted in a *semi-longitudinal research design* of approximately six months of data collection, which is visualized in figure 5.1. The semi-longitudinal character is shown in its lengthy data collection period. However, this study does not entail a traditional longitudinal design, in which the same sample was asked twice to fill in a questionnaire. Here, a more explorative approach is chosen in which quantitative and qualitative data collection methods are intended to complement each other.

Firstly, to explore the workings of Meshworks and the type of actors involved, open interviews were held with The Hague Center members and an online pilot survey was set up for participants of the Meshwork. Additionally, observations of preparatory management activities before Copenhagen complemented the exploration.

During Copenhagen, actor surveys were conducted in the second week of Meshwork sessions (14 until 18 December 2009). All participants who had a face-to-face conversation were invited to fill in the actor survey. Almost all participants agreed to fill in the survey, resulting in 65 surveys. Participant observations were conducted in the form of actively facilitating conversations by the researcher, as well as observing other face-to-face interactions with

facilitators and observing management strategies conducted. Lastly, a few short actor interviews were held.

After Copenhagen, observations of several management meetings of The Hague Center were included to trace development of management strategies, as well as a second round of interviews with members of The Hague Center and Gaiasoft. In addition, a second actor survey (38 respondents) was conducted to gain insight in development of actor interactions and trust levels as well as perceptions on management development and learning.

Ongoing data collection methods included a content analysis of the online Meshwork platform, including knowledge availability and information exchange as well as interaction development and online facilitation activities by network management parties.
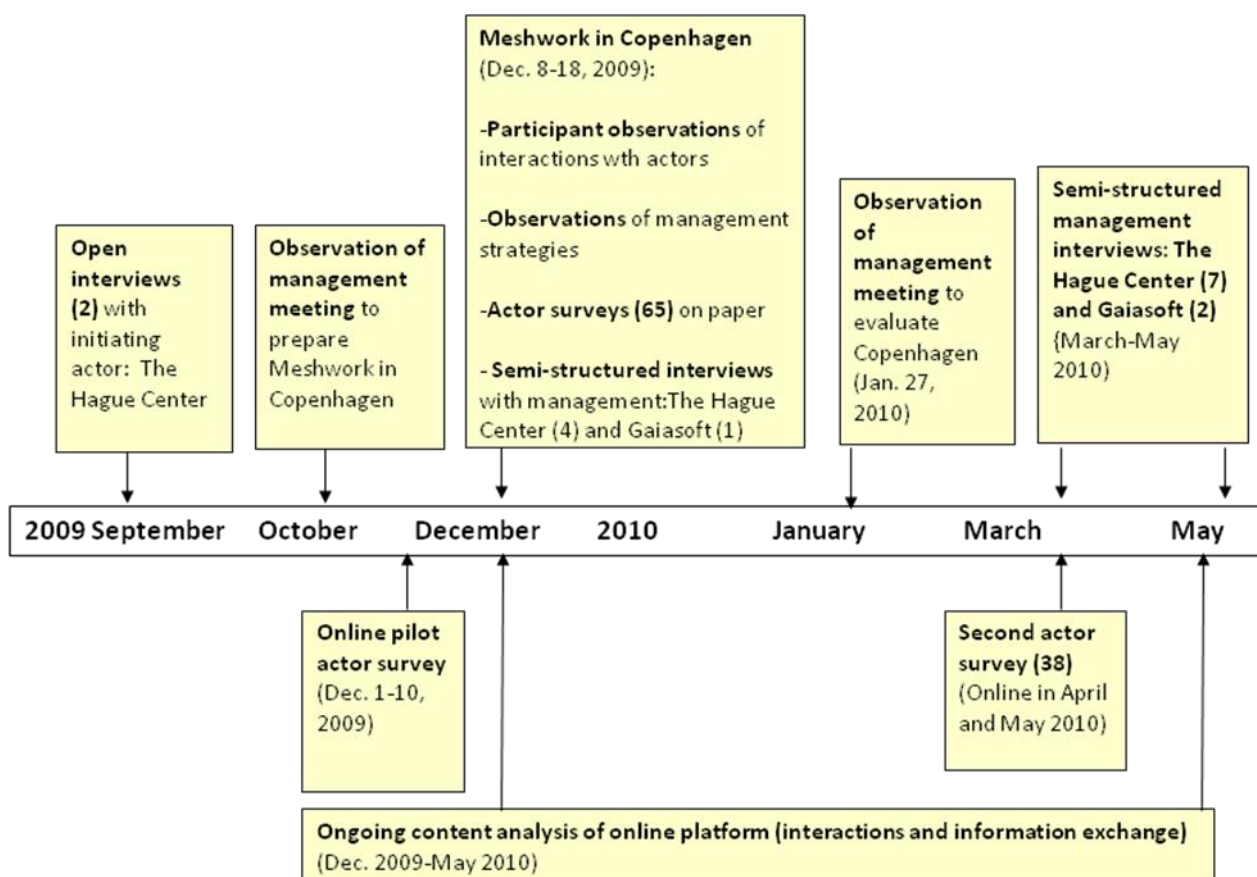
Figure 5.1 Timeline of research methods: semi-longitudinal research design

The rationale behind using a variation of research methods is to gain in-depth understanding of developments in the Meshwork case, when interactions, trust, network management and learning are regarded. Observations hereby function to gain insight in concrete behaviour of participants and management. The actor surveys and management interviews both create insight in knowledge, perceptions and attitudes and reported behaviour. This way, the various research methods complement one another. Actor surveys are chosen for, as the number of participants of the Meshwork is high at the start of the Copenhagen conference, around 600.

Comparability of actors is intended to be obtained and general patterns are aimed at instead of in-depth perceptions of actors. The semi-structured interviews with management members aim to enable rich descriptions of management activities in Meshworks. These management activities are relatively unexplored in current scientific studies and they are especially focused upon here. The semi-structured character of the interviews enables descriptions of The Hague Center and Gaiasoft members but simultaneously leaves enough room to come to rich (additional) descriptions of management activities, even beyond topics as included in the topic-list of interviews. This flexible approach aims to stay close to the perceptions and reported mental frameworks of Meshwork management members.

5.2 Systemic research model

An interactive, or so-called systemic, research model (Maxwell, 2005) is used towards the various aspects of the study. The aspects of goals, theoretical framework, research questions, methods and validity function as "an interconnected and flexible structure" (ibid: 3). The assumption is that the various aspects of the study are interconnected and mutually influencing each other which demands a reflexive approach. This way, the model is a "design-in-use model" (ibid: 2) which represents the actual relationships among the components of the research, as well as the intended design. In practice, this means that the researcher has developed its theoretical framework and usage of data collection methods gradually throughout the research and has made alterations as a cause of early data collection insights. Concretely, the research question and sub questions as well as the topic list of interviews and the list of questions in the second actor survey have endured gradual changes in the course of the research process.

These gradual changes were fostered by using the *criterion of familiarity*: focus is on describing the processes within a system instead of *a priori* categorizing a system (Boeije, 2009: 219). This is in alignment with sensitivity towards dynamics of duality of structure in the case under study. This study therefore does not *test* relationships among variables but rather focuses on describing processes with the help of key themes, used as sensitizing concepts, to guide analysis (see also Boeije, 2009). These key themes are later on in the analysis *related to each other*, as presented in the conceptual model beforehand. However, this does not entail testing causal relationships among themes.

Within this analysis focused on key themes, the intended craftsmanship is to give meaning in a way in which respondents recognize themselves as well as to speak a language understandable to 'outsiders'(Geertz, 1973, in: Martin, 2002). This craftsmanship is explicitly fostered in this study by conducting participant observations in Copenhagen, to view the network management activities from within, but afterwards, to only conduct observations from an outsider's perspective. Special efforts have been put in awareness and prevention of the "going native" phenomenon (Patton, 1999, in: Boeije, 2009: 175), in which the researcher is too much intertwined with the study subjects to give an in-depth well-nuanced analysis. For

this reason, observational memos and theoretical memos were written – ensuring well-specified descriptions of processes in the Meshwork as well as reflecting on how findings are derived from actual data (Boeije, 2009).

5.3 A formative process evaluation of the 2020 Climate Solutions Meshwork

The case study strategy and longitudinal research design lead to a specific analysis: the case is studied through conducting a *formative process evaluation*[8] (Clarke, 1999) of the 2020 Climate Solutions Meshwork. This action-oriented form of evaluation focuses on the development of processes. In specific, the formative process evaluation will be used to study interaction processes in the Meshwork case. The formative evaluation of the Meshwork includes interaction analysis and institutional analysis.

- *Interaction analysis* includes interaction patterns, trust and learning. Analysis of interaction patterns includes number and density of contacts between actors and intensity of knowledge exchange. Trust is included as directly emerging from the interactions and experiences in the Meshwork. Learning is included as a process outcome, resulting from interactions in the Meshwork combined with management activities and trust levels.

- With regard to *institutional analysis*, structural elements of the Meshwork are studied. These elements include characteristics of the Meshwork and network management (on a macro-level) with its accompanying rules. Characteristics of the Meshwork include its platforms, management approach and constituting rules. Network management is included as well on an intermediate level focusing on the network management approach, such as the kind of facilitation of interactions.

In general, the focus of analysis is on interaction and network management *processes* within the 2020 Climate Solutions Meshwork. The attempt is explicitly *not* to arrive at actual determinants of performance of the network under study: performance, or second-order outcomes are outside the scope of this study. Lastly, the researcher has had a formative influence on the development of the Meshwork. On various occasions, including a management team evaluation in Copenhagen and after Copenhagen, as well as within several management interviews, the researcher has come to the fore with observations and analyses thus far and has communicated openly on insights with several management members.

To solely focus on process outcomes and omit an analysis of (more tangible) performance outcomes of the Meshwork has two major reasons. The first reason is of practical order. Since

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[8] Formative evaluation is contrasted by summative evaluations. Some evaluations of inter-organizational networks and collaborative practices in general, take this summative stance in which only (end-) *outcomes* are the basis for evaluation. Then, processes are not taken into account (Clarke, 1999).

the Meshwork only exists for less than half a year, it is (very) early, in the light of its common long term purpose, to aim at evaluating concrete actions and projects already. The second reason, which is more fundamental, is that the current study aims to study the emerging *collaboration processes* within the Meshwork to gain more insight in the workings of this specific type of network, instead of studying its performance and effectiveness.

Hence, this study joins a large group of current network researchers who agree that process indicators are a critical component of network evaluation (for an overview, see: Provan and Sydow, 2008). Additionally, this study connects to other authors who have emphasized the need to understanding network workings through *perceptions* of actors as they are believed to highly affect the way in which participants try to manage their involvement (Hibbert, Huxham and Smith Ring, 2008). Additionally, this study is meant to contribute to a more complete evaluation approach of multi-actor networks. It hereby aims to connect to an increasing amount of studies that are currently reasoning for a multi-level perspective in evaluation, including actor and whole network levels (Brass et al., 2004; Milward and Provan, 2000, in: Rainey, 2003). Furthermore, the need for scientific evaluation is underscored as despite the external pressure for evaluation nowadays (Provan and Sydow, 2008), only a small number of practicing managers in inter-organizational and multi-actor networks conducts a systematic evaluation themselves (Bamford and Ernst, 2002, in: Provan and Sydow, 2008).This study aims to contribute to the multi-level evaluation approach by combining the above mentioned levels of analysis with the use of a wide variety of data collection methods.

5.4 Operationalisation: dimensions for quantitative measurements

Based on the theoretical and thematic framework, several dimensions are defined with regard to key themes of this study. These dimensions clarify and make transparent how the concepts are understood in this study.

5.4.1   Network management

This study focuses on the analysis of network management on an intermediate and macro-level (derived from Hibbert, Huxham and Smith Ring, 2008). On the intermediate level, *network management strategies* are focused upon and on the macro-level, *institutional rules* created by Meshwork management parties are analysed, including its changes over time.

The *macro level* of management is studied with regard to the initiation of institutional rules through observations of Meshwork management meetings as well as observations of management activities in Copenhagen when instructing the group of facilitators to structure face-to-face interactions. Two types of rules are distinguished: constitution rules and interaction rules, in alignment with the overview of rules in the thematic framework.

The *intermediate level* of management is studied through analysing two types of network management strategies, as distinguished in the thematic framework based on Klijn (1996). Network management indicators are divided into items per indicator, as the indicators incorporate various items, as visualized in table 5.1.

Table 5.1 Network management strategies, indicators and items per indicator

Network management strategies	Management indicators	Management items per indicator
Network constitution	-Network selection of actors	-Ease of admission -Diverse entry of participants*
	-Change of positioning of actors	-Positioning in Meshwork -Amount of space to communicate
Interaction management	-Initiation of interactions and selection of actors per interaction	-Active invitation* -Welcoming of different opinions and information*
	-Facilitation of interactions	-Help in understanding of other perspectives* -Stimulating interactions* -Help in connecting and collaborating

Actors were asked to rate the above mentioned network management items on five survey statements (the statements with a * in the table) in the first actor survey, and ten items in the second actor survey (all items as mentioned in the table). The second actor survey included more items, as additional management strategies beyond face-to-face strategies of management in Copenhagen were included.

Moreover, a topic list for semi-structured interviews with the Meshwork management team members and facilitators in December 2009 after the face-to-face sessions and in spring 2010 is included in Appendix 3.

5.4.2   Trust

The level of trust is measured in both actor surveys by asking the *perceived trust* of actors through a grade on a ten-points-scale. The first actor survey only includes one overall grade for trust in all parties in the Meshwork. The second actor survey includes two separate grades

on perceived trust towards other participants and perceived trust in the management and facilitation team. Only after conducting additional interviews in Copenhagen – after the first actor survey had been distributed, it became apparent that trust in network management was viewed considerably different from trust in other participants. Therefore, in line with the flexible research design, a conscious choice was made to include two separate grades of perceived trust in the second actor survey.

Several items per concept often improve validity of data collection but here only one overall indication of perceived trust was chosen for. The reason for this choice is the fact that Klijn, Edelenbos and Steijn (2010) have validated using one overall trust grade. They used five items of trust and one overall grade of trust in a study on governance networks and concluded that the overall score corresponded well with the average score on all dimensions (a high correlation was found). Asking only a single score for perceived trust also enabled the first actor survey to remain within the space of two pages. The first actor survey could hereby be handed out on one double-printed A4-paper. Practically, this helped in convincing participants that it really was a short survey ('just one paper to fill in') and it also decreased environmental damage by reducing the amount of paper by half. However, validation of the overall trust score was the most important aspect to have only one overall trust grade.

5.4.3 Learning

Learning is measured in both actor surveys with the help of the learning impact graph of Homan (2001), as mentioned in the thematic framework. Four types of learning are distinguished, in congruence with the four learning impact axes and they are operationalized with the assistance of several indicators per learning axis, as visualized in table 5.2. The four types of learning are asked in the form of *perceived learning* as indicated by actors.

Table 5.2 Learning dimensions and indicators

Learning dimensions	Learning indicators
Social learning *(relations and interactions)*	-Increasing interactions with already existing contacts -Increasing interactions with new contacts -Understanding other points of view* -Improved collaboration*
Problem analysis learning *(content, cognitive)*	-Providing information on the Meshwork -Finding/gaining information on the Meshwork* -Increase of information exchange -Better understanding of climate issues -Reflection towards own viewpoints* -Being in a continuous circle of collecting information and reflection (double loop learning)

Problem solving learning *(content, cognitive)*	-Practical usefulness of (face-to-face) interactions*
Growth and development learning *(management, methods)*	-Development of collaboration skills* -Formation of shared knowledge (e.g. in an online group)* -Understanding of Meshwork methods and framework*

The learning dimensions and indicators are transformed into fourteen survey statements on learning in the second actor survey in May 2010. The first actor survey in Copenhagen includes only eight learning aspects (the ones with a * in table 5.2). This broadening of questions concerning learning in the second actor survey is chosen for since participants by then had more opportunity to experience various types of learning. Also, participants can indicate development aspects of their learning (such as the items one and two concerning social learning: 'increasing interactions'). Hence, the second actor survey also includes longer-term aspects of learning, such as the indicator: 'being in a continuous circle of collecting information and reflection (double loop learning)'.

Learning hereby also includes development of interaction patterns (social learning) between actors and knowledge exchange (problem analysis learning). Both due to practical reasons and theoretical reasons, the exact number of ties and the centrality of actors in the Meshwork is beyond the scope of the current study, as well as beyond the functionality and reporting facilities of the Meshwork platform. Therefore, this study has focused on *perceived* number of interactions by actors in the actor surveys. However, content analysis of the number of documents and online groups on the online Meshwork platform adds to understanding of the level of activity and interaction in the Meshwork.

5.5 Sampling

Sampling concerns both surveys and interviews. Firstly, with regard to both actor surveys, random sampling was not possible as there was no sampling frame with a list of all participants. That is, population statistics were not timely available of the participants of the Meshwork. The first actor survey, conducted during Copenhagen, was handed out to all participants of face-to-face interactions in the second week of Meshwork sessions, when the researcher was present. This resulted in 65 fully answered questionnaires. Non-response was not observed, all participants of interactions were willing to fill out questionnaires.

The second actor survey was an online survey. The second actor survey was filled in largely by the same group who filled in the first actor survey – 63.2% of respondents of the second survey (24 people) had also filled in the first survey. However, not all respondents in Copenhagen filled in the second survey – even after two reminders were sent. Apart from e-

mail invitations to this group who filled in the first actor survey, an invitation for the second survey was sent to all participants of the Meshwork through a short article in the first 'Meshwork newsletter April 2010' as well as by placing an introduction and hyperlink to the survey on the homepage of the Climate Meshwork. At this moment, it was not clear yet what the total number of participants in the Meshwork was. Due to observations and interviews which hinted at very low participation of participants, the survey invitation was now sent to all participants. Later on, the total population in April 2010 was measured: 1381 people. Nonetheless, after seven weeks of collecting responses, the number of responses was only 38 responses. This equals a very low response rate of 2.75%.

This low response rate can be related with high probability to the remarkably low level of activity on the online Meshwork platform in April and May 2010. Additionally and importantly, the second survey was not including participants who were not any more active in the Meshwork since their registration: unit non-response was high for this large inactive group. The 38 responses might therefore state an artificially higher level of activity then when an additional overview of fully inactive participants was available. Moreover, the low number of respondents also has implications for the number and type of statistical analyses. Paragraph 5.6 will elaborate on sampling issues and the consequences of this low number of responses on the second survey with regard to reliability and validity.

When interviews with managers were concerned, "purposive sampling" (Boeije, 2009) was applied: instead of random selection, interviews were conducted with purposefully selected management members of the various key partners and several facilitators. The foundation for this choice was to select the interviewees purposefully to gain a broad overview of the various perceptions among management and facilitators. In total, 14 interviews were held. Three interviewees were from Gaiasoft, five were facilitators and six interviewees were members of The Hague Center. Interviews were conducted with the use of a semi-structured topic list (see appendix) and lasted on average 45 minutes. Several interviewees of The Hague Center were interviewed in both rounds, in order to gain insight in their perceptions on development.

5.6 Quality criteria: reliability and validity

The first quality criterion of this study is reliability. This mostly regards explicating choices of the researcher and the level of standardization of research methods (Boeije, 2009). Exact repetition of this study is not possible, as the situation among actors and management has changed significantly which prohibits gaining similar results when studied again. However, the researcher does have an important influence on the course of researching. Standardization is aimed for in this study by attaching the topic list of management interviews and the actor surveys in the Appendices. Moreover, reliability is about the possibility for replication of the study. This is fostered as well through making topic list and surveys transparent as well as through clarification of methodological and philosophical implications of this study. Lastly, a reliability analysis was conducted on the aspects of learning in this study, as Homan's division has not been empirically used yet (see also: Van der Velde, 2004: 143). Sufficiently

high correlation between all scaled items in the actor surveys on learning was found (Cronbach's alpha: 0.91). Moreover, unidimensionality was assured by a factor analysis (lowest item loading: 0.61). None of the items needed to be discarded.

The second quality criterion is validity. Validity is gaining evidence against threats of: "*How might I be wrong?*" (Maxwell, 2005: 105). In this section, conscious efforts are taken to make various validity threats implausible by evidence. However, "validity is relative" (ibid: 105) both with regard to the relationship between conclusions and reality as well as with regard to the fact that validity has to be assessed in relationship to the purposes and circumstances of the research. This study is hereby not aiming to convince to have found the objective truth, but rather aims to convince the reader of the credibility of descriptions, conclusions and interpretations in light of its research goals.

An important division in measurement is between internal and external validity (Maxwell, 2005). This study mainly aims for *internal validity*, in the sense of internal generalization, to obtain a broad and in-depth insight in a wide variety of actors involved in the Meshwork case. This internal validity is fostered by the triangulation approach as well as by applying purposeful selection in interviews. This way, the heterogeneity of the various actors was captured as much as possible. *External validity* is only limitedly aimed for by giving some explorative insights in issues of trust and learning in the development of complex international networks based on voluntary interdependencies.

Other forms of validity were also taken into account. An important validity threat is measuring something else than intended. The question: *Do I actually measure what I state to measure? (*Van der Velde, Jansen and Anderson, 2004) needs careful attention. This so-called *content validity* states how well the measure taps all the different aspects of the concept. Content validity was improved by conducting a pilot survey and several open interviews in the beginning to explore the concepts in an in-depth way. Additionally, several items were used on the concepts of learning and network management in quantitative measurements. However, it should be noted that while stating to measure 'trust' and 'learning' in the Meshwork, in reality, both actor surveys measured *perceived* trust and learning. This perception can differ from actual trust and learning behaviour. However, it was not possible to observe all participants' behaviour on trust and learning levels for this study.

With regard to *criterion validity*, existing measurements were used in this study whenever possible to obtain findings by a well-established measure. Trust levels were measured in this way, validated by research of Klijn, Edelenbos and Steijn (2010). Other elements of this study however could not rely on existing tested measurement methods. Therefore, a reliability analysis has been conducted (see above for explanation).

Another validity threat, *researcher bias*, which includes selecting data that fit the researcher's existing theory or preconceptions, was diminished by applying triangulation to gain various types of data. Additionally, the systemic research design and semi-structured character of the

interviews fostered possibilities to obtain important topics outside of prior formulated interview schemes and preconceptions.

Furthermore, *respondent validation* was applied in all management interviews. During the interviews and at the end of each interview, the researcher paraphrased the key notions of the interviewees and interrogated to gain additional information on motives and perceptions and to function as member validation checks, receiving confirmation of the interviewee on observations of the researcher. Interviewees then had the possibility to complement, change or even contradict this summary to (once more) clarify their statements and perceptions.

In addition, the researcher actively *searched for discrepant evidence and negative cases.* While many facilitators in Copenhagen were positive on developments, also explicitly negative facilitators where approached and interviewed. This way, the breadth of data increased.

Lastly, *reducing non-response* was a matter of concern. Whereas the non-response was virtually non-existing when collecting the paper actor surveys in Copenhagen, the online actor survey suffered from an extremely high level of non-response. Measures taken to limit non-response included an additional link on the homepage of the online platform, specific e-mails to people who had already filled in surveys with two additional reminders and stating the survey link on all (group) discussion fora on the online Meshwork. The high level of non-response can also be related to the high level of inactivity among participants of the Meshwork.

The last quality criterion is usefulness. This criterion concerns relevance of the data in practice. A valid, reliable research is in the perception of the researcher of actual added value, when it can be related to practice in some form. Here, the researcher has collaborated in close contact with the management parties in the Meshwork to obtain their questions, concerns and wishes with regard to gaining insight in development of the 2020 Climate Solutions Meshwork. In consultation with especially The Hague Center members, goals and research questions were discussed. Hereby, a balance was found between theoretical concepts and practical questions. The descriptive and explorative character of the study always remained, while the explicit formulation of questions changed gradually when applicable due to situational circumstances or outcomes of early data collection analysis.

5.7 Data analysis tools

The online surveys are configured using the online survey programme 'Survey Monkey'. The data of the quantitative surveys is analyzed by SPSS. To enable analysis of the qualitative measurements, including interviews and observations, MaxQDA software is used for coding and analysis. Additionally, in analyzing qualitative data, *"constant comparison"* (Boeije, 2009: 83) is used to enable a transparent and systematic analysis. Three phases of coding – open, axial and selective coding – are used in this comparison process, to develop insight in the various qualitative data files both in breadth and in depth.

5.8 Part II: a preliminary overview

As theory and methodology have now been outlined, it is time to go to part II of this study: the empirical material. The results will be divided into three main Chapters: initiation and construction; development of interactions; and learning and knowledge exchange. Sub question 1 will be discussed in the first Chapter, sub questions two and three will be discussed in the Chapter on development of interactions and trust building; and sub questions four is discussed in the last results Chapter on learning and knowledge exchange.

