MISTRA Environmental Communication

Reframing communication for sustainability

SLU
Swedish University of Agricultural Sciences

UPPSALA UNIVERSITET

MISTRA ENVIRONMENTAL COMMUNICATION – Reframing communication for sustainability

Programme Host: Swedish University of Agricultural Sciences (SLU), Division of Environmental Communication (EC-SLU), Uppsala, Sweden

Programme Directors: Professor Anke Fischer (EC-SLU) and Dr Eva Friman, Uppsala University

Contact person: Anke Fischer, EC-SLU, PO Box 7012, 750 07 Uppsala, Sweden, +46(0) 18-673556, anke.fischer@slu.se

Summary

MISTRA Environmental Communication – Reframing communication for sustainability is a 4-year research programme that **aims** to reframe environmental communication, i.e., to mainstream an advanced and inclusive understanding of environmental communication in research, policy and practice such that it can effectively underpin and foster sustainability transformations. The programme draws on a transdisciplinary approach that involves researchers from a range of disciplinary backgrounds as well as non-academic partners representing crucial actors in wider society to harness existing thinking, co-develop new insights and approaches and translate these into communication practice.

The programme's **vision** is that by 2035, effective environmental communication practices will underpin Sweden's transformation to a more sustainable society, acting as an internationally recognised model of critical and change-oriented communication that is socially legitimised and inclusive. This is the result of a strong collaborative approach, scaling out from the programme as a hub from the regional to national and international levels.

We argue that the following five **principles** will be crucial ingredients in a reframed approach to environmental communication:

- Understanding environmental communication as multimodal and multilateral rather than as linear diffusion of (expert) knowledge, and as performed not only by scientists or government experts but in all societal fields
- Considering both the instrumental and constitutive aspects of communication – this implies that environmental communication can take place with (e.g., through information campaigns) and without a purpose (e.g., over a coffee among friends and family), and that both these aspects shape public discourses and, ultimately, action
- Understanding environmental communication as a field of discursive struggle, and sustainability as an inherently contested concept
- Complementing sustainability transformation approaches that target individuals with approaches that foreground the social practices and structures that produce environmental problems
- Taking account of the role of power and conflict in knowledge production and communication processes, rather than viewing knowledge as neutral or objective

The programme's **scientific contribution** will thus be to strengthen the development of critical and change-oriented approaches to environmental communication as a research field in its own right that is well embedded in both wider communication studies and other strands of the environmental social sciences. It will produce in-depth knowledge on how and under what conditions environmental communication can contribute effectively to sustainability transformations.

We address **five major fields of environmental communication practice**. These include (i) government-led dialogue, (ii) consumption, (iii) science and knowledge co-production, (iv) organisational networks in market contexts and (v) arts and the media, and form the basis of the programme's work package structure. They are complemented by **cross-cutting work packages and think/do tanks** that synthesise, add value, apply lessons learned to specific organisational contexts, and scale out. Together, our work will provide a comprehensive and in-depth understanding of different forms of environmental communication and their roles in sustainability transformations, and will allow us to effect change in environmental communication scholarship and practice more generally.

MISTRA Environmental Communication brings together a strong **consortium** of researchers and societal actors that is uniquely placed to address this challenging task. The programme is hosted by the Division of Environmental Communication at the Swedish University of Agricultural Sciences (SLU) in Uppsala, and involves the Swedish International Centre of Education for Sustainable Development (SWEDESD) at Uppsala University, Lund University, University of Borås, the University of the Sunshine Coast (Australia), the University of Texas at Austin (USA), Charles University (Czech Republic), and a wide range of other academic and wider societal partners, including the Swedish Environmental Protection Agency, Sweden's Forestry Agency, the Federation of Farmers, Greenpeace, environmental consultancies, artists, media representatives and museums, and other authorities, NGOs and businesses.

Sammanfattning

MISTRA Environmental Communication – Reframing communication for sustainability är ett 4-årigt forskningsprogram som **syftar** till att utveckla miljökommunikation så att såväl forskning som policy och praktik genomsyras av en kvalificerad och inkluderande förståelse av miljökommunikation som främjar omställningen till ett hållbart samhälle.

Programmet har en tvärvetenskaplig ansats som involverar forskare från en rad vetenskapliga discipliner och icke-akademiska partners som representerar centrala samhällsaktörer. Tillsammans bygger de vidare på befintliga tänkesätt, utvecklar nya insikter och ansatser och översätter denna kunskap till nya kommunikationspraktiker.

Programmets **vision** är att Sveriges hållbarhetsarbete vid ingången av år 2035 understöds av effektiva kommunikationspraktiker. Tack vare den kritiska, förändringsorienterade och inkluderande ansats som dessa praktiker bygger på, har de fått bred samhällelig acceptans och även rönt erkännande internationellt. Detta är resultatet av en genomtänkt transdisciplinär forskningsstrategi som med programmet som nav har fått spridning regionalt, nationellt och internationellt.

Vi hävdar att följande fem **principer** är nödvändiga för utvecklingen av miljökommunikation:

- Att miljökommunikation förstås som ett multimodalt och multilateralt fenomen snarare än som enkelriktad spridning av (expert) kunskap, och som något som inte bara utövas av forskare och experter utan av aktörer inom alla samhällsområden.
- Att både de instrumentella och konstitutiva aspekterna av kommunikation beaktas. Detta innebär att miljökommunikation kan utövas både med ett syfte (t.ex. informationskampanjer) och utan ett sådant (t.ex. över en kaffekopp tillsammans med vänner). Båda dessa aspekter av kommunikation bidrar till att forma samhällets diskurser och skapar också samhällsförändringar.
- Att miljökommunikation förstås som en kamp där olika diskurser drabbar samman och att hållbarhet utgör ett ständigt omtvistat begrepp.
- Att de metoder för omställning till hållbarhet som riktar sig mot individer behöver kompletteras med metoder som utgår från de sociala praktiker och strukturer som genererar miljöproblem.
- Att erkänna den roll som makt och konflikter spelar i kunskapsproduktion och kommunikation, snarare än att betrakta kunskap som neutral och objektiv.

Programmets **vetenskapliga bidrag** kommer därför att stärka utvecklingen av kritiska och förändringsorienterade miljökommunikativa ansatser som ett forskningsfält i sin egen rätt. Detta kommer att vara väl integrerat i både kommunikationsvetenskap och andra former av samhällsvetenskaplig miljöforskning. Forskningsprogrammet genererar fördjupad kunskap om hur och under vilka förutsättningar miljökommunikation på ett effektivt sätt bidrar till hållbarhetsomställningen.

Vi fokuserar på **fem områden där miljökommunikationspraktiker spelar en dominerande roll**: (i) dialogprocesser som initieras av statliga myndigheter, (ii) konsumtion, (iii) (tvär)vetenskaplig samproduktion av kunskap, (iv) marknadsbaserade nätverk, och (v) konst och media. Dessa utgör strukturen för programmets arbetspaket. De kompletteras med **tvärgående arbetspaket och "think/do-tanks"** som syntetiserar och konkretiserar det lärande som kontinuerligt sker för att tillämpa det i olika organisatoriska sammanhang och därigenom göra vunna erfarenheter tillgängliga i vidare kretsar. Sammantaget kommer vårt arbete att erbjuda en omfattande och djupgående förståelse för olika former av miljökommunikation och dess roller i hållbarhetsomställningen.

Programmet bygger på ett starkt **konsortium** av forskare och samhällsaktörer med unika förutsättningar att möta dessa utmaningar. Programvärd är Avdelningen för miljökommunikation vid Sveriges lantbruksuniversitet (SLU) i Uppsala. Konsortiet inkluderar vidare Sveriges internationella centrum för utbildning för hållbar utveckling (SWEDESD) vid Uppsala universitet, Lunds universitet, Högskolan i Borås, University of the Sunshine Coast (Australien), University of Texas i Austin (USA), Charles University (Tjeckien) samt ett stort antal partners inom både akademi och det omgivande samhället, däribland Naturvårdsverket, Skogsstyrelsen, LRF, Greenpeace, miljökonsultfirmor, konstnärer, medierepresentanter och museer, samt andra myndigheter, icke-statliga organisationer och företag.