PART II
RESULTS

6. Initiation and construction

The 2020 Climate Solutions Meshwork, the central case of this study, is studied from its first steps in the first half year of its existence. To start with, the initiation of the Meshwork is described in an overview of the initial key actors, their ambitions and interests. Afterwards, an overview of the structure of rules at the construction of the 2020 Climate Solutions Meshwork is visualized, to see characteristics of this Meshwork and the interaction rules as set at the beginning by the Meshwork management. Lastly, the structure of rules is compared to the set of general Meshwork principles – as discussed earlier in the case description of Chapter 2 – and there are important difference found. However, to start with, an initial timeline is presented to grasp the initial intentions on time planning in the 2020 Climate Solutions Meshwork. It is to find out in the coming results Chapters to what extent this intended development timeline really was achieved. This Chapter hereby answers **sub question 1** of this study.

6.1 Initiation of 2020 Climate Solutions Meshwork
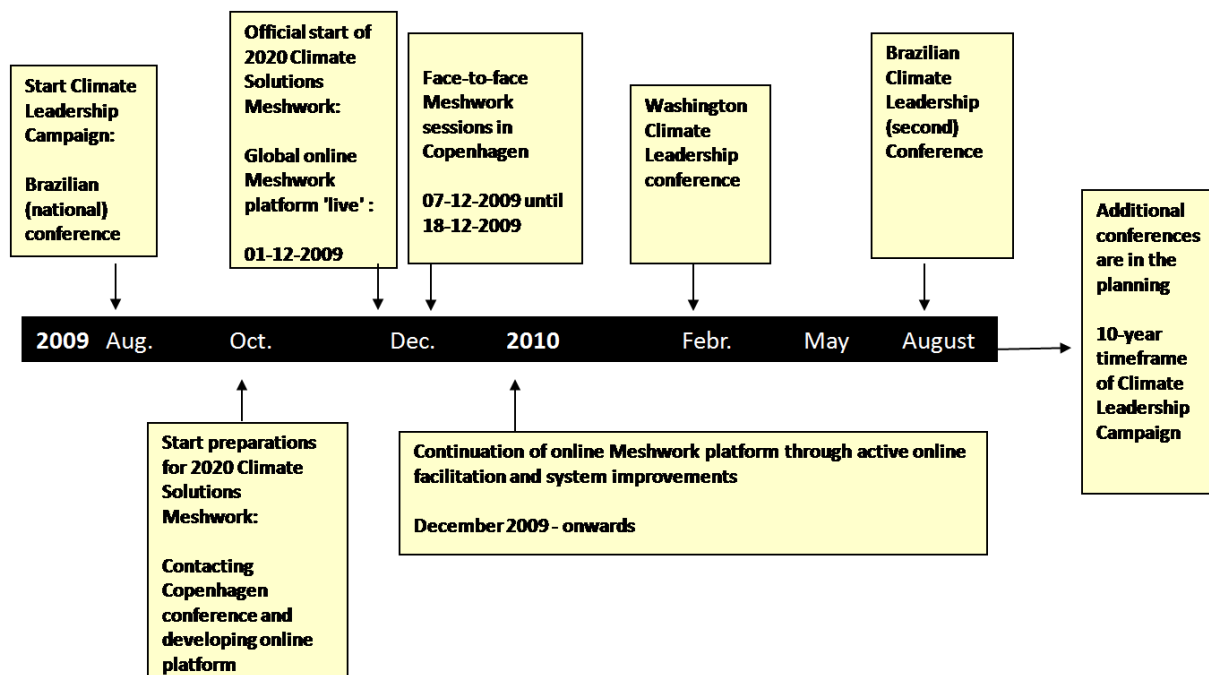
6.1.1 Initial timeline

Figure 6.1 Initial intended timeline of the 2020 Climate Solutions Meshwork

The 2020 Climate Solutions Meshwork officially started at the first of December 2009, when the online platform went 'live'. Additionally, the Copenhagen conference was planned, to have many face-to-face interactions and a large increase in online subscriptions of

participants. As well, the intention at the start was to have several more face-to-face conferences on the short term in Washington (February 2010) and Brazil (August 2010). Simultaneously, the online platform was intended to become a lively platform through continuous system improvements and *active* online facilitation of interactions and activity. The initial timeframe for the 2020 Climate Solutions Meshwork was very long term: fitting within an overall Climate Leadership campaign for the coming ten years. This overall campaign and the most important actors in the initiation of the Meshwork will be elaborated on in the coming paragraphs. First, however, the preparations for the official start in December 2009 of this Meshwork will be described.

6.1.2   Preparations for the initiation in Copenhagen

<div style="border:1px solid">

First Copenhagen Preparation Meshwork Meeting, November 11th 2009:

A member of the core management team of the Climate Meshwork starts the meeting saying:

"The question is: how do we organize ourselves to solve current global problems?

Currently, lots of experimentation is going on, as old structures do not work anymore. I like to use the metaphor of the caterpillar to clarify the global transition we are in right now. Within the caterpillar, gradually new so-called imaginal cells emerge. First, the old body attacks them as they are not recognized, later on when the body starts to recognize them, they connect to each other. Every cell then has a specific function in the whole system, together creating a butterfly. This is how I see the Meshwork functioning."

[The Hague Center member]

</div>

With less than a month to go, members of The Hague Center, an organization linked to the Center for Human Emergence, had teamed up in the first 'Copenhagen Preparation Meeting' to prepare the first global face-to-face event for the 2020 Climate Solutions Meshwork in Copenhagen, December 2009. Several people indicated that a major transformation was needed to tackle climate issues and Meshwork had an important role to play in this transition, referred to in the quote above through the metaphor of the transformation of the caterpillar into butterfly. While the politicians and lobby groups had prepared for years to make the most of this United Nations Climate Summit momentum, this was not the case with the Meshwork. The timing was tight – very tight, and some The Hague Center members said they received feedback, such as:

"You are crazy to start only now! How can you ever succeed in organizing such a large event on such a short notice?"

[The Hague Center member quoting feedback of others]

The main cause for the tight preparation time to initiate the Meshwork in Copenhagen was that firstly, it was not intended to participate in Copenhagen. In fall 2009, members of the Center for Human Emergence (CHE), the foundation who 'invented' Meshworking, presented their experiences on a social entrepreneurs gathering in The Hub in Amsterdam from setting up a Meshwork as part of a Climate Leadership Campaign Meshwork in Brazil in August 2009. Several people in the public, listening to this presentation in fall 2009, were touched by this way of working:

> *"During the presentation, we looked at each other and decided: we have to do this in Copenhagen! But when we approached the Meshworkers after their presentation, they did not have any intention of doing anything there. But their response to our enthusiasm was: if you feel you need to do something there, tell me! Then, we got it going and we started the organizational arrangements to make it happen."*
>
> [Entrepreneur in The Hub, Amsterdam, August 2009]

From that moment on, collaboration started between the Meshworking management team and three new volunteers – all entrepreneurs from the Hub – who felt committed to contribute in setting up a global climate Meshwork. Then, as a connection was made with the directing organizer of the civil society conference in Copenhagen, *Klimaforum*, a dialogue started on alignment between the Meshwork and the goals of the civil society summit. In the words of a member of the Meshwork core management team:

> *"The connection was directly really well. The director [of Klimaforum] instantly understood what it was that the Meshwork could bring to his event. He was searching for more coherence within the program of the conference and additionally, he was searching for: what to do after the conference? Because he felt it to be such a shame if all people just went home afterwards. We could bring both aspects: more coherence and an online system that could be used after the conference as well. And for us, we had the opportunity to create a Meshwork at the event without costs, as at that moment, of course, we didn't have any budget for it."* [The Hague Center member]

The volunteers were incorporated in preparations of the Meshwork and they became the driving force behind the organizational arrangements around the face-to-face sessions of the Meshwork in Copenhagen. However, other parties had tasks on their hands as well. We now have a closer look into the initially involved actors in the 2020 Climate Solutions Meshwork.

6.1.3 Initial key actors with their roles and ambitions

Three key actors to initiate the 2020 Climate Solutions Meshwork were the State of the World Forum (SoWF), The Hague Center for Global Governance, Innovation and Emergence and Gaiasoft. Their initially defined tasks, interests and ambitions are visualized in table 6.1.

Table 6.1 Initial actors in the Climate Meshwork with their roles, interests and ambitions

Actors	Initial role	Initial interests	Initial ambitions
State of the World Forum (SoWF)	o Providing the 'umbrella' campaign o Funding opportunities o Coordination between Meshwork and the overall campaign	Have Meshwork expand the Climate Leadership Campaign to a global scale and build upon Climate conference in Brazil	⇒ Expand climate progress in Brazil, and contribute to 80% CO_2 reductions globally, with a 10-year campaign timeframe
The Hague Center for Global Governance, Innovation and Emergence (The Hague Center)	o Process mentor, all tasks concerning face-to-face interactions and facilitation (in collaboration with 'outsiders')	Further experiment with Meshworking, and create increased legitimacy for Meshwork methods	⇒ Align, activate, expand and support various Meshworks ⇒ Frame Climate Meshwork within a Global Transition Initiative ⇒ Stimulate knowledge exchange, collaboration and learning
Gaiasoft	o Developer of software for online Meshwork platform and online facilitation	Build a new online platform to further development on software for Meshworks	⇒ Developing software for Meshworks to support social and knowledge exchange and performance management ⇒ Focus on developing Meshworks in general

Remarkably, the three partners all had their 'own' initial territory. The State of the World Forum was only on a meta-level involved in the Meshwork, providing an 'umbrella' campaign, the Climate Leadership Campaign, which encompassed the Meshwork. Additionally, funding was partially intended to flow from this actor. The Hague Center was

concerned with managing all face-to-face interaction processes in the Meshwork and Gaiasoft intended to take care of the technological aspects of the 2020 Climate Solutions Meshwork. What is most striking from the table is that The Hague Center and Gaiasoft stated to have ambitions towards experimenting with and developing Meshworking *in general*. However, The Hague Center additionally focused on knowledge exchange, collaboration and learning within the Climate Solutions Meshwork. Only the SoWF explicitly aspires to work on climate issues specifically. At the initiation in Copenhagen, various The Hague Center members and Gaiasoft members were present; no SoWF members were present.

6.2 Construction: structure of initial rules

The initial institutional characteristics of the Meshwork consisted of various rules, as defined by the initial key actors. Here, only *initially formulated* rules as stated by the initial founding actors are focused upon. In the next results Chapters, insights will be given into the development (or decline) of these rules and the emergence of other rules in the Meshwork.

For now, two types of rules are distinguished when describing initially formulated rules in the Meshwork: arena rules and interaction rules. First, arena rules, which have a constituting character, will be described to see how the Meshwork management has 'set the scene' for the Meshwork to operate in. Afterwards, interaction rules, which regulate interactions within the Meshwork setting, will receive attention. Hence, the typology of arena and interaction rules is used in the coming paragraphs to gain insight in formal rules, as *initially imposed* by the three key actors in the Meshwork. Participants did not have influence on these initial rules. Later on, the development of these rules – in relation to actors' behaviour and perceptions – is focused upon.

6.2.1   Arena rules: identity and positioning

Arena rules create the very possibility for a network to function at all: they define the reality or setting of the network. These reality defining rules include determining the nature of the network and its position. In the 2020 Meshwork, initial arena rules as defined by the key actors include (see table 6.2):

Table 6.2 Arena rules

	Aspects	Rules in the 2020 Climate Solutions Meshwork
Arena rules	Identity	o The 2020 Climate Solutions Meshwork intends to become a worldwide collaboration on a global complex problem o Initial framing of the climate problem by experts (specific climate scientists) o Centralized overall purpose: 80% CO_2 reductions globally in the year 2020 as defined by SoWF o No strict dependency relations towards organizations, firms or governments: voluntary interdependencies o Specific theoretical foundations of management, including integral theory with accompanying working methods o Meshwork consists of regular face-to-face interaction sessions (around the world) and an online platform
	Position	o Emphasis on autonomy of actors o The Hague Center as active process mentor o Participants play vital part in developing scope and content o Explicit wish of SoWF, The Hague Center and Gaiasoft to grow quickly in number of participants, cross-sector and cross-country
	Rewards	o Funding by SoWF and individual donations through The Hague Center o Facilitators are volunteers (without financial compensation) o Integral projects and large-scale campaigns receive highest appraisal by initial key actors o Open online information exchange receives high appraisal; email traffic has a negative status, as it limits open availability of information to all

First and foremost, the 2020 Climate Solutions Meshwork centralizes the overall goal of 80% CO_2 reductions globally, based on scientific insights. This group of scientific 'experts' is used to confirm the severe consequences of climate change. A specific group of climate scientists is referred to as rationale for this Meshwork, including the 2006 Stern Report and the so-called "Plan-B" report of the Earth Policy Institute by Lester Brown. These scientists state that governments are now negotiating to reduce CO_2 emissions by 80% in 2050, but on the basis of their calculations, it is needed to achieve this 80% reduction already in 2020 in order to effectively tackle climate change and overcome irreversible negative consequences.

The identity then is also a global one as people from all around the world are invited, on the condition that they subscribe to the overall goal. Autonomy of actors is emphasized in this regard: people can freely interact, collaborate and share information with other actors, on the moment they choose. These global interactions are fuelled by face-to-face sessions at conferences and an online Meshwork platform. This open character is later on explicitly resembled as well in various interaction rules. One of the new volunteers explains the character of the Meshwork in an online post on the Meshwork platform as follows:

> *"The 2020 Climate Solutions Meshwork is an online platform and face-to-face experience. The Meshwork helps to create greater coherence and focus amongst the many activities going on for a more sustainable world. [...] Weaving the world into coherent action."*   [Online post of facilitating volunteer, 13 November 2009]

With regard to positioning, the Meshwork explicitly aims to contribute to solving the complex global problem of climate change. Openness and a new way of collaboration around a central goal are needed in this view and are initially described by a Meshwork management member as:

> *"There is a strong belief that a global transformation needs to arise, just like with the climate problems now at hand. We strive to additive, rather than competitive dynamics. We first ask what needs to be done rather than first ask who wants to connect. That is the main difference with a normal network. That's what gives it energy, because it is about people collaborating around key areas which we need to progress in, and where people have shared interests in. The starting point is then for key stakeholders to align on and commit to the goals of the program."*
>
> [The Hague Center member]

When looking at reward rules, none of the involved actors in the Meshwork receives any financial rewards for developing and implementing this Meshwork. Funding comes from external parties and the SoWF; however, this only covers software and travelling expenses, not salaries. With regard to status, integral projects (in line with integral theory) and large-scale campaigns receive the highest appraisal. Initial key actors value these initiatives as they can be used respectively as a tool to legitimize and a way to expand the Meshworking approach further. Moreover, open information exchange has a high status: participants uploading knowledge on the online platform and interacting through online (open) discussion fora are encouraged. In contrast, making use of email traffic or other forms of limited communication between participants leads to a low status, as regarded by the initial key actors. These communication channels limit open availability of information to all, which is seen as contrasting with the principles of Meshworking.

6.2.2 Interaction rules

Next to the arena rules that define the identity and position of the Meshwork, interaction rules were defined by the initial key actors at the initiation. Interaction rules have a more procedural character and they inform actors what is and what is not allowed in the Meshwork. These regulations include rules concerning access and exit of actors (boundaries), rules on communication channels (information), the kinds of issues and outcomes strived for (scope),

and authority to act and decide in particular positions (authority). The 2020 Meshwork consisted of the following initial interaction rules (see table 6.3):

Table 6.3 Interaction rules

	Aspects	Rules in the 2020 Climate Solutions Meshwork
Interaction rules	Boundary (entry and exit)	o Diverse actors are invited from various sectors and countries on the condition to subscribe to the overall goal (80% CO_2 reduction in 2020) o Actors can freely and without restrictions leave the Meshwork (face-to-face and online) without reasoning for it o Highest authority of The Hague Center and Gaiasoft to decide on process management approach of interactions, selection of facilitators and sanctions in case of conflict in interactions
	Scope	o Field of climate issues structured by 'framework' o Framework is in constant development: actors have large say in changing content
	Information	o Information sharing is key goal o No evaluation criteria or quality control (yet) o Use of information from Meshwork is voluntary and free o Non-intervention only in specific management groups on the online platform o Emphasis on diversity of content and expansion of content
	Authority	o Voluntary interdependencies between actors o Core management decides on theoretical groundings and working methods o Facilitators and actors have limited authority

With regard to *boundary rules*, the Meshwork aims to be an open and easily accessible network. However, the three initial key actors state they are strict in their initial intention that all participants should subscribe to the overall goal of the Meshwork. It is to find out to what extent participants actually need to subscribe to this overall goal in the course of time. Moreover, the CO_2 reduction goal already excludes quite a large group of people worldwide, most noticeably climate sceptics on the one hand, who deny climate change as a threatening problem, and climate concerned people on the other hand who do not subscribe to this specific CO_2 reduction goal.

A second point of selection within the Meshwork concerns the face-to-face interactions, which take place in specific environments and countries. Even though all people entering the conferences can voluntarily join the Meshwork –formally conditioned by their alignment with the overall goal –, the people coming to the various conferences may be invited or belong to specific groups. Nonetheless, the management explicitly aims for a diverse group of actors in the Meshwork and people who enter Meshwork sessions in conferences can participate without any strings attached regarding input or results, neither to their added value for the Meshwork, nor with regard to their interests or backgrounds. These factors enable voluntary interdependencies between actors (Chisholm, 1989).

With regard to *scope rules*, the Meshwork management decided on the overall goal prior to the initiation of the 2020 Climate Solutions Meshwork, as well as on the framework to be used for all participants. Box 6.1 describes the structure of this framework within the 2020 Climate Solutions Meshwork.

Box 6.1 Scope rules: a central framework towards content

All Meshworks are structured with the help of the same framework, to structure content. Hereby, around the central purpose of the Meshwork, four dimensions are distinguished. These dimensions include the process of clarifying *key areas* of the common purpose, breakthrough *conditions* per area, exchange of *know-how* in terms of solutions, case stories, challenges and organizations or groups already active in this field, and concrete *actions* to fulfil the conditions in each area.

Figure 6.2 shows the various layers of the Meshwork structure: in the center the *common purpose* (in this case: the 2020 CO_2 reduction goal), the green *key areas* surround the common purpose and the third layer shows the various *conditions* with their status (red is no action, yellow means consciousness, green is work in progress). The small blue clouds are examples of *know-how* related to a specific condition.

Figure 6.2 The Meshwork framework

At the initiation of the 2020 Climate Solutions Meshwork, the overall purpose and many key areas of the framework were already set. The overall goal itself had been developed in August 2009 through the Climate Leadership Campaign, as initiated by the State of the World Forum. As well, many key areas and conditions within the 2020 Meshwork framework had been already worked on at that moment.

The explicit initial goal of the three key founding partners is to develop and complement this Brazilian framework in Copenhagen. A Meshwork management member refers to this continuation of framework development by all actors as:

> *"...further develop the framework on the basis of the 'collective intelligence'. In other words, to work on the current set of key areas and conditions in collaboration and interaction with all participants in a way that honours the work that has been done in the Brazilian conference."*   [The Hague Center member]

Hence, it is intended that participants can add certain key areas and especially contents within these key areas freely. Nevertheless, the management team decides when and how to change the areas and conditions in the online system. The presence of this framework structure indicates that the management plays a large role in the initiation phase when content is concerned, due to their fixation on installation of this specific framework to guide further interactions and activity within the 2020 Climate Solutions Meshwork.

When *information rules* are concerned, these rules are largely informal in the Meshwork. The management does not state explicitly how information can or should be available, used or shared. However, the management *does* emphasize information sharing as central to the Meshwork within its own core management team. However, it concerns a new way of interacting and sharing information:

> *"The essence of what we are doing is creating greater coherence. It is new behaviour, a behaviour change really, that we are asking of people. Now, some participants have a lack of understanding of the responsibility you actually have to others to make sure that any great insights or knowledge that can arise doesn't end up in a few peoples email inboxes but remains available to anybody else that it might be relevant for worldwide on the platform. That is a realization."* [The Hague Center member]

Information used or shared in the Meshwork is initially not intended to be subject to evaluation criteria or quality control. The importance of a broad and diverse knowledge base is emphasized by the management. Additionally, the use of various forms of content from the Meshwork is voluntary and free. The only limitation to availability of information is regarding non-intervention of participants in 'management-members-only groups' on the online platform. Nonetheless, the aim of the Meshwork is to create a knowledge platform that will be used by participants, ideally in collaborations, with which the overall purpose is served. In theory, participants should not use information for their own interests. In practice, there are no explicit guidelines for participants to indicate this goal.

Lastly, with regard to *authority rules*, the Meshwork only has three initial 'power'-layers. Firstly, the core Meshwork management team, consisting of The Hague Center and Gaiasoft members has the highest authority in terms of power. They have entitled themselves to develop and change the face-to-face and online platforms and the ways they are used. The Hague Center has taken the authority to decide on working methods and changes in facilitation or (process) management and has initiated the Meshwork framework. Gaiasoft decides on all functionalities of the online Meshwork platform. The second layer consists of a large group of facilitators with only some authority in the sense that they function as process mentors in face-to-face conversations at the conferences. In this role, they steer all face-to-face interactions in the Meshwork, by choosing the setting and approach in which interactions take place. Facilitators have quite some space to fill in this role as they wish, as there is no fixed conversation structure intended by the three initial key actors. However, the facilitators

are instructed to focus the interactions along the Meshwork principles of openness, voluntary input and the Meshwork framework. These facilitators are selected on the basis of their knowledge of CHE and working methods surrounding Meshworking. Hence, a basic Meshworking knowledge base is required to perform this role.

Lastly, the largest group in the Meshwork, the actors, has large autonomy and influence only when it concerns content-wise input in the framework. Additionally, actors are entitled to create groups in the Meshwork and participate in online discussions on development of the Meshwork. This makes for a three-layered structure of the Meshwork, in terms of authority (see figure 6.3).

For a full understanding, some overlap does exist between the three layers. Facilitators for example can also be actors when they search for information or participate in a discussion. They are not exclusively entitled to performing purely facilitating functions.
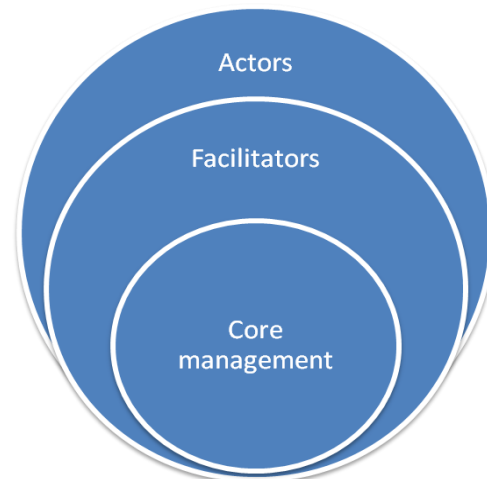
Figure 6.3 Three authoritative layers within the Meshwork

6.3 Alignment of rules and Meshwork principles?

As emphasized in Chapter 2 already, Meshworks are aimed to be guided by general Meshwork principles. To come to a clear understanding of the 2020 Climate Solutions Meshwork, a comparison is made between the concrete initial rules in this Meshwork and general Meshwork principles. However, it should be noted beforehand that the core principles of Meshworking have not been finalized as of yet. This means that the principles are still developing and changes have been made in the course of 2009. In table 6.4, the last documented version of Meshworking principles (Brazil Case Study, 2009) is visualized. Here, an overview is given of alignment between Meshworking principles and concrete initial rules in the current Meshwork:

Table 6.4 Meshworking principles as aligned to rules

Principles	Alignment of principles with initial 2020 Climate Solutions Meshwork rules:
1. Requisite System Identify who needs to be present	Arena rule: openness to diverse actors from around the world to tackle global climate problem
2. Motivation and Intentions Take into account diversity of underlying motivations	–
3. Already There Assume that everything needed is already there	–
4. Critical Areas Identify, align and focus existing resources on critical areas	Interaction rule: Scope is defined by a 'framework' with one overall goal and various key areas
5. Common Interest Uncover the common interest between actors by identifying a higher goal	Arena rule: Identification of a common goal is central in the 2020 Climate Solutions Meshwork
6. Unique Contribution **Make explicit and honour the unique contribution of each stakeholder**	Interaction rule: A diversity of actors is invited which all have their own role to play
7. Synergy Transform friction and conflicts into synergy	–
8. Sense of Belonging Support and nurture belonging to the Meshwork	–
9. Own Goals Relation to own goals	–
10. What is Right Focus on *what is right* rather than *who is right*	–

Remarkably, the list of general Meshwork principles is only limitedly resembled in the rules of the 2020 Climate Solutions Meshwork. Many principles are not resembled in any rule in the 2020 Climate Solutions Meshwork. This creates a difference between the intended principles important for Meshworks and the concrete practical rules as leading in the 2020 Climate Solutions Meshwork. Only principles one and four are resembled in specific arena rules in the Climate Meshwork. Explicitly, this Meshwork aims to include a wide variety of actors to tackle the global problem (aligned with principle 1) and has identified a higher goal (principle 4). However, the common interest of participants of the Meshwork was not uncovered to come to the higher goal, as this goal was set already *before* the global Climate Meshwork was initiated.

Additionally, when interaction rules are concerned, two other general Meshworking principles are centralized: principle 3, as the Meshwork framework of one overall goal and key areas is explicitly used in the Climate Solutions Meshwork, and principle 5, in which each actor has a

unique contribution to the Meshwork that adds to the overall purpose. This principle corresponds to the information and authority rules, in which information exchange is a key element of the Climate Solutions Meshwork and actors are highly autonomous in participating in this process. This leaves many general Meshworking principles initially 'untouched' in the 2020 Climate Solutions Meshwork in the absence of explicit rules on a majority of principles.

Additionally, when asked to various Meshwork management members what the principles of Meshworking are which are explicitly shown in the Climate Solutions Meshwork, the overall goal is often emphasized as well as the unique contribution of actors and organizing around the critical areas. This is in congruence with the analysis of rules of the Climate Solutions Meshwork in the table above, as aligned with general Meshwork principles 1, 3, 4 and 5.

> *"Principles of the [Climate Solutions] Meshwork, uhm, …, one, identify what we need to do, and two, find the people and knowledge who can work around the areas where we need to make progress."* [Facilitator in Copenhagen, volunteer in Meshwork]

> *"In this new form of collaboration, the goal is always central. All other principles are derived from this centrality of the goal. And the beautiful thing is that if everyone does the thing he or she is really good at, together we can do the whole."*
>
> [The Hague Center member]

All in all, alignment between general Meshwork principles and the 2020 Climate Solutions Meshwork's rules is not fully present when documents and management members' perceptions are studied. Many Meshworking principles are not explicitly phrased. Additionally, Meshwork management members state that practical implications on how to organize Meshworks are also still in development; they are in fact in a process of constant exploration and refinement, fuelled by concrete experiences with Meshwork. This constant process is underscored by many management members.

> *"So we just started with the Meshwork. It is the framework of Don Beck [of the Center for Human Emergence Global], but well, it is something else to bring that into practice. Now, we are still developing how to implement Meshworks."*
>
> [The Hague Center member]

6.4 Initiation and construction: a conclusion

The last above mentioned quote: "*Now, we are still developing how to implement Meshworks*" clearly emphasizes that the initiation and construction of the Climate Solutions Meshwork is a fluid, constantly moving process guided by The Hague Center. The 2020 Climate Solutions

Meshwork is initially shaped by three key actors with the intention to become a global, open, free, voluntary network in which information exchange, social connections and performance management are important aspects, all around the overall goal of 80% CO_2 reductions globally in the year 2020. The Hague Center takes the role of a process architect in the initiation and construction phase in which arena and interaction rules have been defined and additionally, a specific framework is used as a tool to structure content and interactions in the Meshwork. Face-to-face sessions and an online platform enable the Meshwork to become alive, from December 2009 onwards. Initial ambitions mainly include experimenting in the 2020 Climate Solutions Meshwork with implementing Meshworks, rather than a strict focus upon climate actions.

After this overview of the initiation and construction of the 2020 Climate Solutions Meshwork, a solid base has been built to analyze development of the Meshwork from its first days of existence. Subsequently, Chapter seven will elaborate on the development of the Meshwork in terms of interactions, information exchange and trust.

7. Development of interactions and trust

By having introduced the initial key actors and their roles and ambitions as well as the structure of initial rules, processes of initiation and construction have been clarified in the previous Chapter to answer the first sub question of this study. As became apparent in the initial rules set at the beginning of the Meshwork, it is an explicit goal of the 2020 Climate Solutions Meshwork to come to active and durable interactions among participants. This Chapter contains an analysis of the development of interactions in the 2020 Climate Solutions Meshwork in its first six months of existence, as stated in **sub question 2**. Two main phases of interactions will be distinguished: face-to-face interactions at the Meshwork conference in Copenhagen in December 2009 and interactions afterwards in the Meshwork, mainly incorporating online interactions and national and local interactions. The development of these interactions as well as knowledge exchange in these interactions is described. Additionally, trust is focused upon to gain insight in the development of trust among actors and between actors and initial key actors – process managers – through the various interactions in the Meshwork. Lastly, management strategies of the key actors to guide interactions are described, as well as relations between management activities, interaction development and trust development. This analysis of network management corresponds to **sub question 3** of this study.

7.1 Dynamics of interactions

7.1.1   Two phases

This study covers the development of the 2020 Climate Solutions Meshwork in its first six months of existence. In this period, two main phases are distinguished. The first phase contains the Copenhagen face-to-face interactions and start-up of the online platform and the second phase includes all interactions after Copenhagen sessions. This distinction is made as the Copenhagen conference was the only period in which face-to-face interactions were present on such a wide and organized scale in a conference setting, whereas afterwards, there were no other face-to-face conferences in the coming six months. Hence, interactions took a different course after Copenhagen when settings were concerned.

Below in figure 7.1 and 7.2, the initial intended timeline and the eventual timeline of activities in the 2020 Climate Solutions Meshwork are visualized. The most important change in activities (emphasized by red arrows in figure 7.2) is to find that Copenhagen remained the *only* actual conference with face-to-face interactions: the intended conference in Washington did not take place and the conference in Brazil is highly uncertain to take place in summer 2010. Additionally, active online facilitation lacks in the eventual timeline, in which only a limited amount of system improvements to the online platform have been made. Online facilitation did not receive systematic attention from the management and did not start until May 2010. Lastly, the initial framing of the Meshwork within the Climate Leadership

Campaign of the State of the World Forum became uncertain in spring 2010. The State of the World Forum distanced itself from the Meshwork. Several of the above mentioned changes will be elaborated on in the course of this Chapter.
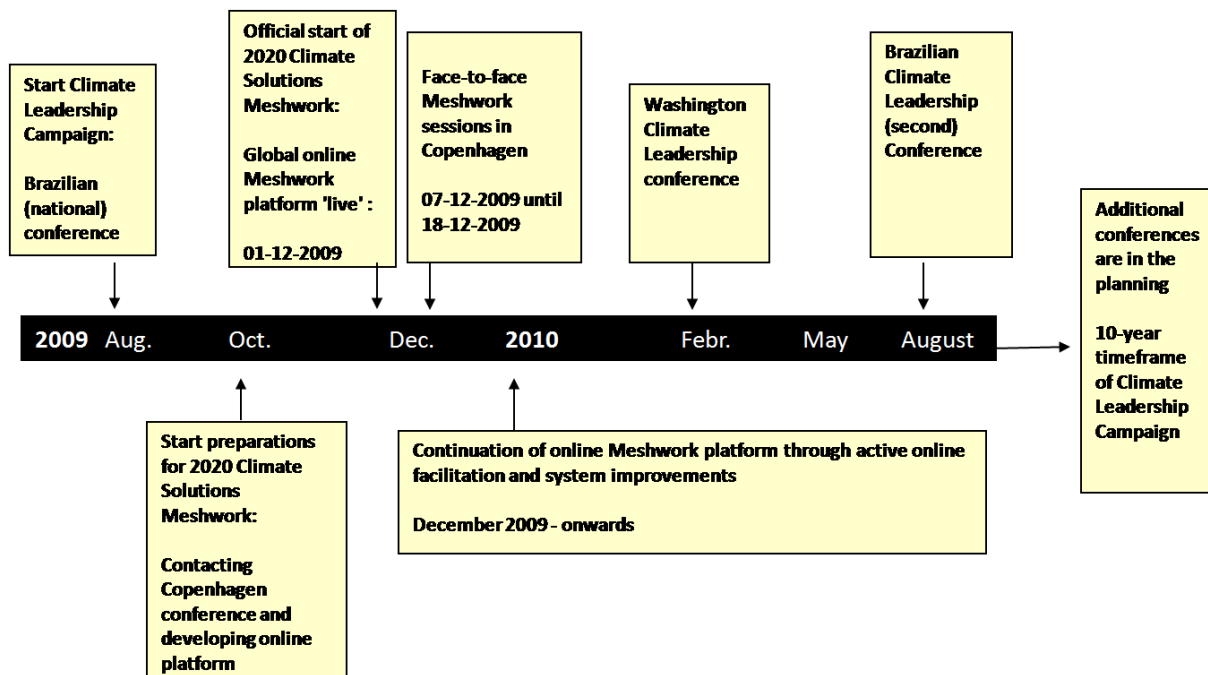
Figure 7.1 Initial intended timeline of the 2020 Climate Solutions Meshwork
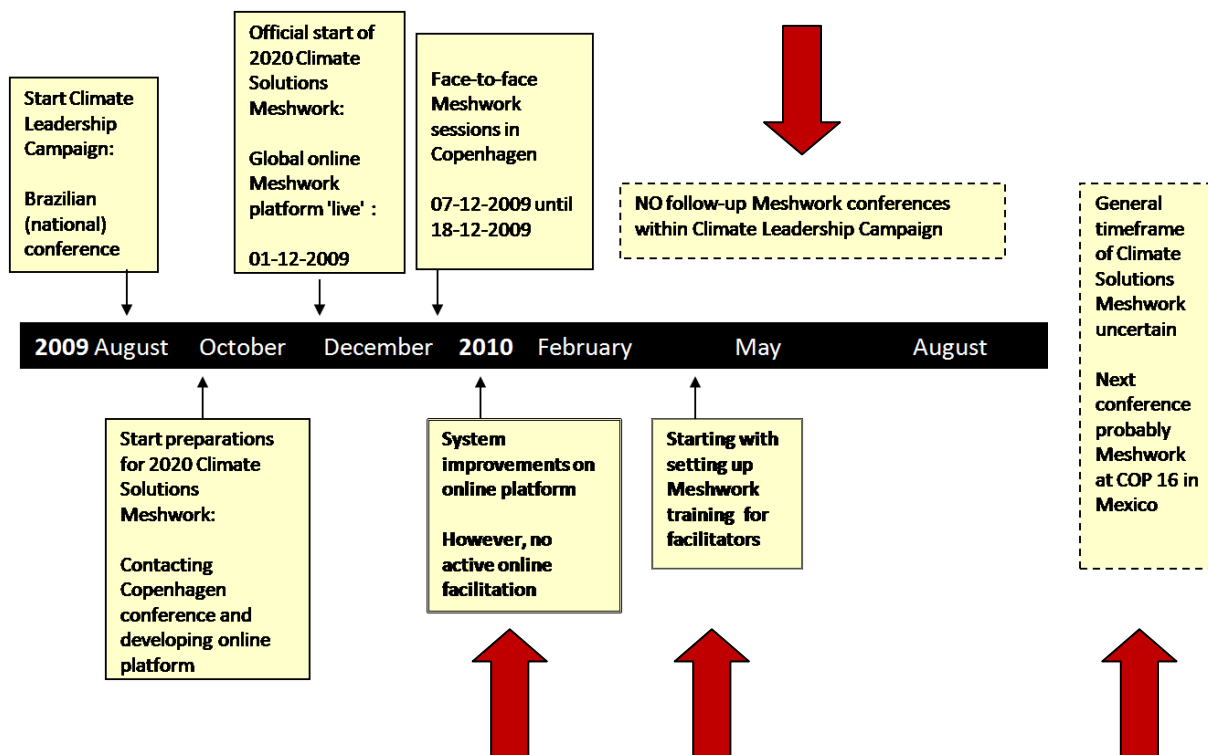
Figure 7.2 Eventual timeline of 2020 Climate Solutions Meshwork: August 2009-May 2010

7.1.2   Various modes of interaction

The 2020 Climate Solutions Meshwork included a wide range of modes of interactions. These modes were present in the various domains of the Meshwork as mentioned before: the online platform and the face-to-face conference interactions. Modes include face-to-face interactions, online interactions as well as email and telephone interactions and national and local interactions. In the overview of interaction development below, the various types of interactions are described with an explicit link to their domain and mode to see where and how interactions took their form in the Meshwork.

7.2 Phase 1: Face-to-face interactions at Copenhagen

The first phase of interactions includes the face-to-face interactions in Copenhagen in December 2009. Below, first the setting in Copenhagen will be elaborated on, to clarify types of facilitation activities and structuring of conversations in the Meshwork space. Afterwards, an overview of participants in Copenhagen will be given, including numbers of online participants, number of participants in Copenhagen and diversity among participants. Additionally, density of interactions is elaborated on. Then, one-on-one conversations are discussed followed by group interactions in Copenhagen. Together, these aspects create a coherent image of the number and type of actors in the initial phase of the 2020 Climate Solutions Meshwork as well as the various interactions occurring.

7.2.1   An "open space" setting

The interactions in Copenhagen took place in an 'open space' setting. A member of the Meshwork management team explains this method of working as follows:

> *"The people chose beforehand where they wanted to go; to which topic or area. So we had key areas, each with an owner to host the conversation. We had facilitators who would say: come talk to me, and let us together explore this topic further. That is open space."*   [The Hague Center member]

Specific principles were kept in mind while using this open space method of facilitation. Some key open space principles in the perception of several facilitators included:

> *"...to really have the intention: whoever comes, are the right people and when you feel you cannot contribute to a conversation, you can leave. This is the law of two feet. Additionally, you build upon each other; listen to each other with the intention of further exploring the key theme at hand. Centralizing this intention to start from the topic at hand in open space is really in line with the principles of Meshwork, centralizing the overall purpose in all interactions."*   [Facilitator in Copenhagen]

The open space arrangements were the context in which the interactions took place. During the conference in Copenhagen, people were involved in various ways into the Meshwork. First and foremost, they could have a conversation with a facilitator and possibly, other participants. Additionally, they were invited to rate their country on 'progress' with regard to climate issues. People could also listen to a presentation on the Meshwork and its approach each day. And lastly, people were invited to join the online platform and were coached in getting into the online system with the help of various facilitators and laptops in the room.

The focus of this study is the interaction patterns within the Meshwork, which implies an emphasis on the conversations taking place. The other elements of the Meshwork in Copenhagen are in general beyond the scope of the current study, except when they are explicitly connected to conversations.

With regard to the face-to-face conversation setting in Copenhagen, nine tables were present for participants to have conversations based on the nine key areas of the framework (see Chapter 2 for a detailed description of the Climate Meshwork framework). The tables explicitly showed the various key areas, through a labelled flag and a poster on the table.

At the start of each day of the conference, a Meshwork core management member from The Hague Center described the most important aspects in conversations to all facilitators and management members. These aspects include contributions to the framework and key areas, relating the overall Meshwork goal to the person's stance and goals and asking actors to become active in the Meshwork, possibly even in a 'key role'. Every morning, these points were stated as follows:

> *"The essence of this Meshwork is to create greater coherence. Please keep in mind several questions to the people in the coming conversations:*
>
> 1. *A meta-question on content: are we having the right key areas? And focus on the insights of a person on certain areas. You can directly have this person contribute through making a post-it and stick it on the wall at the relevant key area.*
>
> 2. *Have the person realize their piece of the puzzle: see how this relates to the overall goal and further refine their involvement or actions.*
>
> 3. *In making a global platform, we are in need of people playing key roles, both on international, national, sector and content level. Ask, when applicable, whether the person wants to pursue a role, and communicate this to the core management team."* [The Hague Center member]

7.2.2   Diversity of participants "all kinds of people came in"

The 2020 Climate Solutions Meshwork did not start at zero participants in December 2009. The participants involved in the Brazilian Climate Leadership Campaign in August 2009 were included in the global Meshwork instantly, when the global online platform went 'live' at the beginning of December 2009: a number of 604 participants.

During the Meshwork conversations at the conference in Copenhagen, a quick rise in number of participants, as subscribed to the *online platform* was visible. Around 500 extra people had made their profile in the online Meshwork platform at the end of the conference, which totals around 1100 participants in the Meshwork at the end of December 2009 (see figure 7.3).
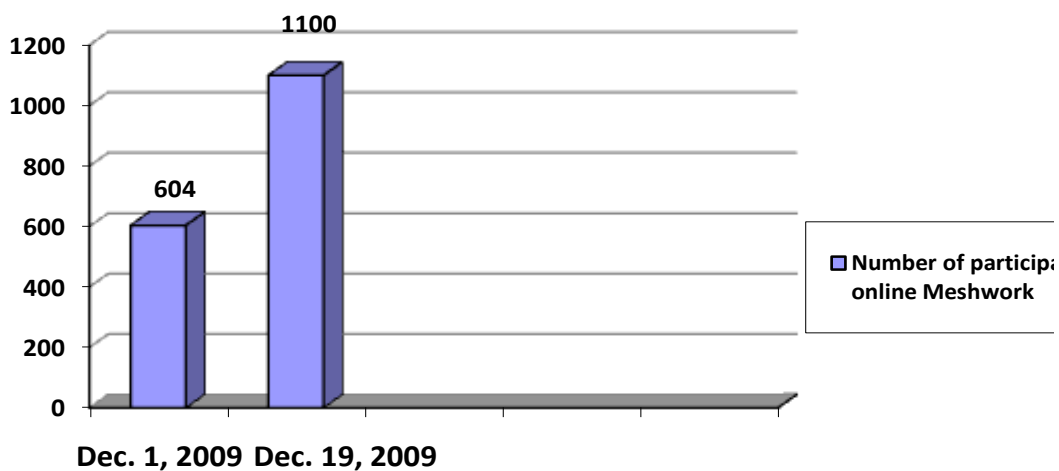
Figure 7.3 Number of participants on the online platform

The number of participants in Copenhagen in the Meshwork space cannot be counted as strictly as the online subscriptions for the online platform. However, from observations and counting estimations, during the second week of sessions approximately 50 to 100 different people were coming by daily to the Meshwork space: this equals around 300 people per week. This includes people who had conversations with hosts, people who rated their country on climate issues and people who were just interested in being coached to sign in on the online platform. However, people who had a face-to-face conversation were often urged to sign in on the online Meshwork platform in order to enable them to continue their involvement in the 2020 Climate Solutions Meshwork if they wished.

With regard to the diversity of participants, the Meshwork definitely became a diverse Meshwork in Copenhagen, concerning geographical location, age, education and sector background of new participants. It literally became a *global* network after Copenhagen, when

people from 116 different countries had registered in the online Meshwork[9]. Most of the time, these people registered on a personal ground, not on the basis of their profession at a specific organization. Yet, many people were already involved in some way in climate projects. During Copenhagen, a diversity of backgrounds was also visible among actors.

The actor survey among participants in Copenhagen who participated in a face-to-face interaction (N=65) shows various geographical backgrounds from Europe, USA and Africa.
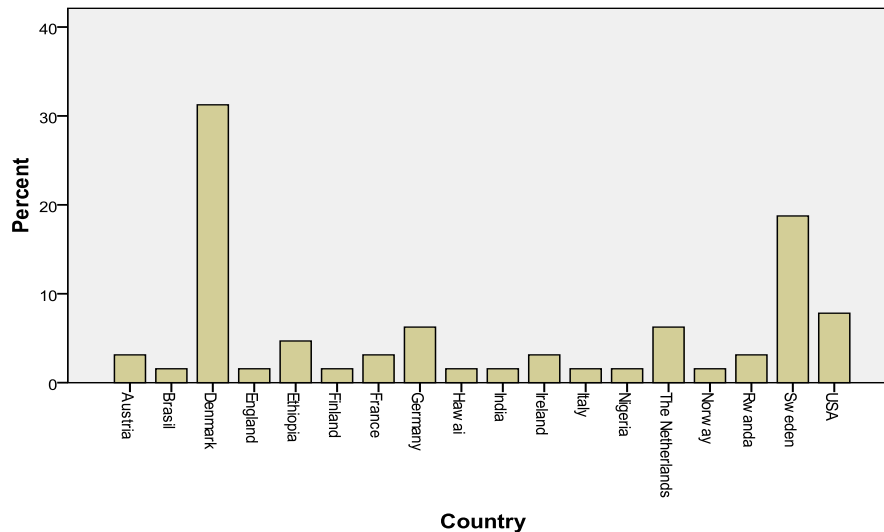
Figure 7.4 Geographical background of participants in Copenhagen, based on actor surveys

Not surprisingly, most participants in Copenhagen were Danes (31.3%) and Swedes (18.5%), as they has the advantage of living close to the conference Then, people from the USA were present (7.7%), followed by Dutch and German participants (both 6.2%). Most participants came from European countries, but also a large share came from USA and African participants were present from Ethiopia, Rwanda, Nigeria. Additionally, Brazilian, Indian and Hawaiian respondents participated. No Asian participants were interviewed, even though some Japanese people did attend the Meshwork room.

With regard to age, the actor survey showed an average age of 32.4 years. Participants included scholars from 14 years onwards until 75 year old senior citizens. Also with regard to the sector people worked in, diversity showed. Participants working in the non-profit sector had a significant share (24.6%), followed by private sector (15.4%) and the government sector (7.7%). Additionally, around half of all respondents (52.3%) was still studying, including secondary school pupils and university students.

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[9] This number is based on online country selection of all participants. However, country selection did not only include country of residence but also countries of interest when climate issues are concerned. The strict number of countries of residence of the various participants can then be lower but was not retraceable independently.

However, with regard to the background of participants in Copenhagen concerning sector, facilitators did not agree on the level of diversity. Some facilitators noted an enormous diversity whereas others described the presence of just a single, specific audience, mainly consisting of NGO-workers and volunteers. The diversity was emphasized by one core management member:

> *"All kinds of people came by, from professors to activists. It was very broad: everyone just came in. That was the fascinating thing about it: prior to the conversation, you never knew the story of someone."*   [The Hague Center member]

However, several other facilitators and other core Meshwork management members perceived the audience still to be quite limited to non-profit public:

> *"I think due to the location we had predominantly NGOs and activist world. A few more policy makers and from the business community would have been good. But then, that wasn't the purpose: the Klimaforum was for NGO sector."*   [Facilitator]

Nevertheless, most of the people who came to the Meshwork and participated in an interaction where perceived by several facilitators as committed and conscious:

> *"The people who came there, who we have touched there, they came with a certain intention. They were in Copenhagen because they wanted to contribute to something in a conscious way."*   [Facilitator]

Also from observations, this committed attitude of participants showed:

> *Several actors tell me [researcher] about their involvement in climate issues. Whether they tell me about carbon in soil, solar energy, recycling or introducing a new sustainable currency; all stories are full of liveliness and commitment towards contributing to the climate in some way. I am surprised to see so many sparkling eyes of people, when they tell about their activities. Often this liveliness increases even more when people have found others with similar interests or activities in different countries.*   [Observational memo in Copenhagen]

7.2.3   One-on-one interactions

Observations of the Meshwork space in Copenhagen gave the image that the vast majority of conversations entailed one-on-one conversations between a facilitator and a participant or a small group of participants who together came to the Meshwork space (see image 7.5).

Figure 7.5 One-on-one conversations in Copenhagen between facilitators (in purple sweaters) and participants, next to the Meshwork framework wall

From observations it became apparent that when visitors of the conference would walk into the Meshwork space, facilitators were approaching them and asked why they were there and if they were interested in talking about climate issues in the Meshwork. Then, generally two types of one-on-one conversations could be distinguished: one with a specific key area focus or with a general focus.

The first type was *top-down* focused on the Meshwork framework, in which a specific key area was leading in the conversation. The facilitator hereby described the Meshwork framework thoroughly and was focused on the alignment of the knowledge and interests of the participant with the key area(s) as defined in the framework. The other type of interaction was a more 'open' conversation, in which description of the Meshwork framework was often omitted. Emphasis was then on the personal interests, challenges or projects of the person within the realm of climate issues. Finally, both conversations ended with the open invitation of the facilitator to make an online profile for the participant to find knowledge and stay involved in the 2020 Climate Solutions Meshwork.

Beforehand, the Meshwork management team did not restrict the conversations to follow a specific sequence and all facilitators had their own stances in the sequence of the conversation. However, to almost all persons coming into the Meshwork space, the term 'Meshwork' was new, so a description of Meshworking sooner or later in the conversation was always part of the conversation. Afterwards, when discussing management strategies, this aspect of diversity in approaches around conversation facilitation will be further elaborated on.