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PART A

1. Vision, aims and expected impacts

Our society faces a broad and complex set of urgent socio-environmental challenges that have no easy solution and are difficult to govern. These challenges, as well as the agenda that the international community has developed to tackle them – Agenda 2030 and the Sustainable Development Goals (SDGs) – are characterised by complexity, uncertain and disputed facts, conflicting values, high stakes and a pressing need to act (Funtowicz & Ravetz 1994, Sardar 2010). Difficult to delineate and without technical solutions, they are often labelled as 'wicked'. As such they call for an entirely different governance approach (Jentoft & Chuenpagdee 2009), in which environmental communication is a crucial component for understanding and facilitating transformations to sustainable societies, i.e., processes that involve profound innovations in social practices and structures as well as technologies (Stirling 2014a).

Environmental communication is the social negotiation of knowledge, values, emotions and embodied experiences related to environmental and sustainability issues (see Section 2.1). Traditionally, environmental communication has largely been understood from an instrumental perspective, often building on a knowledge deficit model, in which the effective communication of appropriate information and knowledge will lead people to adopt more sustainable behaviour (Corner et al. 2017, Irwin et al. 2018). Broader, richer and more nuanced understandings exist, both in communication research and the wider environmental social sciences as well as in communication practice (see below). However, these remain relatively isolated and insufficiently translated into mainstream environmental communication research and practice.

MISTRA Environmental Communication will address this shortcoming. Our **overarching aim** is to reframe environmental communication, i.e., to mainstream a broader and more advanced understanding of environmental communication in research, policy and practice (Section 2), such that it can effectively foster sustainability transformations. We draw on a trans-disciplinary, i.e., multi-actor approach (Section 4.1) that involves researchers from a range of disciplinary backgrounds as well as non-academic partners representing crucial actors in wider society (Sections 2.2, 5.2) to harness existing thinking, co-develop new insights and approaches and translate these into communication practice.

The programme's **vision** is that by 2035, effective environmental communication will underpin Sweden's transformation to a more sustainable society, acting as an internationally recognised model of critical and change-oriented communication that is socially legitimised and inclusive. This is the result of a strong collaborative approach, scaling out from the programme as a hub from the regional to national and international levels.

We will investigate and reframe environmental communication in five fields of communication practice (Fig. 1, Section 2.2). In these fields, the programme will **(a)** review and summarise existing knowledge and theories, **(b)** co-create new insights on the complex connections between knowledge, values, emotions, embodied experiences and environmentally-relevant behaviour and social practices, and the role that communication – as the joint construction of meaning – plays in such processes (Fig. 1). Importantly, we will **(c)** develop approaches and methods to translate these insights into communication practice, thereby initiating a step change in the ways in which environmental communication is conceptualised and enacted.

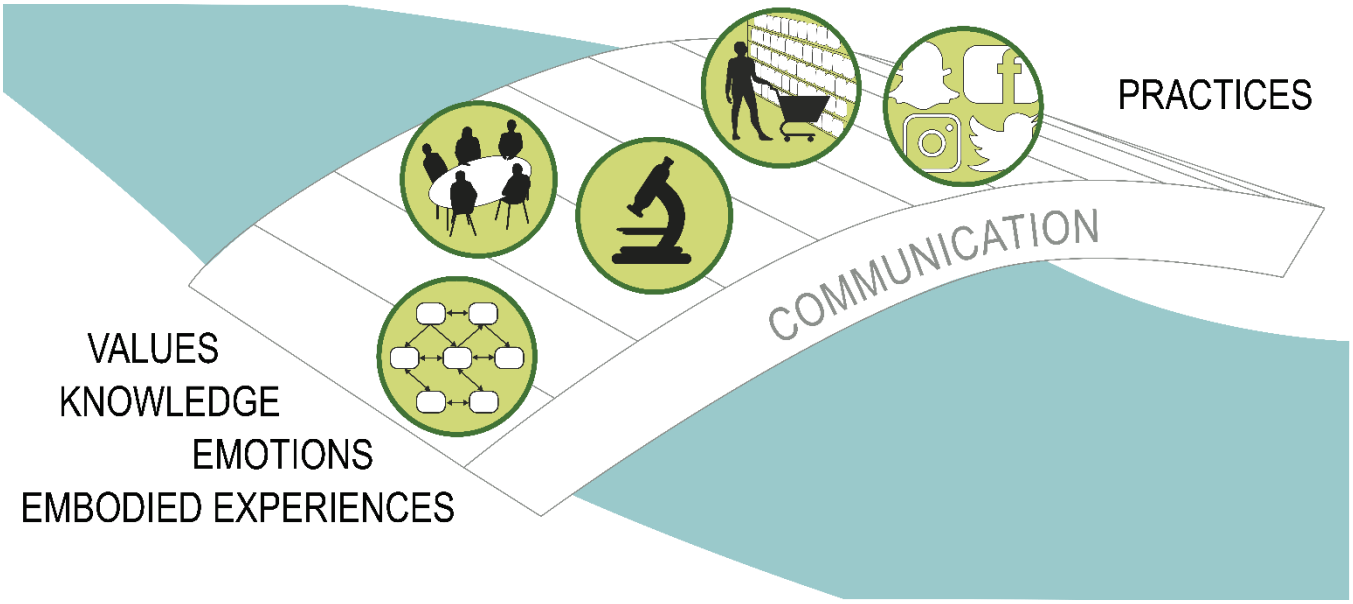


Figure 1. Communication in five fields of practice (government-led dialogue, consumption, science, organisational networks, arts and the media) as a bridge

To achieve its vision and overarching aim, the programme's **goals** are to:

- Develop and mainstream a theoretically and empirically grounded understanding of environmental communication that is capable of addressing 'wicked' challenges and that contributes effectively to societal transformations towards sustainability
- Bridge the gap between theory and practice through close transdisciplinary collaboration between researchers and societal partners, in partner dialogues, think/do tanks and co-developed research, capacity building and communication methods
- Establish a powerful Sweden-based hub for environmental communication research and practice with international reach
- Form a strong European basis for research and debate on environmental communication that stimulates inter- and transdisciplinary dialogue and collaboration
- Explore, develop and apply strategies for transformative environmental communication practices at local, regional, national and international levels
- Ensure continued development and adaptation of transformative environmental communication practices in different contexts – including training and capacity building of environmental communicators and other communication practitioners (Section 2.2).

We will produce a wide range of outputs (Sections 6, 7) for academic and non-academic audiences (Sections 2.2, 3), including communication practitioners across different types of organisations, policy- and other societal decision-makers. Through a variety of pathways (Sections 3, 8), these outputs will translate into the following **impacts**:

- Both in academic and wider societal contexts, the understanding of environmental communication will have been broadened and deepened in a way that allows a more effective engagement for sustainability transformations (see Section 2.2)
- The programme will have stimulated conceptual renewal, wider reflection and debate among relevant actors, in Sweden and beyond, on what environmental communication means, and how it can lead to socially inclusive and democratically legitimate (and ultimately sustainable) outcomes
- Through multi-actor dialogue, environmental communication research will have become more societally relevant and valid
- Environmental communication practices involving academia, environmental consultancies, businesses, non-governmental and governmental organisations, media and civil society are more effective and legitimate as actors are equipped with theoretically informed models and tools for communication and have the capacity to critically reflect upon and adapt activities to the situation at hand
- Communication practitioners feel more confident and empowered, and more able to adapt to their communication partners due to the programme's capacity building approaches, including learning fora where communication practitioners can meet their need to continuously improve their EC practice, and the SLU-EC Masters programme that has integrated and reflects the programme's latest insights
- Arenas and formats for environmental communication will have been pluralised, and traditionally less formal or alternative settings (such as social media and activism) will be recognised as spaces where meaningful communication on the environment takes place

Through improved communication, both environmental research and policies are strengthened in impact and better aligned with the interests of a wider range of stakeholders, which helps organisations, municipalities and the entire state to achieve their environmental and sustainability goals (Section 3.1).

2. Scientific value of the programme

2.1 Moving beyond the state of the art – the MISTRA Environmental Communication perspective

Environmental communication can be conceptualised in many different ways. In terms of its content, we understand environmental communication to encompass all communication about environmental and sustainability issues including their social, economic and ecological dimensions, such as climate change, natural resource use, land use and the management of the natural environment.