Apart from many people stepping into the Meshwork space interested to see what it would be, some actors did not even dare to step into the Meshwork space. They had never seen such a place before in which open interaction between people from all over the world was possible. One The Hague Center member recalls a meeting with a Philippine boy:

"This morning, I talked to a Philippine boy, who now works in Denmark. He said: 'I am just a poor Philippine boy' and did not dare to step into the Meshwork space. When I asked, he said: 'I am just too overwhelmed: there is so much discrimination in this world and here I see open conversations, no discrimination at all. I can be listened to. This is really unbelievable.' And when I [management member] explained Meshwork to him, he immediately grasped it. He said: 'It is a brilliant word.' He really understood it, the consciousness we were working with here."

[The Hague Center member]

7.2.4   Group interactions

Next to one-on-one interactions between a participant and a facilitator, also group interactions occurred in Copenhagen. However, these group conversations happened only scarcely, as there were only a limited number of occasions in which facilitators were aware that several participants were discussing similar matters simultaneously in the Meshwork space. From observations, only one in ten interactions included several participants in a conversation. Whenever similarities were noticed by facilitators, participants with similar interests or topics sat together. These group conversations were always accompanied by a facilitator as well. The group conversations often had quite a different character from the one-on-one conversations. A core management team member who had many conversations stated this difference in the following way:

"One-on-ones give me [as facilitator] the possibility to go deeper and to find a quality connection. The group ones enable you to really serve the group and the individuals in that group to help them understand their situation better, because it is making connections with others who work on similar things, to get a kind of insight in the issues."   [The Hague Center member]

Group conversations then were almost always focused on similarities between participants: either with regard to their geographical background, their specific climate interests or a certain key area which they were all working on. Often, it was a combination of these three, or at least of two elements. For example, two Ethiopian men had separate conversations in the Meshwork space on climate issues in their country, but they did not know each other. When the two facilitators became aware of having participants with similar geographical backgrounds, they arranged for the two Ethiopians to sit together. A The Hague Center member states about this process of initiating collaboration between the two Ethiopians:

"Both were 'green heroes', a title appointed by the Ethiopian president. One of them had been appointed already a very long time ago for planting many trees to empower local communities. The other had just been appointed in 2009. We connected the two, who never heard of each other, but appeared to live less than 100 kilometres from

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each other! Connecting the two really meant to guide them in getting to know each other better and initiate plans for concrete activities." [The Hague Center member]

Other group conversations arose around a specific interest or topic several people were involved in. From observations, several group interactions in Copenhagen included climate topics such as: carbon in soil, a sustainable currency called Kiwah, community empowerment in developing countries on farming and nature, closing down coal mines and sustainable housing. A facilitator for example had a group conversation with Norwegian, Hungarian, German and Indian participants on sustainable housing. She states:

> *"It was important to find the common theme, which everyone wanted to talk about. All were interested in sustainable housing. Everyone told their story, or their wishes to build sustainably. What was striking was the difference in situations between the participants. The men from India were really already in the middle of climate change, with a changed environment. The need to act for them was very high, and this sense of urgency to act really hit the others hard. Suddenly, it felt not only relevant but immediately needed."* [Facilitator]

7.3 Phase 2: Interactions after Copenhagen

Straight after the face-to-face conversations in Copenhagen, many participants were invited to fill in their online profile, to become an actor in the online Meshwork platform. As stated above, around 500 people registered in Copenhagen. However, registration does not equal continued participation and interaction. Here, development of interactions after Copenhagen is gained insight in. First, a short description is included on the online platform, where continued interaction could take place.

7.3.1   Online interaction setting: an open source platform

One of the three initiating key partners in the 2020 Climate Solutions Meshwork, the software development company Gaiasoft, is fully responsible for developing the online interaction platform. However, they do not own the platform they build; they rather use an open source setting as a basis. One of Gaiasoft's employees explains what implications using an open source platform has:

> *"There were some bugs in the system, because we have taken an open source platform and customized it. So we had to do a lot of bug fixing on the platform to make it solid before we started to make any kind of real changes to it. So that was the first phase to get it out, to fix all the bugs and then we could add more functionality in there. I say we finished that around February, and since then the platform is what we call stable and we have been making some improvements to it."* [Gaiasoft employee]

After fixing all the 'bugs' in the open source platform, Gaiasoft was able from February 2010 onwards to build functionality on the Meshwork platform. Their intentions are general: to develop collaborative software for Meshworks. This means that they do not focus on the 2020 Climate Solutions Meshwork specifically but develop a mature online system that can be used for various Meshworks at the moment and in the future:

> *"The 2020 Meshwork is just one of Meshworks we build. We make sure that what we develop here is designed to be generic, so other Meshworks can use the functionality as well. Where we are going with development [in online Meshworks], is really to make the platform more easily embeddable in other platforms and improve user functionality. This is the true meaning of open source, and we want to bring the focus back to this. We now have a stable, mature system, next we want to start working on the benefits of having an open source system."* [Gaiasoft employee]

The online platform also centralizes the key areas of the 2020 Climate Solutions Meshwork, as defined in Brazil in August 2009 already. Additionally, the online profiles of participants are arranged according to these key area and the conditions within these areas as well, that functioned as interest areas for participants. This shows alignment between usage of the key areas in the framework in face-to-face interactions and online interactions.

However, remarkably, the overall goal of 80% CO_2 reduction in 2020 is mentioned *nowhere* on the online platform. This total absence of the overall goal is not in congruence with the initial strong emphasis on the overall goal within Meshworking in general (see Meshworking principles). The overall goal was initially presented as the pivot on which everything hinges. Additionally, omitting the overall goal all together online means that participants who only participated online – and were not present in Copenhagen –cannot even be aware of its existence, let alone try to connect to or even align with this goal. The homepage only states:

Homepage 2020 Climate Solutions Meshwork

Welcome to the 2020 Climate Solutions Meshwork - a global initiative to create greater coherence and impact in the key areas related to climate change and global transition.

7.3.2   Online interactions: increase in subscriptions, few interactions

The online Meshwork platform increased in participants during Copenhagen until 1100 participants were subscribed online. Afterwards, subscriptions to the online platform increased slightly (see figure 7.6). On June 1rst, 2010 the number of participants subscribed to the online platform had risen to almost 1500 participants.
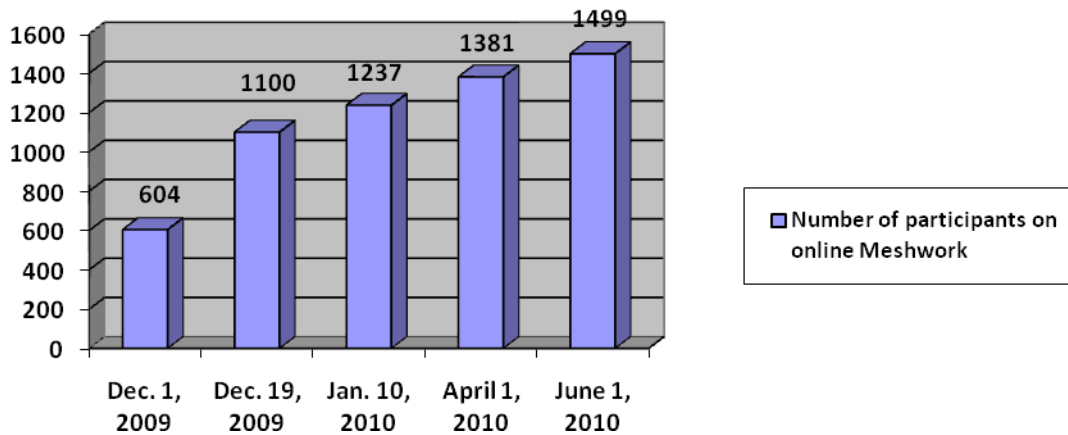
Figure 7.6 Online subscriptions to the Meshwork from December 2009 – May 2010

A slight increase of subscriptions of participants to the online platform however is one thing, having active participants is another. After the face-to-face interactions in Copenhagen, actors were asked in May 2010 to rate their involvement in the 2020 Climate Solutions Meshwork. Figure 7.7 shows the development of involvement of actors from responses on the second actor survey (N=38). Of the actors who participated at the conference in Copenhagen, only 13.8 % (4 people) stated that their involvement in the Meshwork dropped afterwards. A large share of Copenhagen attendees stated their involvement had increased (27.6 % or 8 people) or even highly increased (10.3 % or 3 people) afterwards. However, a substantial percentage of respondents (31.0 % or 9 people) did not participate in Copenhagen and consequently, was not able to state the relative importance of Copenhagen towards their involvement.

10.3 % (3)

31.0 % (9)

27.6 % (8)

3.4 % (1)

13.8 % (4)

13.8 % (4)

Not at all
Slightly
Moderately
Increased
Highly increased
Not applicable
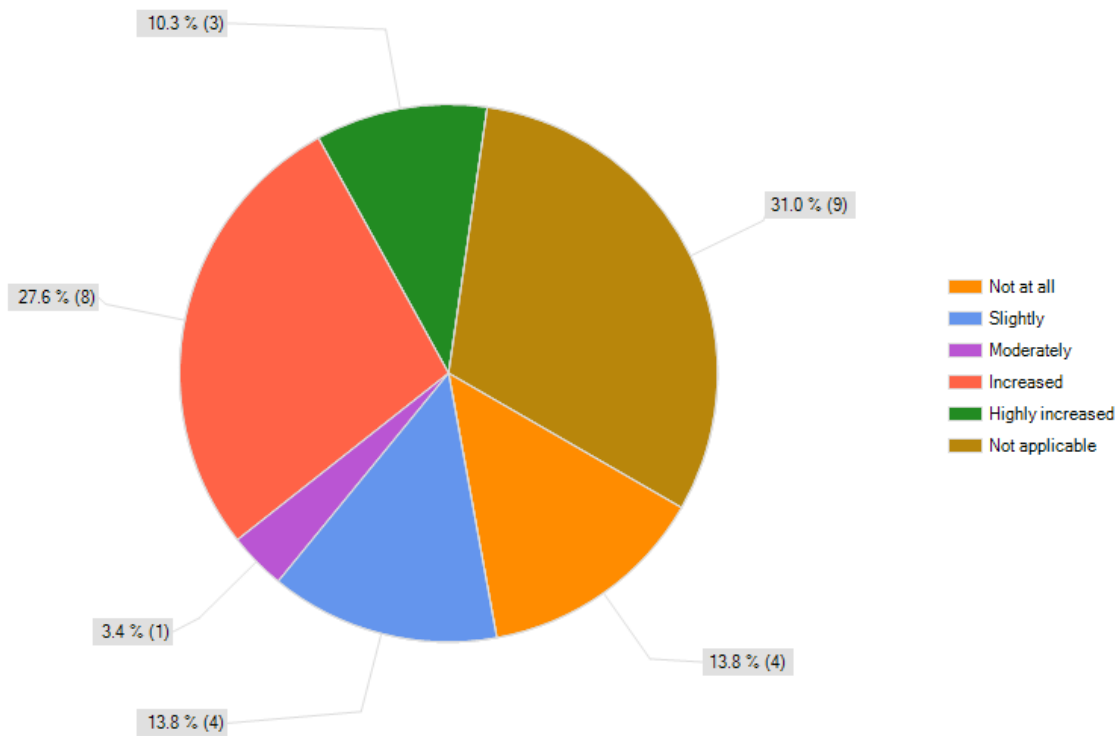
Figure 7.7 Increased involvement of actors after face-to-face sessions in Copenhagen

Whereas figure 7.7 visualizes the *relative* expansion in involvement in the 2020 Climate Solutions Meshwork, respondents were also asked for *physical* data, including the actual number of visits to the online Meshwork platform. Figure 7.8 shows in this regard that more than one third of all respondents (13 people) had merely visited the online Meshwork platform 'only once', whereas the percentages of people visiting the online platform more regularly decrease quickly when the frequency of visits rises. Nonetheless, the most active group, visiting the online platform 'daily' still incorporates 8.8 per cent of the total respondents. Consequently, very large differences are visible when activity of participants on the online platform is concerned. However, it should be noted that the results of the actor survey might already overestimate the average activity of participants on the online Meshwork, as totally inactive users were hard to reach and the likeliness of response rates for inactive members are much lower than for active participants through an online survey.
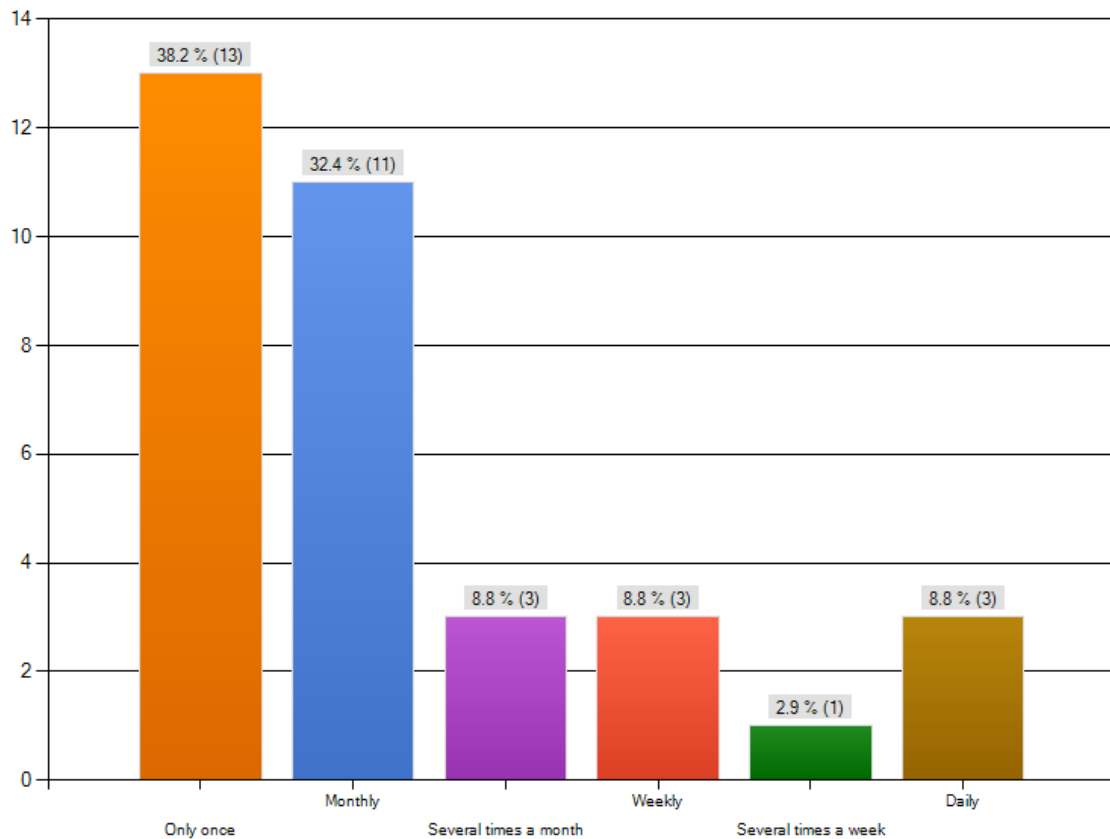
Figure 7.8 Number of visits by participants to the online Meshwork platform until May 2010

A characterization for many similar perceptions of Meshwork management on the number of interactions online comes from one of the Gaiasoft employees in April 2010:

> *"We would like people to use the online system more."*   [Gaiasoft employee]

The online 2020 Climate Solutions Meshwork platform had started already the first of December 2009. Technically, this means that online interactions could have started before the conference in Copenhagen did. However, due to short preparation time and adjustments to the online functionalities, the online platform only started to be used during and mostly *after* Copenhagen, when many new participants had registered. As said above by an employee of Gaiasoft, until February onwards, there were a number of bugs in the system. Already at the registration desks in Copenhagen, this caused some problems for people to successfully register. These hindrances did not stimulate later interactions online, as one facilitator points out:

> *"Many people registered in Copenhagen but it was a difficult process for technical*
> *reasons. People did not always receive a confirmation email to register, which caused*
> *a lot of stress. And if they received it straight away, most people chose to fill in their*

profile at a later time. So most people who had registered at Copenhagen still had an empty profile afterwards." [Facilitator in Copenhagen]

Another facilitator adds that the coaching of people to make their profile did make an important difference:

"It was good to have the computer there and be coached in registration and the possibilities of the online platform, which makes a big difference in terms of getting over thresholds." [Facilitator in Copenhagen]

Despite the personal coaching in registration in Copenhagen, many people were not taking time to fill out their entire profile but instead, they were interested in a 'tour' through the online environment. A majority of participants was very enthused when one of Gaiasoft's members showed some functionality:

"I showed many people for example the synchronicity screen, where they could see their interests matching with other people's interests, and the accompanying content that was in the system. Several people responded: wow, this is really great! However, as there was lots going on elsewhere at the conference, people just wanted the basic in their profile and they said once they were back, they would work on their profile and put content in as well." [Gaiasoft employee in Copenhagen]

This quote clearly resembles the voluntary aspects in participating in the Meshwork, with regard to registration specifically. The participants coming to the Meshwork space in Copenhagen had no idea about Meshworking at all most of the time. This also implies that hardly anyone consciously entered the Meshwork with a fixed intention to participate. Additionally, once people were introduced to the Meshwork, they could decide on a voluntary basis to register on the online platform. Strict obligations or commitments were not asked for at all, especially not on the online platform. This caused many participants to decide, as stated in the quote above, to postpone the completion of their profile and putting content in the online system, instead of finishing their profile straight away. For many people, postponing became sitting back and becoming fully inactive, looking at the number of respondents who have only visited the online platform once. Additionally, and importantly, the very low response rate on the second actor survey (2.75%) also gives an indication of the extremely low level of online activity, as all 1500 participants received the survey, and some groups subsequently received two reminders to participate. This non-committal character of the online Meshwork platform also resembles in the type and number of online visits to the Meshwork platform, as already shown in figure 7.8.

Additionally, it is difficult to analyse online interactions as reporting facilities of the online platform are not prioritized by Gaiasoft. One employee says:

"I did talk to our developers about the reporting facilities of the system. Basically, because we are quite focused on development, the reporting side of things: there has not been much done on that. At the moment, I mean, it is possible, we could do it. But there is [other] work to be done. It is all a matter of prioritization really, and it does not have high priority, and it is not going to get done for now anyway."

[Gaiasoft employee]

A core management member of the CHE also underscores the non-transparency of activity on the online platform: *"There is very limited insight in terms of what happened after Copenhagen in terms of activity on the online platform"*. Special effort is therefore put into uncovering online interactions in this study, especially when online groups are concerned.

With regard to increased activity on the online platform, the online content analysis shows that around 45 new online groups were formed until May 2010. The majority of online constructed groups was nothing more than a one-person-issue or an advertisement for a specific climate project, initiative or event. Additionally, nine new groups were made by The Hague Center members on the nine key areas of the Meshwork with the 'harvest' of the interactions in Copenhagen. Yet, none of these groups became active in the sense that discussion or knowledge sharing took place. Only in 4 groups, people had active discussions or actively shared knowledge on a specific topic (see table 7.1). Of these four groups, only the first two were set up without active interference (or membership) of management members.

Table 7.1 Overview of all (semi-)active groups on the online platform

Online groups	Members	Initiation	Activity
State of the World News	56	October 2009	Improving user friendliness of Meshwork platform. This group enables email notification for members on activity. No discussion
Kiwah Community Currency	13	December 2009	Extensive overview of Kiwah and its aspects: only documents (see figure 7.9) No discussion
Meshwork Laboratory	19	December 2009	Feedback on online platform asked Initiative of Gaiasoft Few discussions
2020 NL Preparation	16	January 2010	Mainly used by The Hague Center and volunteers: sharing documents and audio-files of meetings

An example of an active online group that had its roots in interactions at the Copenhagen conference was the "Kiwah – Community Currency" group. This group includes on their online group page:

1. A description of the new community currency 'Kiwah', including context, principles, concept and spending and receiving the new currency as well as a description of the Kiwah Organization

2. Posters and presentations on Kiwah (see image on the right)

3. A directly accessible movie on Kiwah

4. Additional document on various approaches to Kiwah
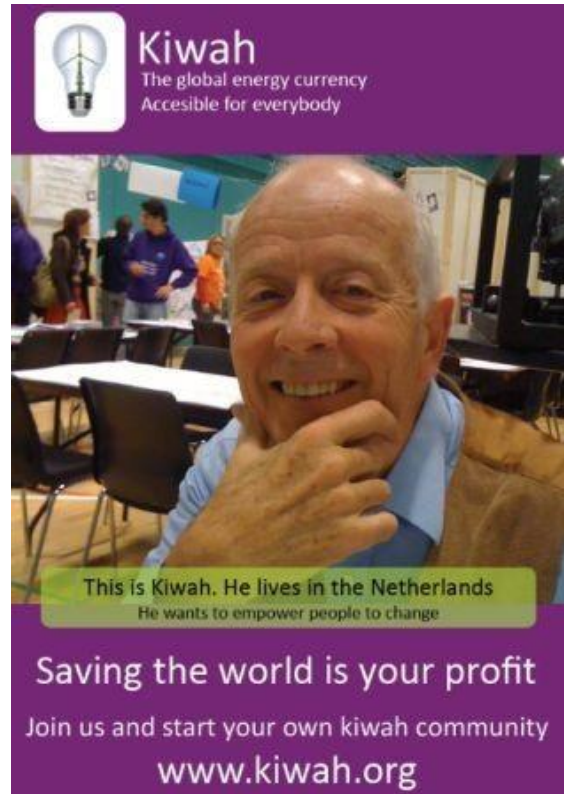
Figure 7.9 Uploaded poster of Kiwah group

Interestingly, the Kiwah group with its 13 members has included several pictures and posters on their group page. The picture of figure 7.9 has been taken at the face-to-face conference in Copenhagen with one of the members, who participated in Kiwah group interactions there. This is one of the few examples in which a direct link is visible between face-to-face interactions at Copenhagen with online interactions in an online group.

Most online groups however do not include such extensive information on a topic. However, when group discussions are concerned, the Kiwah group lacks a group discussion on the forum. When all online groups are analyzed in May 2010, group discussions lack almost altogether. One striking exception to this is the group "Meshwork Laboratory" in which the founder of Gaiasoft asks for feedback from actors about the online Meshwork platform. However, still, this group only contains 5 discussion topics, of which only 2 topics are actively discussed in each nine contributions. Hence, the number of discussions on the online platform is at the most to be called 'at a minimum'.

7.3.3 Online exchange of information

Apart from interactions online between participants in the form of group discussions, information exchange also took place in other ways on the online platform. When information exchange is concerned, three levels can be distinguished on the online platform:

- *Supply of information*: availability of uploaded content on the online platform
- *Demand for information*: usage of content on the online platform
- *Information exchange* between participants

To start with, the quantity of uploads of information (supply) to the platform was analyzed. With regard to the amount of online content, the supply of information on the online Meshwork expanded quite severely during and straight after Copenhagen, and afterwards it increased slightly until May 2010. Figure 7.10 shows the slight increase (between 5-15%) of the number of uploaded documents (or other content) divided per key area within the framework between January and April 2010[10].
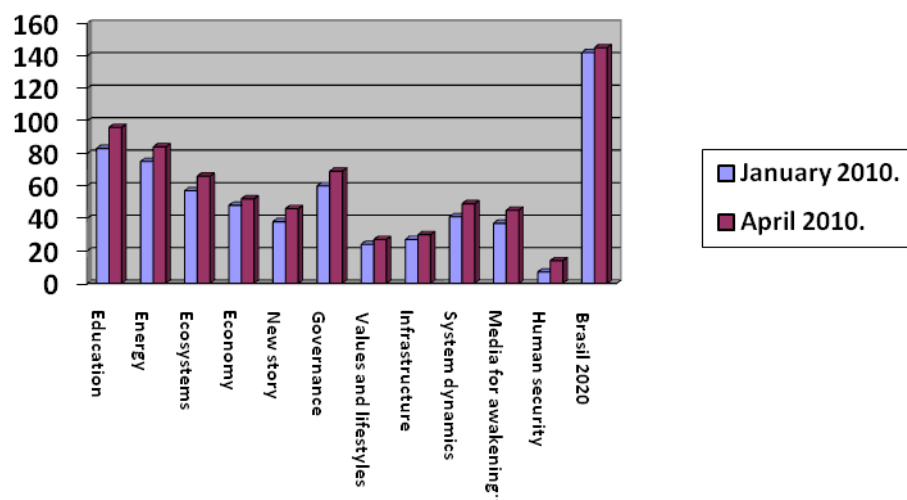
Figure 7.10 Amount of uploaded content on online Meshwork platform in January and April 2010

When demand for information is concerned, 'hard' data are more difficult to acquire. There are no statistics of the online platform, where information demand is traceable. However, when respondents of the actor survey in May 2010 were asked if they found useful information on the online platform, 30.3% responded to have found no useful information at all, whereas a majority did find interesting information. This latter group is divided in roughly two equal groups, of which one states to find useful information 'slightly to moderately' (39.4%) and the other group is most positive, finding a considerable or even high amount of useful information on the online platform (30.3%).

---

[10] Statistics of amount of downloaded or viewed content by participants was unfortunately not retrievable.

With regard to the third level of information exchange on the online platform, the same difficulty arises as at the second level, when transparency is concerned. Unfortunately, the system is not able to give insight in number of document exchanges. However, analysis of groups online is conducted to still gain insight in this aspect. As mentioned above in the group discussions, some participants have interacted face-to-face with each other in Copenhagen and have exchanged their knowledge on a specific climate topic. Online interactions also took place, mostly in specifically designed online groups, where information was uploaded and members were able to discuss the content on a group forum. However, it should be noted that not all members of the groups read group documents, neither actively participate in uploading documents or discussing topics on their group forum. The level of information exchange, related to the highly limited number of groups and content and discussions within the online groups, leaves the researcher to believe that levels of *information exchange* online are *low*.

In line with the analysis above on levels of information exchange on the online platform, Gaiasoft members felt in May 2010 the online system did not yet really come to life when interactions and activity of participants were concerned. One of them stated:

> *"I don't think it [online platform] has been used to its full potential. Again, this is where the community gardening comes into it, on how we facilitate on the online platform. And more budget. If there was more budget available to pull in more resources, then I am sure we could drive up activity and everyone can use the system more."* [Gaiasoft employee]

The community gardening is a term used by Gaiasoft to indicate online facilitation, which was virtually non-existent in the first half year (see paragraph 7.6 for elaboration). And, as mentioned above, a lack of finance is felt to hinder adequate online facilitation to stimulate interactions online. Additionally, the small number of active participants is also connected to limited user friendliness of the online platform, according to feedback from actors:

> *"The feedback I get from actors is all about user friendliness. It is mainly about small things that do not run smoothly. They become large obstacles to continue. And if people are inside the system, then it is not immediately clear what is happening there and what could be of value to them. So people have to put a lot of effort in finding interesting content and people. The system does not come to you. And then people just drop out."* [Gaiasoft employee]

Problems and issues regarding network management and online facilitation will be further elaborated on in paragraph 7.6.

7.3.4   National and local interactions: a long list of follow-ups still on the shelf

Next to the online interactions, also some national and local interactions have arisen. A national 2020 Meshwork has been started in the Netherlands. This national Meshwork also uses the online platform, and has created a group – '2020 NL Preparation' – in which the 16 members share minutes of meetings, interesting documents and promotion materials such as a 2020 Meshwork logo. Many of the participants in this group also belong to the Meshwork management (The Hague Center) or facilitators who have attended Copenhagen.

Additionally, some local interactions are ongoing and are fostered by the management. These local interactions include collaboration between two green heroes in Ethiopia, collaboration between Kenya and Ethiopia on land use and local Meshwork sessions training, and Dutch local initiatives such as a municipal-level Meshwork in its start-up phase in Amersfoort. And, as from March 2010 onwards, there is also activity to continue Meshworking on COP 16, the coming United Nations Climate Summit in Mexico, fall 2010.

However, after Copenhagen, there was a long list of possible connections for follow-up on national or local level, including over fifty potential key actors. A Meshwork management member states the reasons why only a few connections have had a concrete follow-up as of yet:

> *"There has not yet been a follow-up on most of the connections from Copenhagen. Because we were waiting to have a more structured approach to the roles actors could be playing. So one step at a time. And I didn't feel like I wanted to be doing that, I actually wanted to have some coordinators in place. It is also a capacity problem."*
>
> [The Hague Center member]

Additionally, next to capacity problems mentioned in general, some Meshwork management members are also struggling with their attitude towards local and national initiatives or projects. They feel a tension between a reactive and a proactive stance, favouring the former in their concrete behaviour:

> *"It is about capacity but also about which form we choose. Look, David and Gashaw from Kenya and Ethiopia, they were a caller. They were the ones asking us a question. So I am looking for: when should I initiate something and when should I wait for questions from participants. It is really important to work on an authentic question from 'there' that we can facilitate. But it needs fostering locally; I cannot just do it from here."* [The Hague Center member]

7.3.5   Other interactions: email and telephone

Not all contacts occurred through the online platform after Copenhagen. Some connections, for example the local collaboration in Ethiopia, are also based on telephone and email traffic. In the emails, the Ethiopian green heroes contacted some Meshwork management members to discuss possibilities for their future projects. However, other Meshwork management members do not prefer email traffic as general communication channel for groups of participants within the Meshwork as it does not provide openness and availability of information to all participants:

> *"A question was buzzing around through email with a few people. I [Meshwork management member] took their email conversation and put it into a group online, and said: maybe we can post relevant stuff up here. You notice that people don't make that step. Email conversation instead of online. In a way it is laziness and in another way it is a lack of understanding of the responsibility you actually have to others to make sure that any great insights or knowledge that can arise from an email exchange doesn't end up in a few peoples inbox but remains available to anybody else that it might be relevant for. That is a realization. It is new behaviour, a behaviour change really that we are asking of people."*   [The Hague Center member]

This example also clarifies the unconsciousness of many actors on the way of working in Meshworks. Whereas the Meshwork management emphasizes availability and openness of information within its group, it does communicate this to the participants actively. Even when management interferes to change behaviour of participants to open up information for all involved participants, just as in the example above, you see that the actors are not yet aware of the expectations and rules of Meshwork management. In a way, Meshwork management did not state their initial rules well to participants (see also paragraph 7.6).

7.4 Visualization of interactions: actors in different phases of development

When interactions as described above are analyzed in a general way, three groups can be distinguished with regard to level of activity: the Meshwork management and facilitators, a small group of active participants –whether involved in online or local interactions – and a large majority of nearly inactive participants.

The Meshwork has defined a specific 'lifecycle of Meshwork' in which different stages are defined through which the Meshwork evolves. Box 7.1 visualizes and explains this lifecycle, in which the three groups as above identified with regard to activity level are described.

Box 7.1 Lifecycle of a Meshwork: interaction development in phases

In Meshwork theory, Meshworks are perceived to develop through a lifecycle, containing three phases. Theory describes the lifecycle as:

"*First, a situation of pre-network exists: people are not connected. Then, the first stage of the Meshwork consists of networks or clusters of actors on common goals. Then these clusters transform into Communities of Practice and finally, systems of change arise*" (Merry, Meshwork presentation, 2009).

Hence, the first stage in the lifecycle of a Meshwork is when people start finding like-minded other people and form *networks*, starting from a pre-network context. The networks formed in the first phase are still based on self-interest and people usually network to develop their own work or obtain individual benefits. Then, as the networks have enabled people to find others engaged in similar work, *Communities of Practice* (CoPs) develop around a shared topic or practice as collective endeavours (as derived from the work of Wenger, 1998). Lastly, systems of change arise, in which critical connections emerge that have many more capacities than could ever be predicted by analyzing the capacities of individual parts (Wheatley and Frieze, 2006).

When this concept of a Meshwork lifecycle is applied to the current analysis of the 2020 Climate Meshwork, the following picture comes to the fore (figure 7.11).

Most of the actors in the 2020 Climate Solutions Meshwork are inactive. A limited group is at most in the first phase, moving from pre-network state gradually to networks. They are limitedly exploring the scope of the Meshwork and searching for information and possibly, gently starting some interactions with other participants. A small number of actors, often organized in online groups, can be perceived as small CoPs in which interactions have emerged around shared topics and information is shared to serve collective interests. It is questionable to what extent the beginnings of a system of influence, as the third stage, are arising. None of the actors has mentioned or shown behaviour that relates to having obtained increased capacities that have led to actions beyond expectations on climate issues.

Handful of small CoPs
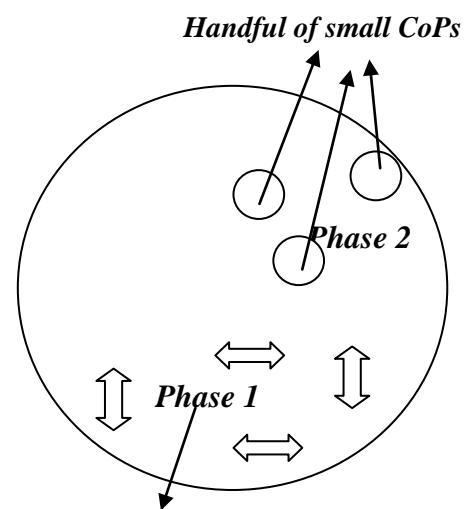
Phase 2

Phase 1

Majority of actors in first phase

Figure 7.11 Analysis of 2020 Climate Solutions Meshwork in phases

A management member of The Hague Center perceives the state of the Meshwork in May 2010 as mainly the initiation of building networks, so the start-up of the first phase, using the Meshwork lifecycle in his argumentation:

"The 2020 Meshwork is primarily a network at the moment [May 2010] and there are a few subgroups in the Community of Practice stage and maybe the core group [management] is in Meshwork phase. So you got this whole mass, some small others in CoPs. Primarily in network phase. I think it would take having these people at those different nodes [key actors on sectors, geographical areas and content areas] to be able to begin taking it to the next phase, because they can convene different players. Which is what you expect, because the lifecycle really starts with pre-network. So we first started to connect people, which is what we have done. To network." [The Hague Center member]

7.5 Trust

7.5.1 Trust in Copenhagen: a boost in self-confidence among actors

Actors who participated in a face-to-face conversation at the Meshwork space in Copenhagen were generally very positive about trust levels in the 2020 Climate Solutions Meshwork. The first actor survey (N=65) shows that respondents on average rate the level of trust among parties of the Meshwork with an 8.2 on a ten-points scale (M=8,2; SD=1,5). Only 3.6% (3 people) gives a 'fail' rating below grade 6. Interestingly, the number of people who graded trust by a 6 or 7 (15 people, 22.8 %) is lower than the number of people grading an 8, 9 or 10 (48 people in total, 73.8 %). Apparently, a majority of respondents has a very high level of trust in the involved parties of the Meshwork after their conversation in Copenhagen.

Trust in 'parties' in this regard includes both actors and facilitators. Concerning the fact that most face-to-face interactions were one-on-ones with a facilitator, this grading probably says much about the perceptions of trust towards management and facilitators in Copenhagen.

Additionally, when asked about trust development between their first involvement in the Meshwork and the end of the face-to-face conversation, the vast majority of participants states their trust level in the parties in the Meshwork to have risen significantly (M=3.9 on five points scale). Only less than 10 per cent of respondents perceives its trust level has declined after the conversations at the Meshwork in Copenhagen. 15.1% states that the level of trust has remained the same, whereas 75.4% of participants state that their trust in the parties involved in the Meshwork has increased (50.9%) or even highly increased (24.5%). Significance of these aspects will be elaborated on in the coming paragraph.

When directly asked to several participants on how they perceived the amount of trust after the face-to-face conversations in Copenhagen, some similar responses kept coming back about a high level of trust in the sense of a strengthened self-confidence:

> *"I have received a boost in my own self-confidence. It has helped me getting more confidence in the work I have to do in Ethiopia around climate issues."*

> *"It was about trust in myself, in the things I am doing and trust in seeing the overview and the bigger picture. Trust that my piece is contributing to something bigger that might succeed."*   [Participants of face-to-face interactions in Copenhagen]

Hence, the first actor survey in Copenhagen gives a very positive image of trust levels among participants of face-to-face interactions in Copenhagen. The high average level of trust, an 8.2 grade, is even increased after the interactions, as stated by the participants. Probably, these high trust levels are reflected in the facilitation activities and approach taken in the interactions. Only a few participants have spoken to other participants in group interactions; consequently, the trust grading will largely reflect trust in facilitators. As the quotes above also emphasize, several actors state to have gained increased self-confidence due to the help and support of facilitators. All in all, the active facilitation in Copenhagen is regarded as highly positive with regard to trust levels of participants in Meshwork management. (See paragraph 7.6 for an elaborate overview of management strategies in and after Copenhagen.)

7.5.2   Trust after Copenhagen

After Copenhagen, in May 2010, actors were asked again on their trust in the parties of the Meshwork. But now, two different questions were asked: trust in other participants and trust in management. The second online actor survey (N=38) showed that trust in participants was on average a 7.3 (on a ten-point scale). Compared to the 8.2 average recorded straight after the face-to-face sessions in Copenhagen amongst all parties, this is a decrease in trust levels. Remarkably is in both cases however, that most respondents rate their trust in the actors of the Meshwork as an 8, and a small number of respondents even scores a 9 or 10. However, the group of 'high trust' participants is smaller in May 2010 than it was in December 2009 after Copenhagen. This difference in trust grading demands for an explanation, however, first trust grading with regard to management is given to come to an overview of all trust levels.

With regard to trust in the management and facilitation team, the respondents of the second actor survey in May 2010 rate on average their trust with a 6.8. A quarter (10 people) even rates their trust below a grade 6. Hence, an important number of participants has a low level of trust in the management and facilitation team after the first six months. As the majority of respondents from the first and second survey are congruent, this decrease in trust is quite alarming.

Additionally, the development of trust in the management and facilitation team is inquired for. Figure 7.12 demonstrates a varied image among participants of the development of trust levels with regard to management and facilitation: whereas half of all respondents indicate no significant difference ('remained the same'), the other half of respondents is divided between a decline in trust (20.0%) and an increase in trust with regard to management (28.0%).
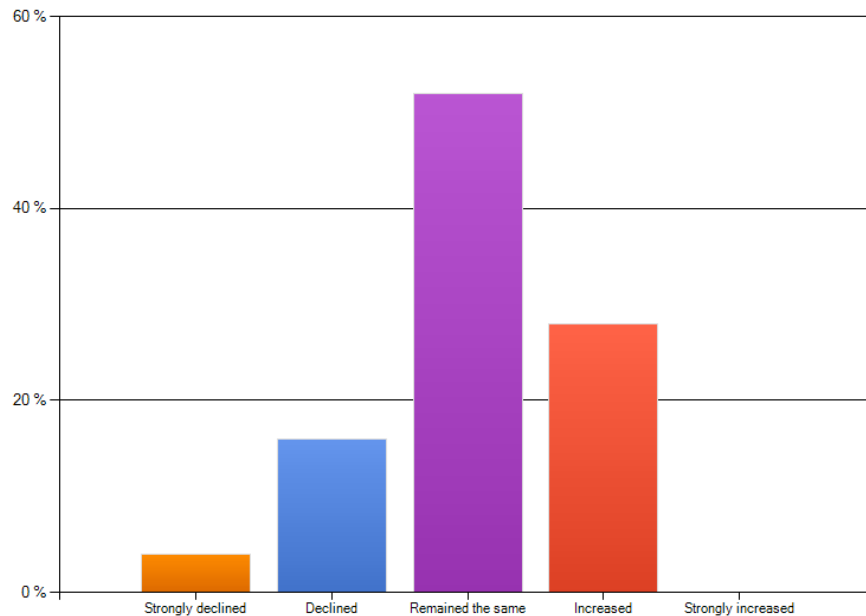
Figure 7.12 Development of trust in the management and facilitation team according to actors from the start of the Meshwork until May 2010

When looking back at interaction patterns, two broad groups of actors can be distinguished: one group which has participated in both Copenhagen interactions and online interactions and the other group which has only been involved in online interactions.

Table 7.2 gives an overview of the two actor groups and their level and development of interactions and trust, according to data from the second actor survey in May 2010. First of all, it is remarkable that the group who was present in Copenhagen states their involvement in interactions to be considerably lower than the other group. Of the participants who have been present in Copenhagen, around 80% states to be largely inactive in May 2010, while this inactive cluster is much smaller (around 50%) in the group who did not interact in Copenhagen.

Despite this large share of inactive participants, half of all participants of Copenhagen face-to-face interactions *do* state an increase in interactions after Copenhagen. Still, it is quite exceptional that participants who have been involved in face-to-face interactions now indicate lower levels of activity than participants who only have been involved through the online

platform. This outcome can be related to levels of trust in network management and the development of management activity, as shown below.

Table 7.2 Actor groups in the Meshwork with level and development of interactions and trust

Actors	Actors participating in Copenhagen and online interactions (55,3% of respondents)	Actors only participating in online interactions (44,7% of respondents)
Activity (May 2010)	• Around 80% largely inactive (max. once a month activity) • Only 20% moderately active (several times a month or weekly activity)	• 50% largely inactive • 50% active (weekly or daily activity)
Interaction development (Jan-May 2010)	• 50% increased or highly increased interactions after Copenhagen • Only 15% did not increase involvement after Copenhagen	- (No data)
Trust level in actors (May 2010)	7.2	7.5
Development of trust level in actors (Jan-May 2010)	• On average: moderate increase • Remained the same for 76.5% • (Strongly) increased for 23.5%	• On average: slight increase • Remained the same for 62.5 % • (Strongly) increased for 37.5%
Trust level in management (May 2010)	6.6	7.3
Development of trust level in management (Jan-May 2010)	• On average: remained the same	• On average: small decline • Only 12.5 % states increase in trust

When trust levels in other actors are concerned, the Copenhagen group has a lower score (mean = 7.2) than the purely online participants (mean = 7.5). The effect size was small ($d =$ .13). An independent *t*-test showed that the difference between the actor groups was not significant ($t = .309$, df = 24, $p = .760$, two-tailed).

With regard to trust levels of participants in the management and facilitation team, the Copenhagen group again has a lower score in May 2010 (mean = 6.6) than the solely online participants (mean = 7.3). The effect size was small ($d = 0.34$). Another independent *t*-test demonstrated that the difference between the actor groups was again not significant ($t = .826$, df = 2, $p = .417$, two-tailed).

When development of trust is concerned, both groups perceive a slight increase in trust in all actors in the Meshwork on average. To the contrary, trust levels towards management remain

the same on average with Copenhagen participants, whereas these are slightly declining in the former group of only online participants. This difference in trust development with regard to management is again not significant (t = -.711, df = 24, p = .417, two-tailed). These non-significant findings can be related to the low N of the second actor survey.

Explanations for the differences in trust levels among the two actor groups can be found in qualitative data and interviews with management members of the Meshwork. The participants who have participated in the Copenhagen face-to-face interactions were very satisfied with the active facilitation in general. It is plausible that these participants have developed higher expectations towards online facilitation, as they experienced active facilitation in Copenhagen as well. However, there has not been active online facilitation in the first six months (see next paragraph). This could be the reason why Copenhagen participants are more negative about the management in May 2010 then purely online participants, who never experienced any active management or facilitation so far.

In the second actor survey, several actors who were present in Copenhagen stated remarks that are congruent with higher expectation levels of these actors on the management. When responding to an open question at the end of the survey: *What would motivate you to become more involved in the Meshwork?*, several Copenhagen participants stated:

> *"If someone reached out to me on the online system to explain and stimulate."*

> *"Better connection between face-to-face experience and agreements on online activities together."*   [Participants of Copenhagen on motivation in May 2010]

Additionally, with regard to differences in level of trust in other actors, the same difference can be observed from additional qualitative data. It is likely that Copenhagen participants also have a higher expectation level towards the type and number of participants on the online system. Again, several participants from this group refer to expectations concerning level of knowledge of other actors, when responding to the same open question as mentioned above:

> *"[I want] More key expertise (scientific, legal, policy) from the Meshwork Members"*

> *"[I want] More functionality, more people, possibility for organizations to sign up"*

> [Participants of Copenhagen and online, May 2010]

Participants who did not attend Copenhagen only refer to improving user functionality online, when asked what would motivate them to become more involved:

> *"[I want] better overview and easier communication."*

> [Participants who not attended Copenhagen, May 2010]

7.6 Management strategies

Above, management and facilitation were already graded by actors, in relation to levels of trust in management. This trust is based upon the concrete activities of the management, supporting participants in several ways in their actions in the Meshwork. In alignment with the structure of network constitution and interaction management strategies from the thematic framework, table 7.3 gives an overview of key management strategies used by The Hague Center, Gaiasoft and State of the World Forum in the first six months of the Meshwork's existence, divided into strategies around network constitution and interaction management.

Table 7.3 Management strategies in the Meshwork: December 2009- May 2010

	Management strategy	**Involved actors**
Network constitution	1. Initiating partner State of the World Forum steps back (Jan. 2010), follow-up face-to-face conferences cancelled 2. New actors continuously enter the online platform 3. Initiating new 'key actors' (from May 2010 onwards)	1. State of the World Forum, The Hague Center 2. Gaiasoft 3. Gaiasoft and The Hague Center
Interaction management	1. Initiation of face-to-face interactions 2. Drastic change in facilitation of face-to-face interactions (Dec. 2009) 3. Harvesting of content outcomes on online platform for continued interactions (Jan. 2010) 4. Activation of a few local interactions and collaborations (spring 2010) 5. Improving online platform functionality (March 2010) 6. Facilitation training development: standardizing facilitation (March 2010) and Meshworking development in general 7. Facilitation of some local interactions (May 2010 onwards), no online facilitation yet	1. The Hague Center as process mentor 2. The Hague Center 3. Facilitators 4. The Hague Center and Ethiopian, Kenyan and Dutch actors 5. Gaiasoft in connection with feedback from actors 6. The Hague Center 7. The Hague Center and Gaiasoft

7.6.1   Network constitution

Whereas The Hague Center had a large share in stating the initial rules within the Meshwork as shown in Chapter 6, also in the course of interactions their role remains vital to the (re-)constitution of the Meshwork and the presence of interactions. A major change in the Meshwork when constitution is concerned is the withdrawal of one the three founders of the Meshwork: the State of the World Forum. This withdrawal leads to cancelling the upcoming face-to-face conference in February 2010 in Washington and likely also the conference in

summer 2010 in Brazil. Initially, SoWF was mostly interested in climate actions, whereas The Hague Center and Gaiasoft were more interested in development of Meshworks by concretely experimenting with interactions, activity and facilitation in the Climate Solutions Meshwork. The remaining actors, with the withdrawal of SoWF, are *not* focused upon second-order end outcomes on climate issues, but mostly concerned with only first-order (process) outcomes of the processes within the Meshwork, to further develop Meshworking. Content guidance is also not conducted and no content facilitation is given during the first months.

Additionally, new actors are continuously welcomed to join the Meshwork throughout its first half year of existence, leading to a larger group of participants and most likely, new perceptions and information input. However, no active invitations are made.

Next to that, The Hague Center and Gaiasoft explicitly started to define 'key actor roles' in spring 2010, which they would like to have played by several participants in the Meshwork who are especially knowledgeable on a certain topic or in a specific field or region. These role definitions occur in the realm of general Meshworking development and facilitation training for Meshwork facilitators. The Hague Center in collaboration with Gaiasoft are busy developing the Meshworking approach and process further in practice, but the focus is not specifically on new management activities in the 2020 Climate Solutions Meshwork. Until June 2010, actors did not yet respond to the invitation to play a key role and neither has The Hague Center intensified its invitation to different actors. This general development focus of Meshworking also has large implications for interaction management strategies, which also failed to occur on most instances as becomes clear in the coming paragraph.

7.6.2   Interaction management

When interaction management is concerned, The Hague Center was initially at the heart of face-to-face interactions in Copenhagen. This active process mentor role was taken up as a flexible one and large adjustments were made as felt appropriate due to context circumstances, for example regarding organizing conversations for the public in Copenhagen. Box 7.1 explains the drastic change in facilitation style and activities in Copenhagen, where the management and facilitators decided to change their 'a priori' developed facilitation structure of conversations to better respond to the number of people coming into the Meshwork space.