We consider communication as more than just the exchange of information or knowledge – communication also includes the sharing and negotiation of values, emotions, embodied experiences and practices. Communication may concern specific pieces of knowledge or feelings (e.g., as in concrete messages or answers to questions) as well as comprehensive discourses, representations, theories or ideologies. The concept of discourse will be found across much of the programme, and we understand discourses here as shared "ensembles of ideas, concepts and categories through which meaning is given to social and physical phenomena" (Hajer 2006, p. 67).

A core premise in the programme is the consideration of communication from both an instrumental and a constitutive perspective. The *instrumental* aspect of communication implies that communication functions as an instrument for persuading, mobilizing, and dealing with

environmental conflicts, as well as negotiating spaces for deliberative processes, and enabling learning for collective action and change (Hansen & Cox 2015, Hallgren 2016). A *constitutive* perspective on communication means to presume that communication is a process of meaning-making and social construction. We thus consider both 'communication with a purpose' (as understood in much of Irwin et al. 2018), which is often driven by 'experts' or communicators in a (quasi-)professional role (e.g., awareness campaigns, advertising, documentaries, planned science communication), *and* communication about environmental issues that is informal and unplanned (e.g., between friends and family).

Environmental communication 'with a purpose' has for a long time been shaped by communication models that are based on the assumption that there is a connection between knowledge, attitudes and behaviour, i.e., people will change their attitudes and behaviour to align with the information they have, provided this information is communicated effectively (Ajzen 1991, Stern 2000). Thus, in the dominant discourse about societal-level transformations towards sustainability, responsibility is assigned to individuals, while the responsibility of the policy- and other decision-makers is to ensure that the 'right' knowledge is produced and communicated in the 'right' way. In this model, then, knowledge production is expected to be carried out by experts (e.g., scientists) in specific organisations assigned to this purpose.

While simple communication models might have always been insufficient for more complex communication processes, they are particularly maladapted for tackling the wicked, i.e., intractable sustainability challenges of our time. Sustainability challenges, such as climate change, overexploitation of resources and environmental degradation, are typically overdetermined – that is, without a simple cause – and object to fierce discursive struggles over interpretations, attributions of responsibilities and proposed solutions. However, such simple communication models continue to shape environmental communication by public authorities, civil society organisations, consultants and, not least, scientists. They have been critiqued in environmental communication research and related academic fields, and more nuanced theories on communication and societal change have been proposed (Katz-Kimchi & Goodwin 2015, Cox 2007, Hansen & Cox 2015, Simpson & Seibold 2008, Endres et al. 2009). Yet, this has so far had limited impact on mainstream environmental communication practices, which are supported by and reproduced through policy documents and instruments, manuals and skills development courses, as well as old and new media.

Scholars in fields such as communication science, sociology, educational sciences, political science, cultural geography and psychology have made numerous and diverse contributions that can help to re-frame environmental communication as a vehicle for transformation to a sustainable society. These highlight both content- and process-related aspects of communication. Key aspects include, for example, the socially constructed and contested understandings of the causes of and proposed solutions to the socio-ecological challenges of our times, how the practices that underpin environmental degradation and climate change are reproduced, interlinked and supported by political and economic institutions, discourses, and technical arrangements, and the possibilities for environmental communication to contribute to social change (Milstein 2009, Katz-Kimchi & Goodwin 2015). And indeed, in the last decades, in some fields of practice such as natural resource governance, more complex, dialogue-based communication approaches have been applied that build on the assumption that well-facilitated participatory and collaborative processes will reduce conflicts of interests and differences in opinions (Purcell 2009, Ison & Wallis 2017). However, research as well as practical experience suggest that such approaches often fail, not least because of underpinning power relations that tend to remain unaltered (Westberg & Waldenström 2016, Löf & Stinnerbom 2016). In addition, the use of participatory approaches does not necessarily mean that the outcomes of a process are environmentally sustainable (Bjärstig 2017).

However, much of this detailed conceptual and empirical work has so far remained within the academic debate, and not found wider application. Again, this might have been due to ineffective communication between scholars in social science and wider society, based on simplistic models of 'dissemination' or 'knowledge transfer', which highlights the need for reflexivity and a critical evaluation of our own communication practices in the social sciences. The programme's ambitions to move beyond the state of the art are therefore threefold:

1) We build on the existing theoretical and conceptual advances in environmental communication research and other relevant scientific disciplines, and, through an inter- and transdisciplinary approach (i.e., bringing not only different scientific disciplines, but also academics and non-academics together), makes these insights and approaches useful for environmental communication practice
2) Over and above these existing but unharnessed advances, the programme provides novel scholarly perspectives and research that substantially enhance our understanding of environmental communication and the role it plays in connecting knowledge and societal change
3) The programme develops methods and spaces for reflexivity of the programme participants and their wider communities, to reflect on, learn and improve their own transformative communication practices

MISTRA Environmental Communication will thus reframe understanding and practice of environmental communication, and inspire innovation in communication practice in a wide range of contexts.

Figure 2. The five fields of practice addressed by MISTRA Environmental Communication: (i) government-led dialogue, (ii) consumption, (iii) science and knowledge (co-)production, (iv) organisational networks, (v) arts and the media.

2.2 Our approach

MISTRA Environmental Communication brings together an inter- and transdisciplinary consortium of researchers and practitioners (see Section 5) that aims to work in a critical, engaged and change-oriented way. Many of the consortium partners formally identify with the sustainability agenda, and the programme explicitly aims to help contribute to the United Nations' Sustainable Development Goals by improving communication for sustainability transformations. However, rather than prescriptively promoting specific sustainability-related content, MISTRA Environmental Communication advances our understanding of environmental communication as a means to support the enactment of the Sustainable Development Goals.

The programme is situated in a broad **action arena** that includes:

1) Researchers from a range of disciplines that contribute to a better understanding of environmental communication
2) Professional communicators, such as journalists, communication consultants, communication officers in private companies, governmental and non-governmental organisations
3) Other actors who engage in environmental communication in a (quasi-)professional capacity, but would not necessarily consider themselves as communicators, such as scientists, policymakers, politicians, other staff of businesses, governmental and non-governmental organisations; this includes both actors who 'do' communication and those who shape the structures and institutional contexts of communication
4) Members of the public who engage with debates on environmental issues in manifold, mediated and unmediated ways

Hereafter, the term 'environmental communication practitioners' includes both groups (2) and (3), whereas 'communicators' only refers to group (2).

We aim to reframe environmental communication by scrutinizing the assumptions that underpin current communication activities, and by informing environmental communication theory and practice. We argue that the following five **principles** will be crucial ingredients in a reframed approach to environmental communication:

- Understanding communication as multimodal and multilateral practices rather than as linear diffusion of (expert) knowledge (Nowotny 2003; Young et al. 2014; Irwin et al. 2018)
- Considering both the instrumental and constitutive aspects of communication – this implies that environmental communication can take place *with* (e.g., through information campaigns) and *without* a purpose (e.g., over a coffee among friends and family) (Section 2.1)
- Complementing sustainability transformation approaches that target individuals with approaches that foreground the social practices and structures that produce environmental problems (Soneryd & Uggla 2015)
- Understanding environmental communication as a field of discursive struggle, and sustainability as an inherently contested concept (see below; Leach et al. 2010, Stirling 2014)
- Taking account of the role of power and conflict in knowledge production and communication processes, rather than viewing knowledge as neutral or objective (Keller 1985, Haraway 1988, Lave & Wenger 1991).

Ideas about what the environment is and how humans relate to their environment are central to environmental communication. These ideas provide "structures of understanding" (Hall 2007: 93) which shape how people make sense of information about the environment. Such ideas are neither homogeneous nor stable. On the contrary, research on human-nature relationships and environmental conflicts show that in many social contexts, multiple and often conflicting ideas exist and engage with one another in discursive struggles, sometimes strongly opposing each other and at other times mutually constitutive (Ganesh & Zoller 2012, Peterson et al. 2016). This is true even in cases where substantial scientific consensus exists, as, e.g., the persistence of climate change denial (e.g., Collomb 2014) shows. Recognition of this heterogeneity and the constant contestation of ideas is key to a better understanding of how environmental communication functions and, importantly, how communication can be more effective in stimulating and supporting sustainability transformations.