Box 7.2 A drastic change in course to start the face-to-face interactions

Initially, in Copenhagen, the plan was to structure the face-to-face interactions by fixed conversation schedules on the key areas within the Meshwork framework. Within the first few days however, much smaller numbers of people came to the Meshwork than expected, which obscured the way of working with prior registration and group conversations. As one facilitator mentioned:

> *"We had a very structured approach [in facilitating the interactions] based on the*

> *prospect of an enormous rush of visitors. We designed as we thought we were not able to handle all of them simultaneously. But from the start in Copenhagen, it did not make any sense even though I was one of the inventors of the whole scheme. It was based on thousands of participants coming by each day but we only had a few. We had to make an enormous shift in the first week."* [Facilitator in Copenhagen]
>
> So the facilitation of the interactions changed significantly in the first few days in Copenhagen. Changing to a different approach caused some uncertainty and was not completely crystallized by the management core team. Some facilitators had explicit doubts on how to proceed but after this limited attuning, several facilitators stated to have more room to manoeuvre and to choose their own style of facilitation. Facilitation structure was not strictly described any more. However, the management emphasized to all the importance of an inviting attitude and curiosity towards all participants in the conversations:
>
> *"The conversation then actually started with making contact. To ask: how and who are you? And what are you working on? Much less abstract than discussing the framework right away. Everyone actually had their own approach in the conversations. We only discussed important principles in the management team, without structuring the way conversations needed to go exactly."*
>
> [The Hague Center member in Copenhagen]

After this drastic change in facilitation, still some aspects of facilitation were kept as central elements of Meshwork facilitation. The Hague Center management states that the selection of facilitators was based upon specific expectations towards facilitation style:

> *"Two role descriptions for facilitators were sent out. One for expert facilitators with experience in facilitation, such as Open Space hosting, and one for satellite team helpers. Both groups were explicitly asked and selected on openness to learn and interest in the Meshwork way of collaboration [...] to have hosts who are able to quickly connect to participants."* [The Hague Center member in Copenhagen]

In addition to interaction management strategies in Copenhagen, The Hague Center together with Gaiasoft were at the heart of activation of the few interactions at a national and local level after Copenhagen. Actors who were working in their own country or region on climate issues within the realm of Meshwork were *all* cooperating with The Hague Center for support in activation and facilitation of local interactions. Moreover, online platform functionality was slowly expanded in spring 2010, which was aimed at an improved interaction pattern among participants online. Specifically, a number of online aspects were attempted to be improved in spring 2010, as stated by an employee of Gaiasoft:

> *"The development now is really to make the platform more easily embeddable in other platforms and improve user functionality. This is the true meaning of open source and we want to bring the focus back to this."* [Gaiasoft employee]

7.7 Management and trust building

Actors have given their statement about trust levels and development in the 2020 Climate Solutions Meshwork and network management. The first actor survey in Copenhagen can relate these two elements. There was a significant positive correlation found between trust rating of actors and network management strategies conducted (r_s = .481, N = 50, p = < .001).[11] Hence, network management is perceived by respondents as positively relating to trust rates in all actors – including network management –in the Meshwork.

In addition, in the interviews with management members, trust became an important notion, both with regard to its role in selection of facilitators as well as with regard to perceptions on outcomes of interactions. Below, the management perspective towards trust aspects in the Meshwork is described, firstly with a focus on trust between the management and participants and secondly with a focus towards trust between participants, as seen from the perspective of facilitators and management members.

7.7.1 Trust between management and participants

The selection of facilitators in Copenhagen and the style of facilitation were focused on openness and connection with participants. As the majority of people who came to the Meshwork space in Copenhagen did not know the Meshwork beforehand, listening and making connections was highly emphasized by many facilitators:

> *"We as hosts brought up an energy of aiming for collaboration, instead of competition or demonstrating against the current system. Important was to be hospitable, listening, to be open to different perspectives. So people could think: hey, we can work together."*   [Facilitators in Copenhagen]

A member from The Hague Center, part of the core management team, states that in the selection of facilitators, capacity to build trust was an important criterion:

> *"The kind of people we asked to host were people who you would naturally expect to be able to build trust pretty quickly in a relationship. Open and curious. And quickly connecting to participants requires trust. So that was a key criterion."*
>
>   [The Hague Center member]

From the point of view of facilitators, they perceived their role as valuable for the participants in various ways relating to building trust. One facilitator relates the above emphasized openness to seeing the bigger picture. Participants were then perceived to be more hopeful after interactions in Copenhagen:

> *"As some actors wanted to contribute to a certain topic around climate in some form, I think we helped [as facilitators] to connect to that. That they were seen and could*

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[11] A Spearman nonparametric test of correlation is conducted, as it is uncertain whether the variables are normally distributed in the population, as well as uncertainty on equal variances among samples (Brace, Kemp and Snelgar, 2006: 16).

see themselves, to see the piece they wanted to be. And then, they could remember that.
This was something they could draw courage and hope from."

[Facilitator in Copenhagen]

Also, when asked to participants about conversations in Copenhagen, several indicated the facilitator to be of importance in trust development between them. This is in congruence with the high trust ranking in the first actor survey (grade of 8.2).One of the participants indicates:

"I really got the feeling I could trust the facilitator of my conversation. He was not in
there for his own interest but was really interested in supporting me and listening to
me." [Participant in Copenhagen face-to-face interaction]

Next to this emphasis on trust, courage and hope arising at the participants' side, facilitators also indicated a connection between the way they facilitated and their perception on trust building between participants and facilitators as a result from the conversation in Copenhagen. Several facilitators perceived a relation between a trustful attitude from the facilitator and increased trust levels of the participants towards facilitators:

"I think people had a high amount of trust in us because we had so much trust in them.
We empowered them." [Facilitator in Copenhagen]

All above notions on trustworthy attitudes of facilitators are in congruence. Participants as well as facilitators were positive on including a trustworthy attitude in the conversations. Participants hereby appreciated the open and inviting attitude of facilitators and related this to their perceived notion of the presence of trust building in conversations. Almost all facilitators also related their own attitude to building trust in conversations in order to run them more smoothly. In this sense, building trust was perceived by both sides as an essential part of the face-to-face conversations, occurring in most instances. High ratings on general trust levels in Copenhagen were the result.

7.7.2   Trust between participants

However, with regard to trust building among participants, there is a difference between levels of trust as perceived by participants themselves and by management parties, in specific The Hague Members. These management members perceive lower levels of trust between participants:

"In terms of trust amongst participants, I don't think a huge amount of team building was
going on." [The Hague Center member]

A facilitator also relates this difficulty of building trust among participants to the voluntary and non-committal character of the Meshwork:

"In this environment of knowledge sharing [in the Meshwork], you of course need to
have an enormous amount of trust. Actors think: why should I give away my valuable

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knowledge? What will be done with it? What will I receive? This is a bit the old paradigm thinking of knowledge is power. Plus, agreement on the overall CO2 goal is not explicit now and participants are hesitating to trust others, or just do not know what to do."   [Facilitator in Copenhagen]

Even though facilitators doubt whether trust among actors is present, as flowing from the quotes above, the actor surveys show that participants in general trust other participants in the Meshwork. However, it is questionable which foundation lies below this considerable high level of trust among participants, as most participants have only had contact with a very few others. However, it is possible that the few contacts participants had were positive and they base their general trust level on their – limited – positive experiences in the Meshwork. Data do not reveal any additional information in this regard.

7.8 Dynamics of interactions, management and trust: a conclusion

Evolving of interactions in the 2020 Climate Solutions Meshwork is distinguished in two phases: the face-to-face interactions in Copenhagen and interactions afterwards, including both online interactions and face-to-face national and local interactions. With regard to the first phase in Copenhagen, facilitators actively guide all interactions between a diverse array of actors from various continents and sectors in an open space setting. A clear condensation of conversations is visible; nonetheless, most conversations have the character of one-on-one interactions between a facilitator and a participant. Only a small number of interactions occurred between groups of participants. As well, these group conversations always occurred in a *facilitated* setting. The Hague Center and the facilitators were central players in all interactions and activity among participants.

With regard to the online platform, the number of participants subscribed rose quickly in December 2009 during the Copenhagen conference with around 500 additional subscriptions. Trust levels among participants in all parties in the Meshwork during Copenhagen are high: an average of 8.2 on a ten points scale. Active facilitation strategies relate highly in the perception of actors to trust levels. This links to the explicit intention of The Hague Center to facilitate in such a way as to stimulate building connections and enhancing trust.

During the second phase – after Copenhagen – contradictory data come to the fore. On the one hand, a large majority of respondents who also attended Copenhagen stated their involvement had increased. However, on the other hand, data from the actor survey in May 2010 showed that one third of all participants had only visited the online platform *once* by then in a period of four months. This contradictory data of the actor survey can be explained to say that only a very small group of participants is still very active, while the majority of participants is not interacting with others, let alone searching for information autonomously online. All in all, the amount of content uploaded on the online platform increased slightly in these months. As well, a handful of national and local interactions were initiated in which a few actors from Africa and Europe started online interactions with the help from The Hague

Center members. Nonetheless, this number of activities undertaken is extremely low, when it is compared to the total numbers of online participants: tens of active participants against a total of 1500 actors in May 2010.

It is not only the majority of participants who is not active; management is also quite passive in the Meshwork after Copenhagen. That is, the majority of follow-up connections as gathered by the management in Copenhagen has not received any follow-up towards initiating interaction and there is no form of structured online facilitation at all. In the course of the first six months, the initial active management stance and 'openness' intended in the institutional rules did not reflect into online Meshwork practice. The Hague Center was almost absent on the online platform, as online facilitation did not receive attention. The only steering occurred when some The Hague Center members steered a few interactions, in a top-down approach, to strictly align with Meshwork interaction customs as full availability of information. And even though Gaiasoft was open to feedback from participants and improved the user functionality of the platform modestly, an immense change had become visible from a highly active face-to-face facilitation at the start to a passive facilitation in the course of the six months.

Lastly, when trust development was regarded, main differences were found between the group of actors who had been in Copenhagen and those who had not. The former group had developed higher expectations on facilitation, as facilitation in Copenhagen was very active and supporting. For this group, the nonexistence of facilitation on the online platform was disappointing and obstructed them from becoming active and knowing their way around. The latter group of actors had lower expectations, as they had never experienced active facilitation. This led to lower levels of trust in Meshwork management among former Copenhagen participants. The group of participants who did not experience Copenhagen sessions had a much more neutral attitude towards trust development between actors and management. All in all, the second phase as characterized by a limited number of management activities failed to stimulate most participants in this voluntary non-committal Meshwork to become active.

To conclude, stability concerning interactions and connections in the Meshwork did not develop in its first six months of existence. To recall a quote of a Meshwork management member on development so far:

> "*So we first started to connect people; which is what we have done. To network. The next step is: how do we facilitate more learning across the whole thing?*"

[The Hague Center member]

This chapter has put a question mark with regard to the extent in which the Meshwork management parties were actually stimulating networking among participants. The quote above is positively overestimating the amount of network going on between Meshwork participants in the first months. The next step in the analysis is exactly to raise the 'next step'-question in the quote: to see to what extent the intended learning focus has been put into practice in the 2020 Climate Solutions Meshwork and whether it has led to actual learning among participants.

8. Learning and knowledge exchange

After having discussed the construction and initiation of the Meshwork in Chapter 6 and the development of interactions and trust in Chapter 7, here, the last part of the triptych of results has come: analyzing learning processes in the Meshwork. **Sub question 4** will hereby be answered. Firstly, initial goals with regard to learning are focused upon and are investigated to what extent and in what way these are achieved. Secondly, learning developments are described, using the two phase distinction also utilized in the previous Chapter: developments during Copenhagen and afterwards. Both actor and management perspectives on learning are included in these analyses. Lastly, relations between trust, network management strategies and learning are elaborated upon.

8.1 Ideal achievements revisited: collaboration and learning

Documents on Meshworking state the ideal achievements of Meshworks as follows: *"A Meshwork improves collaboration, accelerates learning and impact"* (Beck, Center for Human Emergence Global, 2007). However, as stated in the case Chapter (Chapter 2), these three concepts of collaboration, learning and impact do not receive in-depth explanation in Meshwork documents. Collaboration and learning are within the scope of the current study, with Chapter seven already elaborating on collaboration and interaction development. Here, learning is focused upon. The Hague Center members explicitly stated intended outcomes of the 2020 Climate Solutions Meshwork with regard to learning as including gaining an overview on climate issues and work on a shared goal through functional relationships:

> *"The added value [of the Meshwork] is creating greater coherence, a better overview. Greater clarity also about the role which you play in the bigger whole. Building functional relationships, working together on a shared goal."*

> [The Hague Center Member]

The following paragraphs will give an overview of the *concrete* learning activities and achievements of participants and management in the 2020 Climate Solutions Meshwork.

8.2 Learning in Phase I: Copenhagen

With regard to learning in Copenhagen, actor and management learning are distinguished. Learning aspects are gained insight in with the help of the learning impact figure with its four learning impact axes (Homan, 2001) as presented in the thematic framework.

To recall, the four axes of Homan's learning impact graph include different aspects of learning. The social axis represents learning in and from interactions with other actors. This

type of learning is sometimes called strategic learning as well, as it includes developing skills and competencies on interaction and collaboration. The problem analysis axis focuses on learning concerning insight in the problem(s) and its underlying mechanisms. The problem solving axis shows the level of learning with regard to solution building and practical outcomes and lastly, the growth and development axis includes learning about the methods of working and their potential relevance in other contexts.

8.2.1   Actor learning

Actor learning in Copenhagen includes learning on all four axes of the learning impact figure, see figure 8.1. The first actor survey demonstrated that social learning was perceived as present on a high level (M = 4.11 on a five points Likert scale), followed by problem analysis learning (M = 4.03). Learning with regard to problem solving (M = 3.87) and growth and development learning (M = 3.49) were least perceived as occurring. The colours in figure 8.1 visualize the level of learning as perceived by actors in Copenhagen.
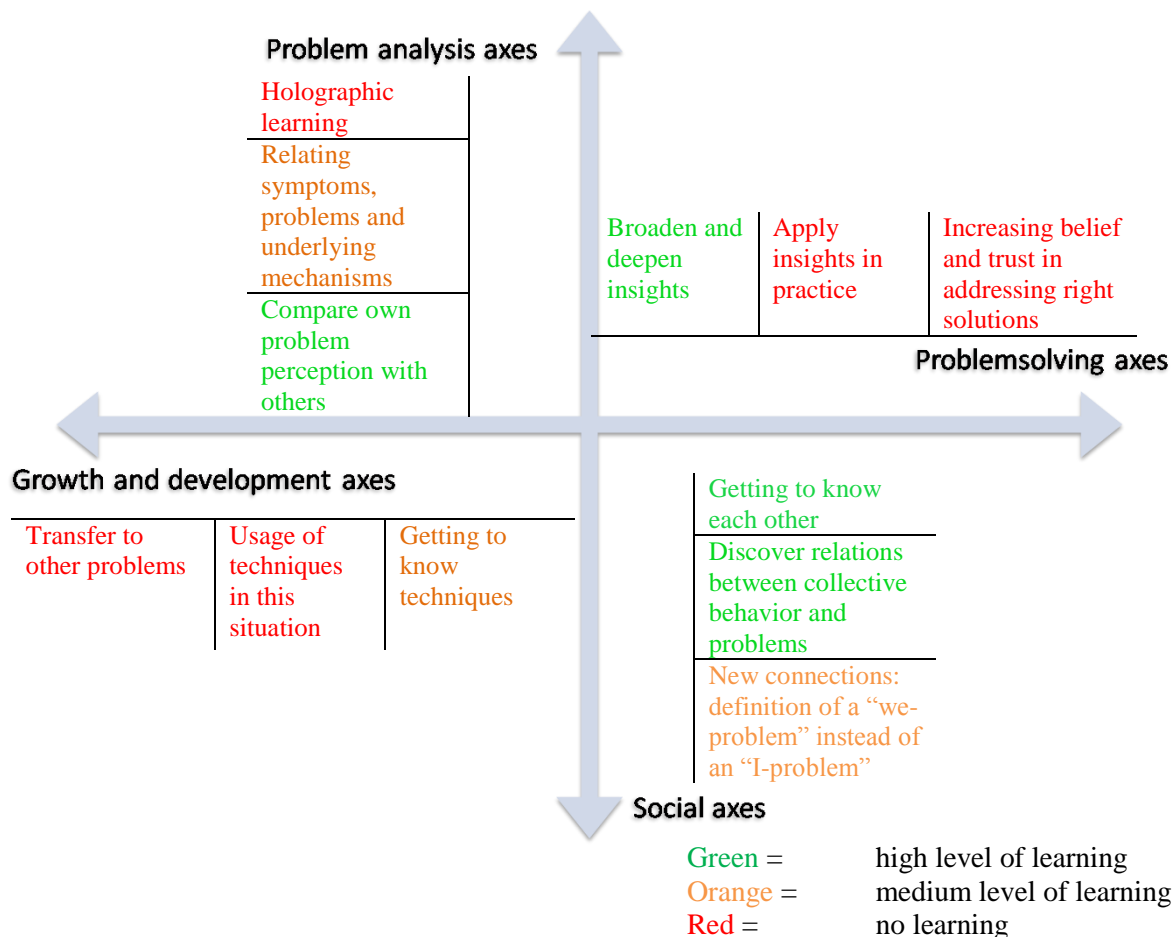

Figure 8.1 Learning impact of actors in Copenhagen

Observations confirm the outcomes of the first actor survey. Firstly, with regard to social learning in and from interactions with other actors, participants have often discovered the need for collective behaviour on climate issues as well as gained new insights in climate problems. Many actors define the climate problem, as framed in the Meshwork to be a 'we'-problem that needs collective action to be tackled. When asked to several actors in Copenhagen on their interactions, they often emphasize newly developed connections and having a clearer idea of the overall problems in the climate field. One actor phrases these elements in this way:

> *"I think the most important thing was seeing the big picture, know that I am contributing to something bigger. And finding others who are working on similar things. By sharing information, I got new insights."* [Participant in Copenhagen]

Secondly, with regard to learning on problem analysis and problem solving, actors exchanged information on problem analyses with each other, thereby comparing and deepening their insights (see also quote above). However, they often did not relate their discussed problem to other problems, even though some one-on-one conversations had an emphasis on situating the discussed problem in the Meshwork framework. The same counts for problem solving: even though insights were discussed, there was no sign of appliance of these insights into concrete actions. However, respondents from the actor survey still on average were slightly positive on practical usefulness of the interactions: even though they might not act differently straight away to tackle climate issues, many actors had a conversation on practical topics which they intended to work on later on.

Lastly, when growth and development learning is concerned, actors in Copenhagen were only to a small extent able to grasp the approach and techniques as used in the Meshwork. For the large majority, Meshworking was an entirely new phenomenon and participants were often not aware of the intended collaborative rules of the Meshwork. From observations in Copenhagen, many actors were viewed to be a bit lost when being confronted with the Meshwork approach towards global sharing of knowledge, even though the framework was often comprehended on a basic level, with the central goal and nine key areas. A significant amount of time was spent on explaining Meshworking and its approach by facilitators, as became clear through observations. One facilitator noticed this emphasis on explaining Meshworking, but came to the conclusion that most actors had a tough time understanding the Meshwork:

> *"Some actors really saw the added value of Meshworking; its promises. However, for many others it is kind of rocket science, to see how useful the system could be."*
>
> [Gaiasoft employee and facilitator in Copenhagen]

8.2.2 Knowledge exchange between actors

With regard to limited progress on the growth and development axis of learning, several actors explicitly noticed that they did not know the rules and techniques of the Meshwork. This resulted in uncertainties surrounding knowledge exchange in Copenhagen. One actor stated this the consequences of this lack of insight in Meshworking techniques and rules as follows:

> *"I asked [to the facilitator]: can I just share this information? For me, it was not clear what are the preconditions or rules of the game here. What does it mean when I upload something? Who can use it?"* [Participant in Copenhagen]

As seen before, knowledge exchange on the Meshwork has various levels:

- **Level 1**: Placing content on online platform (upload)
- **Level 2**: Gaining information or content from others in face-to-face interactions or on the online platform (including searching for relevant content)
- **Level 3**: Exchanging information in face-to-face interactions between actors and/or actors and management or exchange information on the online platform

In Chapter 7, it already became apparent that the number of uploaded documents increased during the Copenhagen conference (*level 1 knowledge exchange*). The actor survey (N = 65) additionally showed that 77.7% of respondents had gained relevant information from face-to-face interactions, or possibly from the online platform while searching for the first time, that was beyond their expectations (*level 2 knowledge exchange*). This means that a majority of respondents was explicitly positive towards the supply of information by Meshwork participants in interactions and on the online platform. More than half of respondents (56.1%) also indicated the exchange of information was above their expectations, with another 35.1% of respondents 'meeting expectations' (*level 3 knowledge exchange*). To conclude, knowledge exchange in the Meshwork during the first phase in Copenhagen generally met or even transcended expectations of participants. Both supply of information (level 2) and exchange of information (level 3) were positively perceived in general. However, it needs to be noted that these positive perceptions do not equal high amounts of knowledge exchange in reality. Rather, it represents the relationship between expectations and concrete experiences with knowledge exchange.

8.2.3 Relation between network management and actor learning

After having analyzed the levels of learning among actors and their perception towards knowledge exchange, it is important to see how these levels of learning are influenced in the Meshwork. One important element in the Meshwork is network management. From data of

the first actor survey, significant positive correlations were found between network management activities and actor perceptions on social learning ($r_s = .394$, $N = 47$, $p = < .01$)[12] and problem analysis learning ($r_s = .492$, $N = 46$, $p = < .001$). There were no significant correlations found with regard to the other two types of learning: problem solving learning and growth and development learning.[13] These outcomes confirm observations in Copenhagen that the emphasis in management and facilitation activities was on constructing interactions and connections (social learning) as well as on gaining new insights in climate issues (problem analysis learning). These outcomes are also conform network management literature, which has stated repeatedly to expect learning to be higher when certain network management strategies (on specific types of learning) are present. The two other types of learning – problem solving and growth and development learning – did only very limitedly receive attention from Meshwork facilitators.

8.2.4 Relation between trust and learning

The first actor survey in Copenhagen also indicates a relationship between trust building and various forms of learning. There was a significant positive correlation between the general trust rating and social learning ($r_s = .464$, $N = 53$, $p = < .001$) as well as between trust and problem solving learning ($r_s = .230$, $N = 61$, $p = .038$) and growth and development learning ($r_s = .263$, $N = 53$, $p = .029$). There was no significant correlation between trust and problem analysis learning ($r_s = .151$, $N = 54$, $p = .138$). Of the three significant correlations, trust was most strongly correlated with social learning ($r_s = .464$). This can be explained as trust is viewed in network literature as most important for initiation and consolidation of interaction and connections. This exactly is the field of social learning: learning how to interact and build relationships. Consequently, this outcome is in line with expectancies on the influence of trust on facilitating cooperation in networks.

8.2.5 Management learning

In Copenhagen, the management in the form of The Hague Center members and volunteer facilitators also indicated to have learned on various aspects. From observations and a handful of management interviews it became apparent that most learning processes related to actively searching for the added value of Meshworking. Learning hereby mostly occurred on the growth and development axis, in which the techniques of Meshworks were further defined and refined. As Meshworks did not exist for a long time, The Hague Center was still highly

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[12] A Spearman nonparametric test of correlation is conducted, as it is uncertain whether the variables are normally distributed in the population, as well as uncertainty on equal variances among samples (Brace, Kemp and Snelgar, 2006: 16).

[13] Non-significant correlations between network management and problem solving learning ($r_s = .061$, $N = 50$, $p = .338$) and network management and growth and development learning ($r_s = .129$, $N = 46$, $p = .197$)

working on experimenting with and characterizing Meshworks. Several members recall that there was not yet a fixed plan on how to carry out a Meshwork in practice:

> *"I guess, we created increased awareness, increased understanding of what we are doing. Because of what we did in Copenhagen, let's say, we carry more authority. Our learning is mostly about what we have to offer, so about what meshworking is. .... So better understanding of how to organize Meshworks."*

> *"It is important to have a manual as foundation for action, otherwise it is uncertain where it is going.* [Interviewer asks: "Can you characterize in which phase the manual for Meshworking in practice is in now?"] *Well, it really is still in its starting phase, we do not even have a completed draft."*   [The Hague Center members]

In addition, many facilitators state that the interactions in the 2020 Climate Solutions Meshwork in Copenhagen foster additional learning and clarification of the added value of Meshworking for them. One facilitator states:

> *"I see this [Copenhagen] as an important step in getting experience, seeing where potential is and to study where we can learn in Meshworking, and subsequently, use this knowledge in the Climate Meshwork."*   [Facilitator in Copenhagen]

Moreover, Meshworking techniques are also still in development, since the approach of The Hague Center is one of experimenting in practice to develop increased understanding and taking the theorizing step by step. In this process, 'learning by doing' or action learning is stated to take a large share. A The Hague Center member emphasized in Copenhagen:

> *"The focus is on what needs to be done, related to the overall goal. Now, we are focusing on how to organize collaboration in light of the overall goal. Thinking about how to create coherence and experimenting with interaction methods that can foster coherence on overall goals. It is action learning, really."* [The Hague Center member]

Action learning is mentioned in all interviews with facilitators, The Hague Center members and Gaiasoft employees. On the one hand, this action learning is perceived as the enabler of a major learning curve for management. On the other hand, action learning and the early development phase of Meshworking causes many facilitators and The Hague Center members to see Meshworking as still immature but developing. With regard to the first aspect of a major learning curve occurring in Copenhagen, a The Hague Center member states:

> *"These two weeks of interactions in Copenhagen were an enormous learning curve, both for me but mostly for The Hague Center. We have taken a large step to fuel our development process, to have experimented and see how it worked out. And how we can take that to next occurrences…"*   [The Hague Center member]

On the other hand, many facilitators perceived the action learning approach of Meshworking as immature or even as problematic. A few facilitators had explicit doubts on this action

learning approach as it was perceived to leave (too) much room open for different ways of working. This substantial room to manoeuvre was perceived to lead to uncertainty on intended behavior of facilitators:

> *"I think a lot of facilitators and me as well, we have the feeling something good is happening here in Copenhagen in the Meshwork. But we don't know exactly what it is. There is no clarity on rules and intended results. I just am in need of defining rules to our actions and a frame to state what we are exactly doing here and what for. I see all around shouts like: 'Do something'. But all we do, is talking. At a certain moment however, there needs to be effectiveness in some way."* [Facilitator in Copenhagen]

This quote resembles that not only actors had problems in understanding the rules of the Meshwork, merely due to minimum communication on these rules. Also facilitators were struggling with ongoing openness and uncertainty about how to consolidate a Meshwork in practice. Consequently, several facilitators have difficulties with the flexibility of approaches in the 2020 Climate Solutions Meshwork. From observations it also became clear that many facilitators did not fully grasp the methods and techniques of Meshworking. Most facilitators were somehow familiar with one of the key partners of the 2020 Climate Solutions Meshwork but their facilitation experience in Meshworking was highly limited. This resulted in misunderstanding and a variety of facilitation approaches, not fully guided by the same underlying principles or rules.