Environmental communication, understood in a broad sense as outlined above, is taking place everywhere in society. We identified **five major societal contexts** where environmental communication can play a transformative role and where we target our efforts. These five fields of practice are reflected in the work packages (WPs) that are the building blocks of the programme (Fig. 2, Section 4.2). These include:

- Government-led dialogue (WP1)
- Communication in consumption contexts (WP2)
- Science and knowledge (co-)production (WP3)
- Organisational networks in wider market contexts (WP4)
- (Social) media and the arts (WP5)

Work in these fields of practice is complemented by synthesis across the entire programme (WP6) and coordination and knowledge exchange (WP7: the programme commons; see Section 6 for details).

MISTRA Environmental Communication aims to change communication practices. However, the same principles that apply to science communication more widely apply also to this research programme: Changing practices is inherently difficult, and, as argued above, advances in scientific knowledge will not automatically lead to changes in practices. The programme therefore adopts a **transdisciplinary approach** in which researchers and practitioners collaborate closely to co-create, translate, challenge and experiment with research insights to develop guiding principles for effective environmental communication. This approach is characterised by the following features:

- Collaboration with societal partners is an integral part of the work carried out at both the programme and the WP level. This collaboration started during the writing of the proposal, and the programme has been jointly developed through **partner dialogues** (Section 4.1)
- Researchers and environmental communication practitioners **critically explore together** the expectations, routines, norms, assumptions, models and methods that characterise their communication practices (see e.g., WP6)
- Researchers and environmental communication practitioners experiment with and evaluate new ways of working that are informed by both theory and empirical experience, and, built on an in-depth and nuanced understanding of how communication can best inform societal-level transformations, **develop effective approaches** that help reframing environmental communication
- Short-term and agile **think/do tanks** (see Section 4.2) facilitate practitioner-led development of activities and events that give space to specific topics of practical interests and that may cut across several WPs.

Historically, environmental communication as a scientific discipline emerged in North America and Europe in the 1990s to meet the growing need to understand the sophisticated and complex dynamics and politics of how 'environment' is socially shaped, contested and practiced. As such, environmental communication was originally intended to be broad and multi-faceted in scope and scale; to cast a wide net of diverse topics and research approaches; to produce research that is accessible and relevant to parties and situations outside academia; and to be deliberately cross-disciplinary and collaborative. In line with this legacy, we endeavour to make environmental communication research transdisciplinary, accessible and applicable so it can increase the capacity of societies and the well-being of ecosystems that include human communities. This programme plan outlines how we intend to support the environmental communication field in achieving its full potential as originally envisioned.

The programme addresses all research areas identified by the authors of the MISTRA background paper (Irwin et al. 2018). First, by engaging with a range of contexts of communication practice in WPs 1-5, the programme involves and examines the roles of a wide spectrum of **publics and organisations in environmental communication**, their discourses and imaginaries, and how these interact in communication and social practices (e.g., WP2, WP3, WP4, WP5). We also investigate power relationships and patterns of inclusion and exclusion (e.g., WP1, WP3, WP6). Second, our work includes both well-established and **emerging formats and sites of environmental communication**, ranging from intended, institutionally embedded communication 'with a purpose' (e.g., government-led dialogue in WP1, or in consumption contexts in WP2) to spontaneous and/or novel forms of communication (such as social media debates in WP5). WP3 examines the changing roles and interpretations of scientific knowledge in environmental communication, and WP5 explores how different forms of communication interact, support or contest each other. Third, in these sites, we investigate **public knowledge-making**, largely using a discourse-analytical lens that examines both the discourses in their communicative contexts (e.g., as expressed in the arts and various forms of media, WP5) and the underpinning meta-discourses, i.e., shared mental models of how communication works (e.g., WP1, WP2, WP6). **Values and emotions** are a focus of the work on consumption-related communication (WP2), but are also investigated in WP6, looking across all five fields of practice, and, in a reflexive approach, our own work throughout the programme. Finally, these fields of practice constitute and represent a wide range of **governance** approaches, from government-led dialogue (WP1) to different modes of steering consumption (WP2) and production (WP4). We examine the role that communication plays in these different fields, and how different models and practices of communication can help or hinder the effectiveness of these governance approaches.

The programme's **scientific contribution** is thus to strengthen the development of critical and change-oriented approaches to environmental communication as a research field in its own right that is well embedded in both wider communication studies as well as other strands of the environmental social sciences. It will produce in-depth

knowledge on how and under what conditions environmental communication can contribute effectively to sustainability transformations.

3. Relevance and benefits of the programme to society

3.1 Societal relevance and expected benefits

MISTRA Environmental Communication is of extremely high relevance to several key policies at the local, national and international level. Transformative environmental communication is a crucial mechanism underpinning Sweden's environmental quality objectives, which also include the goal of generational justice and the target of a climate-neutral Sweden by 2045 (http://sveriges miljomal.se/miljomalen/). And indeed, the Swedish Environmental Protection Agency's (SEPA) support letter for our programme states: "Communication is one of the most important tools in the work toward Sweden's environmental objectives. The Department of Communication at the SEPA works with several projects aiming to increase knowledge and to affect attitudes and behaviours." At the local level, for example, one of our key societal partners, Uppsala Municipality, has pledged to achieve a fossil-free Uppsala by 2030, and to be climate positive by 2050. A reframed and more effective communication practice is essential to achieve these aims.

The programme also aspires to contribute to the national and global efforts towards the **Sustainable Development Goals** (SDGs). Different parts of the programme support different goals (Table 3.1) at different levels. For example, while WP1's contributions to sustainable water governance (SDG 6) will initially be manifest only locally at the level where the case study is situated, the lessons learned from this case (which will be shared through journal papers, workshops and other means, see WP1) will be useful also in other places and contexts. However, our most unique contribution will probably lie in the promotion of inclusivity and legitimacy in environmental communication as part of societal interaction (SDG 16), with the ambition to support sustainability transformations more generally (all SDGs).

Section 1 states the programme's expected impacts, Section 6 specifies anticipated outcomes by WP, and our **audiences** are listed in Section 2.2. In terms of its societal impacts, the programme aims to benefit (a) professional communicators, (b) other environmental communication practitioners such as scientists, staff of public authorities and NGO representatives, (c) policy- and other decision-makers who shape institutional structures for communication and (d) the wider public.

For all of these groups, the programme's main **benefits** will be a turn towards a more inclusive environmental communication practice, leading to more societally relevant, valid and legitimate outcomes that are more effective in achieving societal-level transformation towards sustainability. Participants in communication – whether experts or non-experts – will feel taken seriously and are empowered to contribute to the public debate in multiple fora and formats in constructive ways. Through improved communication, research and policy actors will understand their audiences better – and will be better understood by them – which will increase their impact substantially and support society to achieve its environmental and sustainability objectives (see also Section 1).

3.2 Pathways to impact

The programme will ensure high societal impact through three main approaches. First, the programme uses **transdisciplinary, interactive methodologies** that actively involve the programme participants – both academics and non-academics (Section 5) – in the design, planning and implementation of the work. This has started with the partner dialogues during the development of the proposal (Section 4.1) and will continue through a variety of methods and formats throughout the entire duration of the programme (see Sections 4.1 and 6 for details). This ensures continued co-ownership of and relevance for the societal partners and their wider constituencies. It also enables critical reflection and adaptive management of the programme and the collaborative process where needed (see WP6). The adaptive methodological design thus allows for adjustments as the programme evolves, based on itera-

Table 3.1: MISTRA Environmental Communication's aspirations – contributions towards the Sustainable Development Goals (SDGs)

SDG	SDG summary	MISTRA Environmental Communication contributes through…
6	Ensure access to water and sanitation for all	WP 1
10	Reduce inequalities within and among countries	WPs 1, 3, 6
12	Ensure responsible production and consumption patterns	WPs 2, 4
13	Take urgent action to combat climate change and its impacts	WPs 3, 4; think/do tank on social media collective action
15	Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	WPs 1, 3; think/do tank on natural resource management
16	Promote just, peaceful and inclusive societies	WPs 1, 5, 6; think/do tank on environmental consultancies

tive cycles of joint learning within (e.g., WPs 1 and 5) and between the WPs (see WP6). The interactive research methodology also provides individual societal actors with the possibility (and where useful, support) to critically reflect on their current practices and to test new ones. In addition, the partner dialogues are used to identify opportunities for internships for researchers and students at societal partners' organisations and vice versa (Löf 2011). Overall, we expect these methods to build capacity of and empower both researchers and societal partners, also outside and beyond the programme.