In general, most management members and facilitators perceived Meshworking as a process in its early development stages and related the types of learning to this specific early stage. Also with regard to levels of learning, only low levels of learning were present, mostly when growth and development learning was concerned. However, this 'basic' level of getting to know the methods of working better was explicitly present and seen as an important and large task. Box 8.1 will elaborate on this perception of early development of Meshworking, with the help of a metaphor as used by management to characterize the current phase(s) of development: Meshwork as a small child.

Box 8.1 Early development stage: Meshwork as "small child, just learning to stand up"

A concrete example of the perception of Meshworking as being in its 'start-up phase', as mentioned above, is the metaphor used to characterize the 2020 Climate Solutions Meshwork straight after Copenhagen. Several facilitators and The Hague Center members perceive the Meshwork as a child. A facilitator explains:

> *"For me, I see the Meshwork as a child just starting to stand. It needs a table to pull itself up, and sometimes, it falls back on the ground. However, in Copenhagen, I have the feeling that the child can keep standing. It still needs to hold itself to the table but we were able with our facilitators group to continue interactions without falling down, and having major problems."* [Facilitator in Copenhagen]

Learning within the management and facilitation team in Copenhagen also was an explicit component of management activities. From observations it became apparent that the management and facilitation team had a team meeting every morning and evening to discuss experiences during the interactions. These so-called 'circles' were especially perceived as valuable as every day a partially new team helped out facilitating in the Meshwork space. Especially the hourly meeting at the end of each conference day in Copenhagen was used to reflect upon experiences and to learn from insights that were created that day:

> *"Facilitators were generally really happy, when they shared their experiences at each end of a day in Copenhagen in the circle [with all facilitators and management]. We instantly had a team spirit, people who intrinsically felt the need to contribute in Meshworking."* [The Hague Center member]

On the last day of the conference in Copenhagen, members of the management and facilitation team who were still present had a collective evaluation on progress and challenges in Copenhagen. The key question for all to be focused upon, as led by The Hague Center, was: *"What have you become aware of?"* Main outcomes of this evaluation included:

Box 8.2 Observational memo of management evaluation in Copenhagen

Main evaluation points as discussed in the management and facilitation team on the last day of the Copenhagen Meshworking sessions:

- All facilitators and management show commitment to Meshworking in some way but have different ideas of the overall goal of the Meshwork. Some even have difficulty in relating to the overall climate goal.

In conversations with facilitators, several indicated these difficulties in relating to the overall goal very explicitly as congruent with the point mentioned in the evaluation. Some different viewpoints from facilitators towards the overall goal include:

"Climate change is really not my topic. But what I am interested in is that I think that climate change demands us to realize that we are one humanity and we need to act in coherence."

"I focus on change in consciousness with people. We ask in Meshwork a new kind of behavior and a mind switch. I am happy others are focusing on the solutions on content."

"Reducing CO_2 actually is too abstract for me as well. How are we going to do that? It is difficult to relate the overall goal to concrete behavior and intentions of participants."

[Facilitators in Copenhagen]

- Tension between flexibility on the one hand with regard to new input of actors in the framework, and rigidity of the framework and online system on the other hand

- Tension between openness towards further development of Meshworking and limited focus on rules and commitment from the side of actors

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The last two evaluation points will receive further attention in the second phase by the management. They will be elaborated on in the next paragraph.

8.3 Learning in Phase II: after Copenhagen

8.3.1 Actor learning

The second actor survey (N = 38) in May 2010 asked participants for the second time to rate their current levels of learning on the four learning impact dimensions. All four learning levels were reported to be *lower* than learning levels as reported during Copenhagen. Social learning decreased sharply (from M = 4.11 in Copenhagen to M = 2.69 in May 2010) and problem analysis decreased slightly as well (from M = 4.03 to M = 3.19 in May 2010). Problem solving learning also decreased sharply (from M = 3.87 to M = 2.47 in May 2010) and lastly, growth and development learning levels also decreased sharply (from M = 3.49 in Copenhagen to M = 2.51 in May 2010). In general, problem analysis learning was reported as having the highest level of learning in May 2010. This high level of problem analysis learning can be explained due to the fact that new insights can easily be obtained autonomously, by searching on the online platform. Other types of learning often need more interaction with others to be present, which was very low at this time in spring 2010. There were no significant differences found between actors present in Copenhagen and actors not present in Copenhagen when the four types of learning were concerned.[14]

As the response rate of the second actor survey was very low, a few additional actor interviews were conducted to gain a more in-depth view into learning levels of participants. One participant from Sweden, who also attended Copenhagen, emphasized she only had learned a bit by searching for new information online:

> *"I have only visited the online platform once, due to time constraints. When I was online, I logged in, put in some of my profile information and with the help of somebody there on a forum, we looked around, just trying to get a feel of how it works. Because I am not really good at these computer things. I thought about the online system: wow, there is a lot out there! A lot of information. It feels like I need to sit down for at least an hour to be able to gain some understanding of what is out there."*

[Participant]

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[14] Only very slight differences were noticeable in the independent *t*-test between the two actor groups. All differences were by far not significant. Again, this can be due to the low number of responses on the second actor survey.

With regard to problem analysis learning, another actor who is interviewed in June 2010 states that the way Meshworking is working also contributes to less CO_2 emissions. This way, he relates the Meshworking approach to the overall goal and has learned with regard to problem analysis about diminishing too much transportation:

> *"Meshwork is part of a development, a new way of communicating, which is both exciting and essential. So that we stop flying around the world to talk to each other, but build relationships here online and then occasionally meet each other. I don't think it eliminates the need to meet each other but I definitely hope that it is going to bring a lot of networks together."* [Participant]

However, none of the actors stated anything about gaining insight in solutions or gaining more insight in the methods and approaches of Meshworking in May 2010. This confirms the outcomes of the second actor survey: problem solving and growth and development learning levels were still (very) low among participants.

8.3.2 Relation between network management and actor learning

In the second actor survey in May 2010, questions were asked for the second time on network management and learning. Whereas significant correlations were found with regard to social and problem analysis learning during Copenhagen, now, a different image comes to the fore. *No* significant correlations were found in the second actor survey in May 2010 when network management and the four types of learning were correlated.[15] This can be explained due to the fact that facilitation was virtually nonexistent during spring 2010 on the online platform, which was the main Meshwork domain in this period. Hence, learning only happened on certain aspects and when it occurred, it was mostly due to autonomous actions of participants, rather than fuelled by network management. However, it should also be noted that the response rate of the second survey was very small, which might have strengthened non-significance of correlations.

8.3.3 Relation between trust and actor learning

In the second phase of Meshwork development, the actor survey in May 2010 asked again for levels of trust and levels of learning. However, probably due to low levels of respondents,

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[15] Non-significant correlations between network management and all four types of learning: social learning (r_s = .108, $N = 20$, $p = .650$), problem analysis (r_s = .175, $N = 20$, $p = 460$.), problem solving (r_s = .161, $N = 28$, p = .412) and growth and development (r_s = -.007, $N = 20$, $p = .976$). A special note needs to be addressed, as the second actor survey only contained 38 respondents, of which only 20 respondents scored all network and learning questions. This can have a large influence on significance levels as well.

none of the types of learning showed a significant correlation towards trust.[16] Additionally, as a majority of respondents has indicated to be largely inactive on the online platform, it is unlikely that much learning could have occurred. However, in the small active group of participants, this might still be the case. For this group, trust level can be important for their involvement and levels of learning in the Meshwork. However, this could not be analyzed in a quantitative way and qualitative data were also not indicating towards any specific relationship.

8.3.4 Management learning

After the Meshwork was initiated in Copenhagen, in the second phase, management actors kept on focusing on learning themselves with regard to growth and development – or to state it otherwise: it kept on exploring Meshworking and its elements and practical implications.

After the short evaluation on the last day of Copenhagen among management and facilitators, an in-depth evaluation meeting took place in January 2010, in which much more management members and facilitators could join. Observation of this meeting gave insight in learning processes within the Meshwork management team. It appeared that learning was an explicit goal of this evaluation meeting and in this regard, improvement points were listed eagerly, written down under the title "*Treasure chest*".

Some points already mentioned at the short evaluation came back in this meeting and were elaborated on. Often, these points took the form of tensions between various elements needed in the Meshwork. First of all, a tension between openness and adjustment versus rigidity and control about the framework was discussed, and additionally, tensions and developments surrounding institutional learning were elaborated on.

A major tension as perceived in the evaluation meeting was between openness and maneuverability towards new input of actors on the Meshwork framework on the one hand and rigidity and top-down quality control within the online system on the other hand. This tension was put forward by a member of The Hague Center as a major focus point, as the online system was not able to integrate all new input in the framework, if it was to remain conveniently arranged and user friendly:

> *"Changing key areas and conditions is a whole endeavor. And it is difficult, as all conditions are now asked in people's profile. Right now, we have collected over hundred conditions, which means that people need to work through an enormous list of interest areas which they can check if interested in. Nobody likes to do that, so we have to condensate again. So, it is actually an art of balancing: how to do justice to everyone's contribution while simultaneously keep a kind of clarity and accessibility*

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[16] Non-significant correlations between trust and all four types of learning: social learning ($r_s = .223$, $N = 22$, $p = .318$), problem analysis ($r_s = .151$, $N = 22$, $p = .503$), problem solving ($r_s = .053$, $N = 26$, $p = .796$) and growth and development ($r_s = .052$, $N = 21$, $p = .821$).

to the system? Now, we just did not incorporate any changes or additions to the framework, as we have not answered this question." [The Hague Center member]

8.3.5 Institutional learning

Related to the above mentioned tension of how to sensibly add new input in the Meshwork framework without interfering with its profile structure online, here other developments surrounding institutional learning are discussed. The initial rules as stated by the three key initial founding parties of the 2020 Climate Solutions Meshwork have not been used straightforwardly by participants of the Meshwork. On the contrary, many participants have stated to be uncertain or even fully unaware about the rules in the Meshwork. Recall the quote of a participant, unknowledgeable about rules for information sharing on the online platform, and other participants who used email traffic to share their documents instead of online groups, which obscured visibility of information to all participants of the Meshwork.

Many management members and facilitators were already struggling with some interaction rules in Copenhagen, as there was no essential list of fixed and specified rules. After Copenhagen, many participants did not participate actively anymore in the online Meshwork; the momentum for action had passed. Management and facilitation even fuelled this passive attitude, by remaining in the background and only supporting a handful of initiatives without facilitating online. Additionally, many participants stated in May 2010 not to know the Meshwork methods and rules of conduct and thereby not to being able to grasp its identity and working methods.

In this sense, there was a tension between the step-by-step reflexive, inner-focused management approach towards further development of Meshworking versus limited communication towards actors on goals and rules of the 2020 Climate Solutions Meshwork. Low levels of commitment (and activity) of the side of a majority of participants was a result of this tension.

Several facilitators and The Hague Center members were aware of this tension. Some were explicitly negative about the consequences of this step-by-step management approach with unclear rules causing much uncertainty among participants, instead of stimulating them to become active. One facilitator pointed to the imbalance between push and pull factors in March 2010:

> *"The rules of conduct are unclear. What is actually happening on the online platform, and what is of added value to a certain participant? It takes much too much effort now from the side of participants to search online for information or people. People drop out then. Actually, it is about push and pull efforts. Pushing from the side of management to fuel activity by showing participants progress on the online platform, on areas they are interested in. Things should come to you, making it much more attractive to be involved in the Meshwork, and gaining from it."* [Facilitator]

The only pushing by management being done was sending out one reminder in spring 2010 to people who had not finished their profile but the effectiveness of this notification is (until this date) unknown by management. Additionally, in April 2010, one newsletter got out, to thank participants and ask them if some would be willing to play key roles in the Meshwork. Only a handful of "*callers*", actors with a concrete demand on local initiatives, were supported. Management members so far only reacted to 'pulling' of participants in this sense. One facilitator emphasized the importance of turning around this passive management stance:

> *"It is as if the Meshwork is a large fire place. Now [May 2010], we have gathered a lot of wood – people and documents – and they are piled up together in the online platform. But these elements did not catch fire yet as a sparkle was absent so far. This sparkle is the facilitation team, who needs to actively stimulate online activity, interactions and eventually collaborations that foster further collaboration, like a fire spreading around."*   [Facilitator]

Especially due to the voluntary, non-committal character of interdependencies within the Meshwork, initiation of activity and interactions was perceived as important to create a lively Meshwork. The Meshwork management was aware of this role in Copenhagen but afterwards, it did not continue fuelling interactions.

Additionally, the initial position rules, in which participants were said to have large autonomy in the Meshwork, were not carried out as such. In the course of spring 2010, the management asked actors to play a key role in the Meshwork but still decided what the roles contained exactly and which actors were 'suitable' to perform these roles. This suggests that the management is partly trying to control all activities on the Meshwork, instead of centralizing self-organization. However, these 'key actors' would receive more authority on the platform, which would also change authority rules in the Meshwork. Nonetheless, by May 2010, there were no key roles filled in by actors yet. So far, all changes to the Meshwork were implemented top-down, or at least largely top-down.

Lastly and importantly, commitment to the overall goal was initially central to the rules in the 2020 Climate Solutions Meshwork. Along the lines of the analysis, it became clear that both management and facilitators had different views on the overall goal, or were not even committed to the CO_2 reduction goal, but liked to improve Meshworking. In May 2010, this is still the case, causing uncertainty:

> *"The Meshwork says: first you need to commit to the overall goal. But it is still flying right now, you cannot grasp the goal. One is committed to climate, the other to sustainability, the other to a new consciousness in society. It is just not clear."*

[The Hague Center member]

End of March 2010, The Hague Center even organizes a large event, called '*The Meshwork Design Exploration*' in which various elements of Meshworking are explored: needs, purpose, principles, the Meshwork lifecycle and concrete functions, competencies and tools needed.

The term exploration already entails that The Hague Center does not perceive Meshworks as mature fixed types of collaboration but rather view it as still in its initial phase of development. Purpose of this exploration event is also to start a Meshworking training to train people in how to guide a Meshwork process:

> *"This exploration was to make a start with a trainer's module in which training and mentoring on the job are central. We want to coach people on how to facilitate Meshworks in practice."* [The Hague Center member]

Result of this explorative focus of The Hague Center is that management and facilitators are not yet appointed a fixed role, and neither are rules set in stone. Rather, most rules are either still under construction or participants do not receive communication on rules at all in the 2020 Climate Solutions Meshwork. The initial rules as defined in chapter 6 had become vague indicators instead of clear guidelines to act upon. In this sense, the case under study is not a mature Meshwork running at full steam but rather a start-up with changeable rules in which support and guidance is still continuously renegotiated, which does not provide for a solid grounding to start interactions from.

8.4 Duality of structure

When Giddens' notion of duality of structure is used to analyze the above mentioned development of institutional rules, two main points stand out. Firstly, The Hague Center and Gaiasoft have defined initial rules at the start of the 2020 Climate Solutions Meshwork but did not fixate these rules and neither communicated these rules openly to all participants. In a sense, both key actors are explicitly working on development of Meshworking as a specific collaboration practice, in which searching for an identity and reflexivity towards Meshworking methods is done through experimenting with Meshworks in practice, such as in the 2020 Climate Solutions Meshwork. However, this growth and development learning on working methods does not spill over to the participants, as the Meshwork management team is mostly inner-focussed when learning is concerned.

Secondly, and resulting from the first point, the usual mutual influencing relationship between institutional rules and social practice is distorted in the case under study. Participants do not have an unambiguous influence on the initial rules, as the management itself 'plays with' these rules. Often, for participants, it is not a case of trying to bend the rules when acting outside of the scope of the institutional rules but of not understanding the current rules in the first place, as they are often not clearly defined and disseminated. Furthermore, participants were not even included in constructing the rules in the first place. However, especially The Hague Center is actively putting effort in compliance with the rules, by giving the example, such as initiating an online group conversation to substitute for email traffic among a group. Even though Meshwork management is actively searching to define its rules and shows a certain form of flexibility with regard to facilitation methods, it is – paradoxical – strict when it comes to openness and full availability of knowledge within the Meshwork.

8.5 Learning and knowledge exchange: a conclusion

Learning is an explicit aim of all Meshworks, as stated in the Meshwork principles (Beck, 2007). However, initiating and – especially – continuing learning processes in the 2020 Climate Solutions Meshwork proved a difficult endeavor.

First, when learning during Copenhagen is regarded, actors perceived a high level of social learning and problem analysis learning. Confronted with new information and new people around climate issues, most actors stated to have gained additional social skills as well as more in-depth knowledge on climate problems through the interactions in Copenhagen. Significant positive relations were found between active network facilitation and these high levels of social and problem analysis learning of participants. Network facilitators played a key part in all conversations. However, only limited contact arose *between* participants. All in all, network management was perceived to foster learning due to their active facilitation approach in Copenhagen. As well, a significant positive correlation was found between trust levels of actors and levels of social and problem analysis learning. These outcomes give reason to state that trust and network management both created conditions that fostered these two types of learning among participants during Copenhagen.

On the other hand, lower levels of learning occurred among participants with regard to problem solving learning and growth and development learning. These two other types of learning impact as defined by Homan (2001) did not correlate with network management. That is, participants perceived only a limited amount of action-focused problem solving in Copenhagen. Additionally, with regard to growth and development learning, Meshworking methods were not clear to a majority of participants. Many stated to be unaware or insecure on having grasped the rules and methods of the Meshwork. Explanation of Meshworking methods by facilitators was perceived as occurring, but insufficient. Participants perceived this as a major shortcoming, as Meshworking was an entire new concept for almost all in need of a solid explanation. Also qualitative data gathered from participants and The Hague Center members showed that communicating and explaining the way of working and the accompanying intended rules of this Meshwork was not done extensively. This absence fostered feelings of uncertainty with participants. Activity diminished as a result.

After Copenhagen, learning levels of participants decreased on all four learning aspects. Social learning dropped most drastically, which was related to the limited number of interactions on the online platform. However, of the four learning aspects, problem analysis learning was still most prevalent among participants in May 2010. The small number of participants that stated to be active indicated to find interesting content on the online Meshwork platform and learned more on climate problems. For the majority of participants, drastically declining levels of activity were visible in the online Meshwork after Copenhagen. Participants related their inactivity often to the absence of online facilitation of network management. Trust in management declined in the course of this period and so did learning levels. Participants indicated that without active network management, they were not

stimulated enough to initiate and continue interactions – let alone collaboration with others. Accordingly, learning was not fostered.

Nonetheless, in contrast to very low levels of learning among participants, network management itself was actively reflecting internally during this second phase. Evaluations were conducted on (management) experiences in Copenhagen by Gaiasoft and The Hague Center and improvements were put forward by members. Several management members perceived lack of resources – both human and financial – to hinder active continued facilitation in this Meshwork. As well, due to the framing of this Climate Meshwork by The Hague Center members as a "small child, just learning to stand up", specific types of learning were most focused upon, mainly with regard to methods (growth and development learning). Importantly, content-wise reflections were omitted totally. The withdrawal of the State of the World Forum as management partner in spring 2010 caused the content focus to evaporate entirely. Hence, all management evaluations were process-focused, without a clear link to climate content. This obscured the initial intended central focus on the overall climate goal of the Meshwork. Moreover, learning among Gaiasoft and The Hague Center in a 'learning-by-doing' way on Meshworking methods was not communicated to the participants. As a result, in combination with passive online facilitation, participants were not knowledgeable on new, developing insights from the side of Meshwork management. The inner-focused management evaluations pointed to problems and challenges but did not lead to re-activation of network facilitation after Copenhagen, and discussed improvements were not (yet) brought into practice. As a result, possibilities for (increased) learning among participants were limited.

PART III
CONCLUSION AND
DISCUSSION

9 Conclusion

9.1 Empirical analysis

This study centralized a recently developed form of multi-actor network to tackle global societal problems: the Meshwork. The emergence of this type of network can be seen in the light of a general increase in number of networks as ways of organizing complex societal problems. This study has investigated the processes of initiation and development of the 2020 Climate Solutions Meshwork in order to elaborate on central concepts of network theory and network management in complex multi-actor networks. Using actor surveys as well as semi-structured interviews and observations, this study described the processes of construction and interaction in the Meshwork in its first six months.

The central question this study aimed to answer was:

How does the 2020 Climate Solutions Meshwork develop from a network perspective, specifically with regard to interactions, network management strategies and the development of trust and learning?

The first six months of development of the 2020 Climate Solutions Meshwork were studied, starting from its initiation phase and emphasizing processes of interactions, network management, trust and learning. Below, a thematic overview of empirical findings is presented conform the sequence of sub questions (see paragraph 4.5). Afterwards, reflections are elaborated on with regard to theoretical implications, methodological limitations and practical recommendations.

Part I - Initiation and construction

Already in 1980, Wassenberg stated convincingly: "Network formation is not a goal in itself" (1980: 195). The current case study showed that the founders of the 2020 Climate Solutions Meshwork initially agreed with this statement: this Meshwork was aimed at fostering collaboration and improving learning among people around climate issues. Three key actors constructed this Meshwork with the intention to create a global, open and diversified network in which all participants were engaged around an overall goal. These initiating actors were Gaiasoft, The Hague Center and the State of the World Forum: three organizations in support of Meshworking methods. Construction of the 2020 Climate Solutions Meshwork included a broad definition of institutional rules towards openness of the Meshwork and a non-committal input from actors based on voluntary interdependencies. The reasoning of management at the start was that dedicated actors would self-organize interaction around climate issues, as this

goal could only be achieved collectively. However, participants were hardly informed about these rules of conduct and the Meshworking approach from the start.

Part II - Interactions, network management and trust building

Initially, the Meshwork started in December 2009 with the creation of an online platform and a two-week conference in Copenhagen –next to the international UN climate summit – in which visitors were invited to join Meshwork interactions. Meshwork management actors were highly active in facilitating over hundred one-on-one conversations with a single participant and a few group conversations between various participants. The number of Meshwork participants registered on the online platform increased tremendously in this period to over 1000 participants. Next to initiating interactions, Meshwork management parties also fostered collaborations between a small number of actors from various countries. By then, trust levels of participants in the parties in the Meshwork were high, as recorded in the first actor survey. Additional brief interviews with actors emphasized that high trust levels were often perceived as being fostered by active network management strategies during interactions in Copenhagen.

After Copenhagen, the Meshwork did not include any face-to-face conference until summer 2010. Follow-up conferences were initially planned but as one of the main founders, the State of the World Forum, distanced itself in spring 2010, a lack of resources and a lack of focus on climate content hindered organizing future conferences. Nonetheless, the online Meshwork platform was in the air and numbers of registered participants as well as uploaded content increased slightly over the first half year. However, interactions drastically dropped in spring 2010. In May 2010, one-third of respondents of the participant survey stated to have only visited the online platform *once* since their registration. Only a handful of online groups showed activity in the form of online group discussions. Both actors and network management parties stated to perceive the Meshwork not (yet) as a lively system. Absence of active network management after Copenhagen had a large impact on number of activities of participants. That is, virtually *no online facilitation* was conducted – with the exception of loosely supporting a handful of local initiatives worldwide. Contrary to the initial assumption of Meshwork management parties that actors would self-organize straightforwardly, it proved difficult for actors to autonomously interact and create connections. All in all, the Meshwork had become more of a database of knowledge and actors on climate issues than an active network of actors around the intended central climate goal.