Second, **think/do tanks** are initiated and led by practitioners and synthesise practice-relevant outputs from across the work packages (see Sections 2.2 and 4.2). These think/do tanks are another of our means to address the theory/practice gap in environmental communication. They bring together lessons learned from the different societal contexts covered in the WPs, and provide a further forum for researchers and practitioners to translate, challenge and experiment with context-bound research insights, co-creating guiding principles and effective methods for transformative environmental communication for sustainability. The think/do tanks are supported by a dedicated member of the EC-SLU team to facilitate their work.

Third, we organise and develop a number of **platforms, activities and methods** that serve to share findings, lessons learned and tools developed with the participating organisations as well as wider audiences and the general public (see Sections 6 and 7). Some of these are programme-wide, such as the interactive website, the twitter feed, training and capacity building in environmental communication practice, input into organisational communication strategies, and meetings and conferences (see WPs 6 and 7). Others are hosted by individual work packages (where appropriate with input from other WPs) such as the exhibition planned in WP5 or the national-level stakeholder workshops in WP1. Many of these, for example, the capacity building approaches and potentially the serious game system, will constitute a legacy even after the programme's conclusion, and could be expanded on, applied to other contexts and/or systematically evaluated for their impact, should the programme be continued after the initial 4 years. We will also actively use national and international relevant practitioner networks (see Section 5.3) for dissemination and sharing (see Section 8 for more details on communication and implementation).

We **track our societal impact** to enable an evaluation of our work (WP7). We refer here to a wide range of possible outcomes, including instrumental, capacity-building, conceptual, attitudinal/cultural and enduring connectivity impacts (Meagher & Lyall 2013). We also distinguish here between outcomes that are experienced (and thus 'measurable') by the programme partners, and outcomes that reach beyond the programme partners to affect societal actors more widely. To identify appropriate indicators of success for all of these areas, we will hold sessions at the first consortium meeting as well as with the Programme Board (Section 4.3.4). We will then, first, set up an approach for all programme participants to log evidence of impact – such as feedback from societal actors, or information on our work's influence on organisational communication strategies – throughout the programme. Second, we will use the partner dialogues to elicit feedback from our societal partners on a regular basis, to be able to track the outcomes of our work in a structured way. Third, together with the Programme Board, we will identify additional ways of assessing wider societal impact. Together, these approaches allow us to compile evidence of the programme's immediate effects. Longer term effects could be monitored in a second phase of the work.

4. Organisation of the programme

4.1 A transdisciplinary approach

In a multi-actor approach, MISTRA Environmental Communication brings together a transdisciplinary consortium of researchers and societal partners (see Section 5 for details). The programme has a firm, well-established basis with critical mass and collaborations in Uppsala and is enriched by selected Swedish and international partners. Academic partners include:

- The Division of Environmental Communication at the Swedish University of Agricultural Science (EC-SLU) in Uppsala, which acts as the programme host
- The Swedish International Centre of Education for Sustainable Development (SWEDESD), the Climate Change Leadership Node and the Department of Game Design at Uppsala University
- Ecologists and environmental scientists from the Departments of Ecology and Aquatic Sciences and Assessment at SLU
- Environmental psychologists at Lund University
- Cultural scientists in information studies at the University of Borås
- Scholars in sustainable development at the University of the Sunshine Coast, Australia.
- Communication scientists at Charles University, Czech Republic
- Organisational communication scientists at the University of Texas, USA

Non-academic partners represent a variety of relevant societal actors in environmental communication, and include (see Section 5.2 for details):

- Environmental consultancy companies specialised in spatial planning and communication
- Public authorities dealing with environmental policies at local, regional and national levels

- Non-governmental organizations (NGOs) concerned with environmental and land use issues at local and national levels
- Relevant actors in the media, arts and business sector

These actors (Section 5.2) have confirmed their involvement through **partner dialogue** processes where shared interests, diversity of perspectives and ideas for activities and outputs of the programme have been jointly explored. While these partner dialogues started during the development of this proposal, they will continue throughout the runtime of the programme to ensure that the work remains relevant and meaningful (see also Section 3.2, WP7). Additional societal actors will be invited to participate where needed, through their involvement in WP-specific case studies or in larger roles. We will also continuously scan the horizon for new relevant stakeholders.

While the consortium thus stretches across a variety of sectors, administrative levels and countries, the programme also has a physical home, and is rooted in Uppsala through its tight collaboration with local and regional authorities and a network of local businesses. From there, it scales out to the national and international level, through a range of pathways (Section 3.2), drawing on the structures and networks of programme partners, such as the International Environmental Communication Association network and the recently created SLU-EC network of Masters alumni - both networks that include environmental communication researchers and practitioners (see Section 5.3 for details).

The two core academic partners, EC-SLU and SWEDESD, have a strong track record in multi-actor, transdisciplinary research (Westberg & Polk 2016, Löf & Stinnerbom 2016, Peterson et al. 2016, Larsen et al. 2017, Eastwood et al. 2017, Joosse et al. submitted). Transdisciplinary research is characterised by its ambition to create legitimate, scientifically rigorous and effective solutions to complex societal problems through the involvement of both multiple disciplines and a diversity of societal actors in research situated in real-life contexts (Nowotny et al. 2001, Pohl & Hirsch-Hadorn 2007, Wiek et al. 2012). Transdisciplinary methodology includes processes where problems are jointly identified and possible solutions examined. However, like most research approaches, transdisciplinary research wrestles with how the findings can be implemented in practice. In a study of pilot projects carried out by MISTRA Urban Futures in Gothenburg (Westberg & Polk 2016), the authors focused on these questions from the lens of social practice theory. By viewing the pilot projects as temporary social practices different from the participating practitioners' ordinary practices (in terms of identities, norms, routines and world views that were reproduced), the lacking implementation turned out to have both a reasonable explanation and potential solution. The authors conclude that knowledge needs to be translated to make sense outside the context in which it is developed and suggest that it "*is critical to continually, throughout the TD* [transdisciplinary] *project, explicitly discuss the relevance and usefulness of project activities, outcomes and learning in relation to the ordinary practices of the practitioners*. [This] *can hopefully contribute to avoiding the main pitfalls of TD research*" (Westberg & Polk, 2016, p. 395). These insights have guided the programme's methodological set-up.

4.2 Structure of the programme

MISTRA Environmental Communication is organised according to three dimensions. These capture:

a) Research in major fields and formats of environmental communication practice (the work packages)
b) Cross-cutting themes and areas of application (think/do tanks)
c) Theoretical, conceptual and methodological perspectives that cut across work packages and think/do tanks.

Work packages (WPs) and think/do tanks constitute major structural elements in the design of the programme (see Fig. 3), whereas theoretical, conceptual and methodological perspectives applicable to the entire programme are addressed in WP6 (see Section 6 for details).

WPs 1-5 cover five major fields of environmental communication practice (Fig. 2). Together, they provide a comprehensive overview and in-depth understanding of different forms of environmental communication and their roles in sustainability transformations, and allow us to draw conclusions for transformative environmental communication scholarship and practice more generally.

WP1 examines **government-led dialogue in urban and rural planning processes**, focusing on their effectiveness and perceived legitimacy, and aiming to further develop existing dialogue approaches to improve their ability to deal constructively with power imbalances and conflict. WP2 takes 'traditional' individual- and lifestyle-focused **communication in consumption contexts** as a point of departure, and expands on such models by combining environmental psychological perspectives on the role of emotions with sociological theories on social interaction, identity formation and practices. Communication in **scientific modes of knowledge (co-)production**, and how it could be reframed to address sustainability challenges more effectively, is addressed in WP3. WP4 investigates the role of communication in **organisational networks in the context of the sustainability agenda**, in particular, the impact of increased visibility and transparency in globalised communication networks on organisational behaviour, especially of market actors. In WP5 we explore discursive encounters, negotiations and contestation enacted in **social media, mass media and the arts**. WP6 **synthesises** the work across WPs 1-5 along a number of key conceptual dimensions to identify, consolidate and reflect on our main contributions to a reframed understanding and practice of environmental communication, linking back and critically elaborating on the five principles we introduced in Section 2.2. Programme coordination and shared knowledge exchange activities, i.e., **the programme commons**, are the tasks of WP7 (see time plan in Section 8).

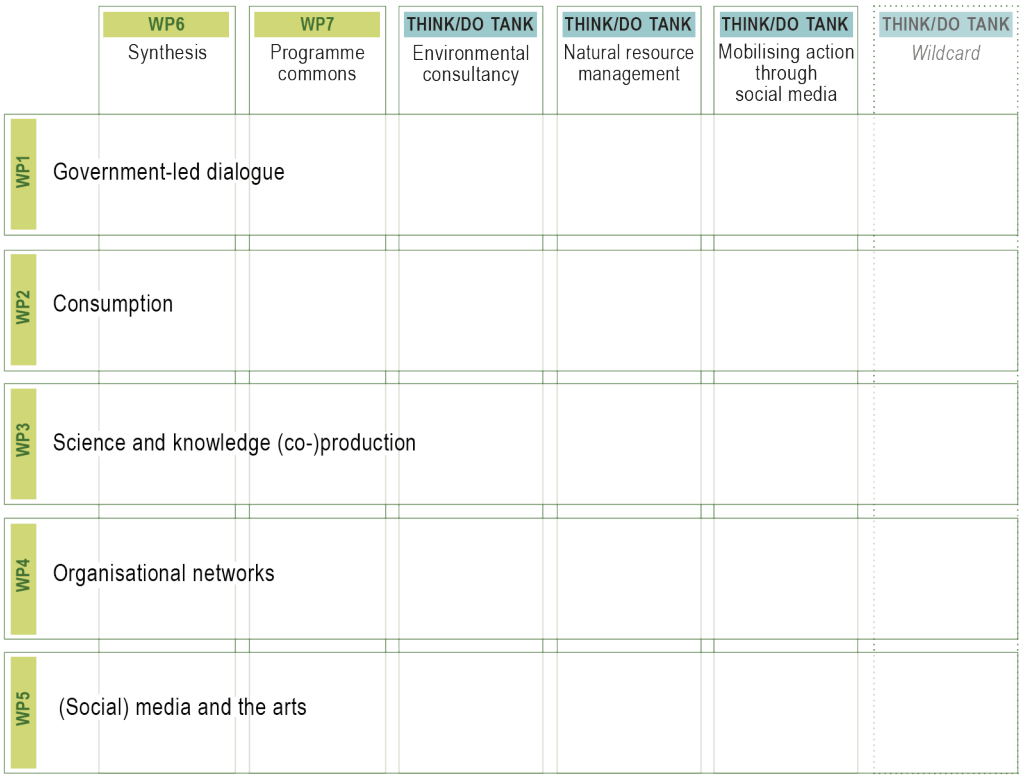


Figure 3. The structure of MISTRA Environmental Communication.

The programme makes use of a wide range of research methods. This includes qualitative (interviews, focus group discussions and group feedback analysis, observation, co-inquiry, serious games, document and media analysis such as netnography) and quantitative approaches to data collection (surveys, experiments, media analysis). These are applied to a spectrum of real-world cases ranging from conflicts over natural resource governance in northern Sweden to climate change education in Vietnam to sustainability activism in the social media with global reach.

To consolidate and further develop practice-relevant insights and approaches across these five fields of communication practice (WPs), the programme uses **think/do tanks** in a flexible and adaptable manner. Think/do tanks are led (or at least initiated) by one or several of the societal partners who are interested in developing additional outputs based on the work of several WPs, with the involvement and support of a wider range of partners, including relevant researchers. Typically, think/do tanks last for one or two years; however, they could also work in shorter, more intense timeframes, or, if appropriate, prepare their work over a longer period of time. Their core activity consists of a series of working meetings, which can include contributions from the different WPs, with the specific aim of making the research in the WPs useful for interested practitioners. Such think/do tanks address direct needs of the societal partners (e.g., address recurring communication challenges in environmental authorities, provide targeted and timely input into the revision of a policy or organisational communication strategy) and/or provide a space for more wide-ranging exploration of an issue (e.g., the potential and limitations of social media in mobilising collective action for sustainability transformations). Additional activities complement the work as needed, and may include targeted, practitioner-led interviews of programme participants and other actors to answer specific questions. Therefore, the outputs of the think/do tanks cannot be defined a priori, but all think/do tanks are encouraged to produce – apart from outputs of direct relevance to the participating societal partners – contributions to the website, tweets, blogposts and summary briefings.

The current plans foresee three think/do tanks, but more could be created during the course of the programme if opportunities arise, and if this was regarded as an appropriate use of the strategic reserve by the Programme Board. The following think/do tanks have been proposed to date:

- **Communication between environmental consultancies, their customers and other stakeholders** (led by WSP): This think/do tank aims to expand on the work of the WPs to improve communication between environmental consultancy companies (such as WSP and Tyréns), their customers and other stakeholders. How can consultancies use communication tools, e.g., workshops, blogs, dialogues, seminars, to work more effectively towards sustainability transformations?
- **Communication for sustainable natural resource management and land use** (led by the Swedish Forestry Agency): What are the shared experiences of public bodies and NGOs (such as the Swedish Hunters' Association and the Federation of Farmers) in

communication on land use and resource management, and how can the programme support their needs?

- **Bottom-up communication in the social media and its potential to mobilise sustainability action** (led by either Greenpeace, the Influencers, or another relevant societal partner): What can we learn from recent examples of social media-initiated sustainability activism (e.g., the impact of Greta Thunberg and others' climate strike?) – what are the opportunities, risks and limitations?

These ideas will be developed further at the kick-off meeting and throughout the programme's runtime.

Theoretical and conceptual integration across the WPs and think/do tanks will be described in WP6.

4.3 Management structure

The programme is hosted by the Swedish University of Agricultural Sciences, Division of Environmental Communication (EC-SLU). EC-SLU will together with the Swedish International Centre of Education for Sustainable Development (SWEDESD) at Uppsala University form the core of the programme consortium. The director's role is shared between these two organisations. The management structure is set up to create optimal conditions for all participants to work collaboratively towards the aims of the programme (Section 1), and to ensure the best possible short- and long-term impacts. The management structure:

- ensures compliance with the programme agreement
- establishes reliable overall coordination
- provides equitable and appropriate methods for decision-making and conflict resolution
- ensures timely and accurate execution of administrative and financial tasks
- optimises the use of resources available within the programme
- monitors progress and support integration of work across all WPs
- ensures efficient communication within and beyond the consortium.

4.3.1 Programme Directors

The programme directors liaise between MISTRA and the programme partners. The programme directors will be responsible for ensuring that decisions made by the programme board are appropriately planned and undertaken, for administering and distributing MISTRA funds, as well as for monitoring partners' compliance with their obligations. Programme directorship will include research leadership, with responsibility for overall research strategy, design and implementation. The programme directors will be in regular contact with WP leaders to ensure research obligations are met, and ensure scientific quality by reviewing reports and other outputs (see also Funding Agreement). The role of the programme directors is shared between Professor Anke Fischer (EC-SLU) and Dr Eva Friman (Director of SWEDESD). Each will devote 50% of their time to the leadership of the programme. Their backgrounds, expertise and skills complement each other, and by sharing this role, the programme will benefit from both skillsets as well as from the inbuilt resilience and broader organisational ownership that a shared director's role brings.

4.3.2 Programme Communicator and Administration

Communication is obviously at the core of this programme – this includes *research* on communication, the development of improved communication *methods and approaches*, and the actual 'doing' of communication, i.e., the *sharing of findings and methods*. While all researchers and many of the societal partners will be actively involved in sharing their work, and these activities are an integral part of the WP plans, we also employ a professional communicator (50%), hosted at EC-SLU, to work closely together with the programme directors and the programme management team.

The communicator is responsible for creating appropriate structures for exchange and discussions among partners, for generating a dialogue with users and stakeholders, and for sharing programme outputs with wider audiences (see details in WP7 and Section 8). They will set up regular meetings (both in person and virtual as appropriate; three 2-3 day consortium meetings per year are included in the budget in terms of both staff time and non-staff costs), with focused ad-hoc meetings on specific tasks complementing the programme-internal debate.