Additionally, trust levels among participants were generally lower than during Copenhagen: on average, the initial 8.2 score (on a ten point scale) dropped by almost one point. As well, trust level in network management was lower than trust level among participants, even though both score were still moderately positive. However, the lower trust level in network management was related to inactive network management after Copenhagen. Especially actors who had been present during Copenhagen perceived to have less trust in Meshwork

management than other actors who had only been active online. This difference can be explained by stating that the former group of Copenhagen actors had gained high(er) expectations from network management due to their experiences with the active initiation of Meshwork management in Copenhagen. All in all, the initial ambitions of Meshwork management actors to stimulate and improve collaboration were not fostered by active network management strategies after Copenhagen. In general, the process design to guide interactions was very limited and lacked vital assistance for the participants to (inter)act confidently in the 2020 Climate Solutions Meshwork.

Part III - Meshwork: a learning journey?

Especially due to the voluntary, non-committal character of interdependencies within the Meshwork, active initiation of interactions by network management in Copenhagen related positively towards learning levels of participants. Network management had an active start in facilitation and participants perceived this as positive and stimulating. Participants stated to have learned, especially with regard to social learning from interactions and problem analysis learning from online content and other participants' knowledge. After Copenhagen, The Hague Center and Gaiasoft – as Meshwork management partners – did not continue fuelling interactions: network management was almost non-existent on the online platform. Almost immediately, this passive network management was accompanied by decreasing learning levels among participants. Especially participants who had been to Copenhagen had high expectations on continued active management – expectations that by far were not being met. By May 2010, many actors were confused about the identity and workings of the Meshwork as Meshwork management parties had only limitedly communicated Meshworking methods. Additionally, interactions and learning were perceived to be hindered by participants as mature online functionalities and active online facilitation were *not* present. In the voluntary and non-committal Meshwork, participants were not stimulated to act by management parties during the first months, even though participants and network management parties *both* indicated to realize that fostering interactions was crucial to energize the Meshwork. However, lack of human and financial resources and an inner-focussed emergent learning process of Meshwork management parties hindered direct active Meshwork facilitation 'on the spot'.

All in all, the first half year of development in the Meshwork was characterized by an intense start in Copenhagen in which active network management strategies were launched to define institutional rules and facilitate interactions, and trust and learning levels were high. After Copenhagen, when participants were almost exclusively connected by the online platform without active facilitation from Meshwork management parties, interactions as well as levels of trust and learning decreased. Both quantitative and qualitative data hint to a relation between the decrease in network management strategies on fostering interactions and the decrease in trust and learning levels of participants. Only a handful of participants had come to concrete interaction and collaboration in the Meshwork within a context of over 1500

registered participants. The 2020 Climate Solutions Meshwork had changed in the course of six months from an initial actively facilitated and motivated group of global citizens into a passive and limitedly connected collection of members who were not actively interacting and learning. Even though Meshwork management parties were partly aware of this trend, it proved very difficult to intervene in this downward spiral. Nonetheless, Meshwork management parties *did* actively learn about ongoing development in the 2020 Climate Solutions Meshwork as one of the first Meshworks in practice. The Hague Center and Gaiasoft stated to have gained important additional insights from their current – sometimes challenging – experiences in this Meshwork. The first signs of bringing small improvements into practice were visible in June 2010, specifically towards professionalizing facilitation. However, data show that participants long for major participative incentives to create a vivid and interconnected whole of participants in the 2020 Climate Solutions Meshwork.

9.2 Reflections

9.2.1   Theoretical implications

This study is only one of many network studies undertaken in the last decade. The analysis of the 2020 Climate Solutions Meshwork can be related to outcomes from other network studies.

Firstly, Meshwork as a phenomenon connects to the current focus of network studies on networks with increasing linkages on a global scale with geographical space becoming less important (Castells, 2003). Additionally, the Meshwork also centralizes its overall identity – with a focus on the overall goal – which fits the trend of analyzing so-called *network fur sich* (Raab and Kenis, 2009).

Secondly, this study adds to the understanding of three key themes in network studies: network management, trust and learning. Especially, the interconnectedness of the three key themes has had a strong focus in the current analysis. To start with, with regard to network management and trust, the importance of management to build relationships and trust is emphasized. Absence of active interaction management strategies related to decreased trust levels. This is in line with Edelenbos and Klijn (2007) who state that network management can create conditions for trust, including defining institutional rules and facilitating interactions. Even though Meshwork management parties had broadly defined rules at the initiation, facilitation of interactions was only fostered in the beginning. Additionally, the conclusions presented in this analysis are in line with Huxham and Vangen (2005) who emphasize the need for network management to continuously foster conditions for trust, especially when facilitation of interactions is concerned. This stimulating role of management is stated by Huxham and Vangen as: *"Managing to collaborate involves actively managing (in order) to collaborate"* (2005: 4, emphasis in original text). Stimulation of collaboration between actors hereby includes active constitution and interaction management (Koppenjan and Klijn, 2004). In the current case, especially the absence of continued interaction

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management proved to be fatal for interactions to continue on a longer term, under conditions of voluntary interdependencies and absence of face-to-face interactions.

Additionally, this study showed that trust can be an enabler for cooperation and learning in the Meshwork. This is in line with Arentsen et al (2000: 598), stating: *"To cope with uncertainties [in networks], learning is essential. Mutual trust and respect are essential [...] as they empower rather than frustrate the inputs of all."* Conditions for trust building were apparent in the beginning, with an increase in interactions and a solid facilitating team. However, gradually, both elements decreased quite quickly and levels of trust declined along – however not as sharp. This is in line with previous studies on trust (Edelenbos and Klijn, 2007). The role of trust with regard to learning was visible, as emphasized earlier in contexts where innovative knowledge is demanded (Nooteboom, 2008). In a sense, climate issues also need innovative knowledge in order to be tackled, as current solutions do not suffice. High initial trust levels in the current case hereby showed to relate to increase of knowledge exchange, as stated by participants. Knowledge exchange then is seen as an aspect of learning (Klijn et al., 2010), enabling problem analysis learning.

Afterwards, when trust levels declined – especially with regard to network management – actors also became less active in sharing knowledge on the Meshwork. However, the linkage between trust and learning was not one of 'two tightened gears' as visualized in the conceptual model: as trust levels among participants in the Meshwork remained rather high, the learning levels decreased quite sharply. Hence, in congruence with conclusions of various authors, learning is an delicate and complex process that is in need of more than trust alone between actors (e.g. Homan, 2001).

One other factor influencing learning was found by addressing network management strategies. Previous studies have already mentioned network management as an important stimulus to enable trust but also proved to have a connection with learning levels in the Meshwork (e.g. Edelenbos and Klijn, 2007). Conform these conclusions, this study also showed that learning levels decreased quite rapidly after network facilitation had become almost non-existent. Qualitative data further emphasized this connection network management and learning, as many participants explicitly wished for more and better guidance to be able to (inter-)act in the Meshwork. These findings are also in line with Homan (2001) who stated that network management has an important role in defining and guiding the learning domain of participants in networks.

All in all, this study shows that active network management practices on construction and facilitation of interactions are related to the blossoming of trust and learning in a multi-actor network based on voluntary interdependencies. The roles of mediator, process manager and facilitator (Klijn, 2007; O'Toole 2002; Hibbert, Huxham and Smith Ring 2008) were hereby again indicated as significant in achieving sustainable interactions and high levels of trust and learning.

9.2.2 Methodological implications and limitations

A number of specific methodological limitations exist that need to be addressed for reasons of transparency. First of all, this study entails a case study. This causes limited generalization towards other contexts. However, it fosters an in-depth understanding of the current case. When external claims are made, these need to be modest of character. Additionally, this study only focused on process development of the case, leaving out aspects of effectiveness and impact of the Meshwork. It would take another study to state Meshwork outcomes. Lastly, with regard to surveys, one major point needs attention: the extremely low response rate of the second actor survey. This low response rate has been counteracted with reminders and various ways of approaching (see Methodology Chapter) but its low rate has had a large influence on the outcomes of statistical analyses used. However, the low response rate also states something about the immense level of inactivity on the online Meshwork in May 2010. Still, analyses were conducted to check for correlations. A larger response rate would have added to statistical reliability. However, with the help of much qualitative data, this gap in quantitative data collection was aimed to be filled.

9.2.3 Practical recommendations

During the course of the first six months, the 2020 Climate Solutions Meshwork developed differently from its initial high ambitions. In general, improving collaboration and accelerating learning were the initial goals as defined by Meshwork theory. Additionally, Meshworks were intended to foster social connections, knowledge exchange and performance management. However, this Meshwork by far did not reach all these goals. Whereas interactions and learning took off in Copenhagen, fuelled by active network management and facilitation, sustaining these processes did not work out very well. Both aspects of number of interactions and learning levels decreased during the first half year of the 2020 Climate Solutions Meshwork. It is therefore worthwhile to look at various aspects of the analysis that might aid in understanding how the intended goals can be better achieved.

First of all, an important misfit is noticed between Meshwork theory and Meshwork implementation practice. The 2020 Climate Solutions Meshwork is only based on a limited number of Meshworking principles. However, the main cause for this misfit lies in the ongoing development of Meshwork theory. The Hague Center and Gaiasoft are still developing the concept and aspects of Meshworking. The current Climate Meshwork case then is rather seen as an experiment or 'try out' to further develop Meshworking methods than a case led by a clear and unambiguous structure to tackle climate problems. Even though the Meshworking management partners value this 'learning-by-doing' approach, it is dubious to what extent a specific Meshwork case can be successfully implemented when no consensus on Meshworking methods and approach exist. The Hague Center and Gaiasoft are currently working on professionalizing Meshworking, by further exploring its foundations and by

creating a training to educate Meshwork facilitators professionally. When this process is turned into concrete trainings, this can significantly add to the coherence and uniformity in management and facilitation activities.

Additionally, Meshworking theory that *does* exist so far is rather ambitious. Goals of improving collaboration and accelerating learning and impact are far-reaching, especially when voluntary non-committal networks as the 2020 Climate Solutions Meshwork are concerned. Participants do not have strong interdependencies but rather voluntary dependencies. They are not easily triggered into working together as the current case has shown; there is no sense of urgency or contract that obliges any activity in the Meshwork. Moreover, as tight interactions are not straightforward to arise, it might also be questionable to what extent trust can be built among participants. Still, trust levels were not drastically low in the Meshwork. Apparently, trust levels can be quite high without tight interactions occurring among participants. In line with trust levels, also learning is not straightforward to arise in the 2020 Climate Solutions Meshwork. The analysis has shown that learning can also decrease dramatically after a certain period when it is not fostered.

Importantly, network management of the 2020 Climate Solutions Meshwork did not always work effectively in terms of Meshwork goals. Four key aspects of network management on construction and interaction management demand specific attention after hearing the accounts of participants.

Firstly, *clarity on core values and rules* could be strengthened. Currently, communication towards participants on institutional rules is almost absent. Participants are in need of elaborate explanations of Meshwork methods to be able to act with confidence in this new network type. The internal focus on Meshworking methods within The Hague Center without altering concrete structures in the Climate Meshwork has had a dramatic effect on sustaining activity and interactions. Focusing on concrete structures and transparency in communication on methods demands clearer guidelines on Meshworking methods as well as a specific definition of the identity of this Meshwork and the intended participants. Thus, first of all, according to participants and facilitators, it is a matter of putting Meshworking methods on paper, before communication can run smoothly throughout the Meshwork.

Secondly, management could *practice its participative intentions more*. While intentions include a participative and 'bottom-up' approach; in practice participants have seen network management primarily as a top-down steering team so far. Options to strengthen participants' input could be looked into and acted upon to foster activity and commitment. This point is also emphasized in literature, when substantive variety is concerned in which a variety of knowledge is needed to come to climate solutions. Additionally, this process can considerably increase learning levels of participants.

Thirdly, with regard to the quality of content in the Meshwork, management could bring its *focus back to climate issues*. At the moment, only general Meshwork methods are reflected upon and the overall climate goal is not guiding in interactions and management activities at all. Better alignment is needed between the overall goal and activities in the Meshwork – as this was the intended focus. This might even mean to alter the overall goal – possibly in

collaboration with participants – in order to actively relate personal goals to the overall goal and to create commitment. As well, management is advised to center climate content more in all its activities to strengthen process management activities along a specific scope. After the first six months of existence, data showed that Meshwork management members had lost a content focus. They hereby risk falling in the trap as already mentioned by Wassenberg above: "Network formation is not a goal in itself" (1980: 195). Currently, network formation in the form of a pure focus on Meshwork processes is overly focused upon.

Lastly, management could include *stimuli for progress* in its activities. Participants are not straightforwardly initiating interactions and knowledge exchange, especially in this voluntary and non-committal context. Network management is advised to strengthen its online facilitation to create incentives to initiate interactions as well as to foster and sustain interactions and collaboration on the longer term. These activities can hereby foster trust levels and learning levels among participants as well. Management can then become and remain a "process catalyst" (Mandell and Keast, 2009: 2) by understanding the critical importance of focusing on the process that will lead to building a new whole:

"Instead of empowering others, it is the ability to recognize and unleash the inherent power and worth of each member […] it is primarily focusing on building trust and new ways of working together" (Mandell and Keast, 2009: 15).

Especially since The Hague Center and Gaiasoft assume that a well-guided process will lead to solid solutions (content-wise), it is time to critically reflect on process management within Meshworks and to implement hands-on improvements in order to achieve a flourishing 2020 Climate Solutions Meshwork. This way, the Meshwork as a whole can start reaping the fruits of an ongoing learning journey.

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Appendix 1: Actor survey 1

Survey 1: Improving the 2020 Climate Solutions Meshwork Part 1

Research in collaboration with Utrecht University, the Netherlands (December 2009)

1. What is your gender?

☐ Male
☐ Female

2. How old are you? ____

3. Country of residence:

   _____

4. Which sector do you work in?

☐ Private sector
☐ Public sector
☐ Non-profit sector
☐ Student

5. What is your highest level of education?

☐ I have not received any formal education
☐ Primary school
☐ Secondary school / High school
☐ Vocational school
☐ University Bachelor
☐ University Master

6. Please, fill in your email address to receive the survey results and participate in a short online survey on the online Meshwork platform.

   Email address*: _____
   Anonymity is safeguarded: personal information will not be used for other purposes.

Outcomes of the Meshwork conversations at Copenhagen

7. The following questions concern the process and the outcomes of the Meshwork conversations. Can you please rate these elements on a scale from 1 to 5:

	Strongly Disagree	Disagree	Neither Agree/Nor Disagree	Agree	Strongly Agree
Do you understand the framework of key areas in the Meshwork?	1	2	3	4	5
Do you think the framework of nine key areas is suitable to address climate problems?	1	2	3	4	5
Do you feel you can contribute to the Meshwork in a certain key area?	1	2	3	4	5
Do you think the conversation you had was practically useful?	1	2	3	4	5

Trust

8. Please rate the degree of trust you have in the involved parties in the Meshwork:
   (Give a number from 1 to 10 whereby 1 is the lowest score and 10 the highest score).

   Trust rating: _____

9. Compared to when you first heard about the Meshwork, has your trust in the parties involved in the Meshwork after the conversation:

- ☐ Strongly declined
- ☐ Declined
- ☐ Remained the same
- ☐ Increased
- ☐ Strongly increased

Facilitation

10. Below are given some statements about facilitating activities that can be performed before or during the Meshwork sessions. The facilitators are wearing purple sweaters. Can you please indicate in which way you agree with the following statements (on a scale from 1 to 5):

	Strongly Disagree	Disagree	Neither Agree/Nor Disagree	Agree	Strongly Agree
The facilitator actively invited me into a conversation	1	2	3	4	5
The facilitator helped me to understand my unique contribution	1	2	3	4	5
Different opinions were welcomed	1	2	3	4	5
The facilitator made sure I received the information I was looking for	1	2	3	4	5
The facilitator helped me to better understand different perspectives	1	2	3	4	5

Learning

11. Below are some statements about learning in networks. Can you please indicate in which way you have learned from your participation in the Meshwork so far (on a scale from 1 to 5):

	Not at all	Fairly	Meeting expectations	Slightly above expectations	Above expectations
I have gained new information from other people	1	2	3	4	5
I have reflected on my own viewpoints	1	2	3	4	5
Through the conversations, I now better understand other views	1	2	3	4	5
I have improved my collaboration skills through the conversations	1	2	3	4	5
Through the conversations, shared knowledge was formed	1	2	3	4	5
The conversations led to improved collaboration with others	1	2	3	4	5
The conversations were meaningful to me	1	2	3	4	5

12. If you have any additional advice or comments on the Meshwork, please state them below:

_____

_____

_____

Thank you for your cooperation!

Appendix 2: Actor survey 2

Research in collaboration with Utrecht University, the Netherlands (online in April-May 2010)

1. What is your gender?

   ☐ Male
   ☐ Female

2. How old are you? ____

3. Country of residence:

   _____

4. Which sector do you work in?

   ☐ For-profit sector
   ☐ Governmental sector
   ☐ Non-profit sector
   ☐ Other, please specify:
   ……………………………

5. What is your highest level of education?

   ☐ I have not received any formal education
   ☐ Primary school
   ☐ Secondary school / High school
   ☐ Vocational school
   ☐ University Bachelor
   ☐ University Master

Current involvement in the Climate Solutions Meshwork

The coming questions concern elements of your involvement in the Climate Solutions Meshwork, including your activities face-to-face and online in the Meshwork.

6. In which way(s) have you been involved in the Meshwork?
   (multiple answers possible)
   ☐ Online platform
   ☐ Face-to-face at Copenhagen Klimaforum (December 2009)
   ☐ Other, please specify: ………………………………

7. How often did you visit the online Meshwork platform until now?

   ☐ Daily
   ☐ Several times a week
   ☐ Weekly
   ☐ Several times a month
   ☐ Monthly
   ☐ Less than monthly

8. Please rate the following statements. Through joining the Meshwork….

	Not at all	Slightly	Moderately	Considerably	Highly
I increased collaboration with **already existing** contacts	1	2	3	4	5
I started collaboration with **new** contacts	1	2	3	4	5
I provided information on the online platform	1	2	3	4	5
I found useful information on the online platform	1	2	3	4	5
I increased my knowledge on climate issues	1	2	3	4	5
I used information gained from the Meshwork in practice	1	2	3	4	5

Management and structure of the Climate Solutions Meshwork

The following question concerns the structure of the Climate Solutions Meshwork and the management and facilitation activities undertaken.

9. Can you rank the following components of the Meshwork?

	Strongly disagree	Disagree	Neutral / Not applicable	Agree	Strongly agree
I was actively invited to join the Meshwork	1	2	3	4	5
Admission to the Meshwork was easy	1	2	3	4	5
Actors with different ideas and perspectives take part in the Meshwork	1	2	3	4	5
There is enough space to communicate with other participants	1	2	3	4	5
The functionality of the online platform stimulated me to interact with other participants of the Meshwork	1	2	3	4	5
The Meshwork framework with the overall purpose and key areas contributed to achieving my own goals	1	2	3	4	5
I know who is part of the Meshwork management and facilitation team	1	2	3	4	5
The facilitators helped me to connect to other participants	1	2	3	4	5
When I had questions, I could easily approach Meshwork facilitators	1	2	3	4	5
When I posed questions to the Meshwork facilitators, I was satisfied with their follow-up or answer	1	2	3	4	5

Your judgment of the Climate Solutions Meshwork so far

The following questions concern you judgment of the Climate Solutions Meshwork so far. This includes the structure and framework of the Meshwork as well as the online and face-to-face interactions.

10. Please state your overall judgment of the **face-to-face conference** in Copenhagen:
    (Give a number from 1 to 10 whereby number 1 is the lowest score and 10 the highest score).
    - ☐ 1
    - ☐ 2
    - ☐ 3
    - ☐ 4
    - ☐ 5
    - ☐ 6
    - ☐ 7
    - ☐ 8
    - ☐ 9
    - ☐ 10
    - ☐ Not applicable, since I was not present in Copenhagen

11. Has your involvement in the Meshwork increased by attending the face-to-face sessions in Copenhagen at the Klimaforum?

Not at all	Slightly	Moderately	Increased	Highly increased	Not applicable
1	2	3	4	5	6

12. Please state your overall judgment of the **online platform**:
(Give a number from 1 to 10 whereby number 1 is the lowest score and 10 the highest score).

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

13. Can you rate the following components of the Meshwork?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I think the Meshwork makes a contribution to achieving 80 % CO2 reduction by 2020	1	2	3	4	5
I think there is greater coherence in working on climate matters due to the Meshwork	1	2	3	4	5
In general, the gains from joining the Meshwork extend the costs I made (in time and effort)	1	2	3	4	5

Trust

The following questions concern the presence of trust in the Climate Solutions Meshwork. This covers trust both with regard to the management and facilitation team as well as trust in the other participants.

14. Please rate the degree of trust you currently have in your **contacts** in the Meshwork:
(Give a number from 1 to 10 whereby number 1 is the lowest score and 10 the highest score).

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

15. Since your first involvement, has the trust in your **contacts** in the Meshwork:
- ☐ Strongly declined
- ☐ Declined
- ☐ Remained the same
- ☐ Increased
- ☐ Strongly increased

16. Please rate the degree of trust you currently have in the **management and facilitation team**:
    (Give a number from 1 to 10 whereby number 1 is the lowest score and 10 the highest score).
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

17. Since your first involvement, has your trust in the **management and facilitation team**:
- ☐ Strongly declined
- ☐ Declined
- ☐ Remained the same
- ☐ Increased
- ☐ Strongly increased

18. Below are some statements about trust. Please rate them.

	Strongly disagree	Disagree	Neutral / No opinion	Agree	Strongly agree
Trust is an important condition for realizing collaboration in the Meshwork	1	2	3	4	5
Trust in the other **participants** in the Meshwork is an important condition for knowledge exchange	1	2	3	4	5
Trust in the Meshwork **management and facilitation team** is an important condition for learning	1	2	3	4	5

Learning

19. Please rate the following statements.

Through participating in the Climate Solutions Meshwork, ….

	Strongly disagree	Disagree	Neutral / No opinion	Agree	Strongly agree
I have gained new insights from other participants' information	1	2	3	4	5
I have reflected more on my own viewpoints due to interaction with other participants	1	2	3	4	5
I now better understand other points of view	1	2	3	4	5
I am in a continuous circle of collecting information and reflection	1	2	3	4	5
I have developed more skills on how to collaborate with others	1	2	3	4	5
Collaboration with others improved	1	2	3	4	5
Together with other participants, we came to new insights and knowledge	1	2	3	4	5
I now better understand climate issues	1	2	3	4	5
I can now better position myself within the field of climate issues	1	2	3	4	5

20. What would motivate you to become more involved in the Meshwork?

Thank you for your cooperation!

Appendix 3: Interview topic lists

- **Topic list for Meshwork management team Round 1 (in Copenhagen)**

1. General

-Background and funding of 2020 Climate Solutions Meshwork

-Principles of meshworking

-Entry and exit of actors

-Working methods and 'initial rules' (management strategies)

2. Specific role / tasks during Copenhagen

-Specify your role

-Type of facilitators present

-Interaction development (during facilitation)

-Experiences in Copenhagen in facilitation (management strategies)

3. Process outcomes

-Progress made?

-Trust built?

-Learning points?

-Follow-up?

- **Topic list for Meshwork management team Round 2 (Spring 2010)**

1. General

-Looking back at Copenhagen: learning and development then?

-Changes in Meshwork afterwards?

-Interactions development (and connections)

2. Specific role / tasks

-Specify your role (after Copenhagen)

-Current activities

3. Process outcomes

-Progress made?   Divide into:

        -general activity on online platform?

        -other activity / interactions (e.g. initiation Dutch Meshwork)?

        -continued (online) facilitation?

        -key roles for actors?

        -Meshwork lifecycle progress?

        -trust development?

-Learning points?   Divide into:

        -evaluation meetings

        -Meshwork Design exploration (March 2010)

        -feedback from actors

        -results from (limited) facilitation

        -availability of resources

        -added value of Meshwork

        -other learning experiences (among management and among participants)

-Follow-up?   Divide into:

        -next steps (and continued actors)

        -priorities

        -prospects