As the programme host, SLU establishes and supplies a programme administration team (including 35% of a dedicated finance administrator funded by the programme), to be led by the programme directors. The administrative team supports both day-to-day and long-term financial management, including the processes required to ensure that the programme is completed according to MISTRA's requirements, and within the approved budget.

4.3.3 Consortium agreement

A consortium agreement between the host (SLU) and the programme partners is being established. The legal unit at SLU is responsible for setting up the consortium agreement including amendments. If additional legal issues arise, they will be managed by consultation with the legal departments of the other partners.

4.3.4 Programme Board

The programme board will be appointed by SLU in consultation with MISTRA. The programme board will direct and monitor programme activities in relation to the programme plan, including the budget and the use of the strategic reserve, and will supervise its execution. It will meet 3-5 times a year.

4.3.5 International Scientific Advisory Group

An international scientific advisory group with 4-6 members will provide guidance, helps ensure scientific quality of the work and supports the sharing of outputs through their networks. Here, we suggest scholars with critical perspectives and the ability to challenge us in order to truly break new ground in our endeavour to transcend what environmental communication is and can do. This advisory group will meet through video conferencing once or twice per year, and will additionally support specific WPs where appropriate.

4.3.6 WP leaders and management team

WP leaders are responsible for planning and fulfilling the objectives of the different WPs. They report to and maintain regular contact with the programme directors regarding the progress of their respective WPs and ensure that WPs 1-5 contribute to the joint outputs in WPs 6 and 7. WP leaders include (1) Dr Kaisa Raitio (EC-SLU), (2) Dr Lars Hallgren (EC-SLU), (3) Professor Neil Powell (SWEDESD/University of the Sunshine Coast), (4) Professor Shiv Ganesh (University of Texas), (5) Professor Nico Carpentier (Charles University Prague/Uppsala University), (6) Professor Anke Fischer (EC-SLU) and (7) Dr Eva Friman (SWEDESD) – see Section 5.1 for details.

A management team will be set up which is chaired by the directors and includes the WP leaders, the communicator and other key programme participants, including societal partners. The exact composition of the management team might change over the course of the programme to reflect the varying roles of the societal partners. The management team convenes as part of the larger consortium meetings as well as ad-hoc (using video-conferencing or Skype) to discuss, plan, consult on and (where appropriate) decide on matters that concern the entire programme. In conjunction with the Programme Board and the guidance from the International Scientific Advisory Board, the management team is a crucial forum for ensuring suitability of joint processes and outputs where a discussion in a plenary would not be appropriate.

5. Skills, partners and networks

5.1 Academic partners

5.1.1 Swedish University of Agricultural Sciences (SLU)

SLU was founded in 1977, a young university with a long history developed from agricultural, forestry and veterinary university colleges, the Veterinary School at Skara and the Forestry School at Skinnskatteberg. Participating from SLU are the Division of Environmental Communication (host), the Department of Aquatic Sciences and Assessment and the Department of Ecology.

Environmental Communication, SLU

The Division of Environmental Communication (EC-SLU) is concerned with deliberative and dialogic approaches to contested environmental questions. We conduct research on themes and theories around participation, collaboration, learning, conflict and resistance in environmental decision making from a communicative perspective.

The research group has an interdisciplinary set-up of around 20 scholars from e.g., sociology, anthropology, political sciences, gender studies, agronomy and human geography. Our work addresses a wide range of contexts, such as game management and illegal hunting, agricultural extension, impacts of the bio-economy on forestry policy and practice, collaborative implementation of the European Water Framework Directive, climate change adaptation, reconciling local livelihoods and nature conservation, sustainable urban planning and indigenous rights in mining. Our research sites span the global North and South, including Nordic and European countries, Mozambique, Ethiopia, Columbia, Nicaragua, Chile, India, Australia, USA and Canada.

We have developed a distinct reputation in the field of environmental communication, focusing on longitudinal, interactive and transdisciplinary methods where the connection to practice is central to our research on and for sustainable development and social change. This collective experience recently resulted in a methodological journal article submitted to Environmental Communication, collaboratively written by all academic members of the group (Joosse, Powell et al. submitted). With this article, we aim to further the discussion on how to conduct critical, engaged and change-oriented environmental communication research. The quality of our work has also been recognised in the recent external evaluation (KoN 2018) of all units at SLU, where the committee was "impressed with the Environmental Communication faculty's robust and meaningful academic program".

The group is an attractive partner for social actors to engage with in collaborative research projects. We are frequently contacted by Swedish public authorities to provide expert advice and training in communication competence and conflict management related to environmental governance. During the years 2008-2013, some 500 civil servants from SEPA and the County Administrative Boards (CABs) participated in the skills development programme "Dialogue for Nature Conservation" (Westberg et al. 2010). Regional Wildlife Management Delegations were offered similar training. Our international Master Programme in Environmental Communication and Management contributes to increased communication skills and competence in society. This programme has high application rates and evaluations, and the students (Swedish and international) continue their careers in public authorities, NGOs and private companies. These alumni are of utmost importance for a turn towards more participatory and dialogical approaches to environmental management. An alumni network has lately

been established to create a community of practice with continuing links to the group.

Professor **Anke Fischer** has recently joined the group to take on their academic leadership. Her research approaches environmental communication through conceptual lenses such as social representations, discourses and values, and explores intersections with legitimacy, resistance and participation, and their implications for the governance of conflict and transformation processes. Prior to joining SLU, she led the Social, Economic and Geographical Sciences group (40 staff members) at the James Hutton Institute in Scotland. She also has ample experience in leading and coordinating WPs and tasks in EU FP6 and FP7 projects on social scientific aspects of nature conservation and sustainability issues. The research group consists of Senior Lecturer **Lars Hallgren** (symbolic interactionism), Associate Professor **Kaisa Raitio** (indigenous land rights and agonism), Associate Professor **Lotten Westberg** (practice theory), Researchers **Erica von Essen** (ethics and animal-human interactions), **Sofie Joosse** (practice theory and social media), **Hanna Bergeå** (collaborative practices), **Stina Powell** (feminist theory and knowledge production), **Sara Holmgren** (forestry and critical discourse analysis), **Helena Nordström Källström** (rural livelihoods), **Annette Löf** (indigenous rights and collaborative governance) and **Camilo Calderón** (collaborative planning and urban sustainabilities).

Department of Aquatic Sciences and Assessment, SLU

The Department of Aquatic Sciences and Assessment has a track record in interdisciplinary research and collaboration with a wide range of academic and societal partners. Professor **Kevin Bishop** is Pro Vice Chancellor for Environmental Monitoring and Assessment, which involves developing SLU's capacity for decision support to societal actors on questions of sustainable development, involving extensive interaction with national and regional authorities to facilitate communication between academic expertise and society. Professor Bishop participates in WP3, where he also draws on his experience as the leader of two 'transdisciplinary working groups' within the MISTRA Future Forests Programme.

Department of Ecology, SLU

SLU's Department of Ecology combines internationally recognised research in basic ecology with applied research in nature conservation, wildlife management, forestry and crop protection. Professor **René van der Wal** contributes to the programme with his ecological perspective and his long-standing experience in inter- and transdisciplinary research in areas such as citizen science, biodiversity management and human-nature relationships. Well rooted in the ecological sciences, he has previously collaborated with educational scientists, sociologists, psychologists, philosophers and computer scientists, and is thus a valuable addition to the WP6 team that aims to develop synthesis outputs that are useful for a range of communication practitioners, including natural scientists.

5.1.2 SWEDESD and Uppsala University

The Swedish International Centre of Education for Sustainable Development (SWEDESD) at Uppsala University is one of the world's leading centres for environmental and sustainability education, with strong expertise in learning in wicked contexts. An 18 people team develops transdisciplinary research, capacity building and policy relevant innovations on education and learning in relation to current global frameworks for addressing environmental and sustainability challenges such as the SDGs.

SWEDESD is appointed by the Swedish government to function as national coordinator of education for sustainable development (ESD), and UNESCO Key Partner and Co-Chair for enabling educators' and trainers' capacities in transformative learning.

ESD research engages with how learning and education can develop and transform knowledge, skills, attitudes and values within societies to promote sustainable development. ESD addresses sustainability issues, such as climate change, biodiversity and consumption, as contents of learning and education that are inherently wicked and complex which require us to rethink and remodel learning and educational processes. Consequently, we aim to develop inclusive, reflexive and equitable conditions for learning that allow learners to co-define issues at stake and visions for solving them through formal, non-formal and informal education.

Director **Eva Friman**'s research focuses on equity, ecological sustainability and global exchange from ecological economic and political ecology perspectives, and lately also on transformative learning in wicked contexts. She is an elected member of the Royal Swedish Academy of Sciences' Committee for Global Environmental Change. Eva has a far-reaching leadership portfolio, containing e.g., the directorship of four academic sustainability centres, membership of educational councils and boards, and leadership of several research projects.

Keri Facer, Visiting Climate Change Leadership Professor at Uppsala University (UU) and Professor at Bristol University, UK, contributes with her extensive research experience in the development of educational practices to enable adaptation to social, technological and environmental change. She will contribute through WP6, where her experience will greatly support the development of reflexive methodologies. Joining the programme from SWEDESD are also post doc **Martin Westin** and research assistant **Alexander Hellquist**, all with extensive experience in facilitating and training civil servants in collaborative planning. The use of serious game systems in WP 3 will be explored by Professor **Steven Bachelder** (Department of Game Design, UU) in collaboration with **Thao Do** (SWEDESD).

5.1.3 University of the Sunshine Coast (USC), Australia

The Sustainability Research Centre at the University of the Sunshine Coast, Australia, strives to solve persistent and emerging issues related to the social and environmental

nexus at local through global scales, using innovative, transdisciplinary applications of social, economic, and environmental sciences to foster long-term environmental and social resilience. The centre focuses on evolving sustainability issues, such as coastal management, water resources, community development, rural landscape management, indigenous aspirations, natural hazards and climate change mitigation and adaptation.

Professor in Sustainable Development **Neil Powell** and Senior Lecturer **Marcus Bussey** (History and Futures) will contribute through WPs 3, 6 and 7. Beside his professorship at USC, Neil Powell is also a guest professor at SWEDESD (Uppsala University) as well as a Senior Research Associate at the Stockholm Environment Institute (SEI).

5.1.4 Lund University

The Environmental Psychology research group at Lund University sprung from a collaboration between psychology and architecture and was one of the first of its kind to be established in Europe in the 1970s. Since its early days, the group has held a leading position in the international environmental psychology community, heading the International Association for People-Environment Studies in the 1980s and hosting their international conference in 2016. The group has developed an extensive network of collaborations with society, including municipalities, county administrative boards and industry. It uses a wide range of methods ranging from surveys and field studies to highly controlled laboratory studies including physiological measures. Professor **Maria Johansson** heads a team studying human-environment interactions from the individual's perspective, addressing nature conservation, including communication around fear of wildlife, and evaluations of interventions aimed at energy efficient behaviour.

5.1.5 University of Borås

Professor **Jutta Haider** leads the information practices research group at the Swedish School of Library and Information Sciences at the University of Borås. The group consists of about 20 researchers and is a dynamic hub for information-related research in Sweden and internationally. Jutta's research focuses on the shaping of knowledge and information in contemporary digital culture, specifically information on the environment, on the algorithmisation of everyday life and related challenges for media and information literacy.

5.1.6 University of Texas at Austin, USA

The Moody College of Communication at the University of Texas (UT) at Austin is the most comprehensive college of its kind in the U.S. and one of the world's foremost institutions for communication research. Professor **Shiv Ganesh** brings a strong organisational perspective to the programme – his research focuses on civil society organizing in the context of globalization and digital technologies. He has recently concluded a visiting professorship at EC-SLU and has thus close links to the group as well as a good understanding of the Swedish context.

5.1.7 Charles University, Prague, Czech Republic

Nico Carpentier, Docent in Media Studies at Charles University (CU), Prague, and Professor in Media and Communication Studies at Uppsala University, and Vaia Doudaki, Senior Researcher in Media Studies at CU will complement the programme team, contributing their expertise to WPs 5 and 6. Their research covers a broad range of topics in the field of media and communication studies, with a special interest in processes of democratisation, participation and power-sharing on the one hand, and conflict, violence and war on the other hand.

5.2 Societal partners

MISTRA Environmental Communication consists of a broad range of societal partners from different societal fields. While the consortium thus stretches across a variety of sectors, levels and nations, the programme has a physical home and is firmly rooted in Uppsala through its tight collaboration with local and regional authorities. As the programme evolves, partners might get involved in more activities (e.g., think/do tanks) than the ones indicated here.

5.2.1 Public authorities and agencies

- The **Swedish Environmental Protection Agency** (SEPA; Naturvårdsverket) is the public agency in Sweden for environmental issues. Guided by Sweden's environmental objectives, SEPA's Department of Communication works to increase knowledge and to affect attitudes and behaviours. Contact: Berit Oscarsson, Stina Söderqvist; WPs 1, 2, 5, 6
- Skogsstyrelsen, the **Swedish Forestry Agency**, is the national authority in charge of implementing forestry policy which places equal emphasis on production and environmental goals. Contact: Åsa Hofring, Raymond Wide; WPs 1, 3 and 6; think/do tank
- The **Swedish Agency for Marine and Water Management** (HaV) is the public authority responsible for managing the use a of Sweden's marine and freshwater environments. Contact: Anna Ek; WP1
- The **County Administrative Board (CAB) Uppsala** (Länsstyrelsen Uppsala) is the public authority for Uppsala County and promotes sustainable development. Contact: Anna Carlsson, Karin Gustavsson, Daniel Öman; WPs 1, 3
- **Uppsala Municipality** (Uppsala kommun) is the WWF's One Planet Climate City of the year 2018. The municipality is a local government entity that governs Uppsala, the fourth biggest city in Sweden, and the surrounding rural areas. Contact: Sara Bjurström, Hannes Widmark; WPs 1, 2, 3, 4

- The **County Administrative Board (CAB) Västmanland** (Länsstyrelsen Västmanland) is the public authority of Västmanland County and works to increase the quality of life and work in the county. Contact: Elin Ångman; WP1
- The CAB Västmanland also hosts Mälarens vattenvårdsförbund, the **Water Council of Lake Mälar**. Contact: Ingrid Hägermark; WP1
- **Enköping Municipality** (Enköping kommun). Contact: Johan Axner; WP1
- **Nyköping Water Council** (Nyköpings vattenvårdsförbund). Contact: Anneli Carlen; WP1
- The **Swedish Association of Local Authorities and Regions** (Sveriges Kommuner och Landsting, **SKL**) SKL is the association for all municipalities, county councils and regions in Sweden. As their employer and representative organisation they advocate their interests and offer support and service. Contact: Lena Langlet; WPs 1, 6, 7

5.2.2 Businesses, including environmental consultancies

- **Tyréns AB** is one of Sweden's leading community development consultancies that works with sustainable solutions in the context of urban development and infrastructure. Contact: Frida Franzén; WPs 1, 6; think/do tank
- **WSP** Sweden is a branch of an international consultancy company. WSP has 40 offices across Sweden and offers services aimed at sustainable societal development in property, transportation and infrastructure, industry and environment and energy. Contact: Maria Noring; WPs 1, 2, 6; think/do tank
- **RISE** (Research Institutes of Sweden) is an independent state-owned research institute working for the competitiveness of Swedish industry as well as a sustainable society. Contact: Jørgen Korning, Anna Rydberg; WPs 3, 4
- The **Swedish Organic Farmers Association Uppland** (Upplands Eco Uppodlarna) aims to advance and disseminate information about organic farming, and looks after both farmers' and consumers' interests. Contact: Kjell Sjelin; WP3, 4
- **Green Collar** Australia is Australia's largest environmental markets investor, natural resource manager and conservation-for-profit organisation. It works with farmers, graziers and other land managers throughout Australia to diversify income streams and integrate sustainable opportunities into existing operations. Contact: James Schultz, Murray Bleach; WP3
- **Hanoi Innovative Learning Lab** (HILL) is a private educational organisation in Vietnam. HILL develops, provides and implements experiential learning programmes that aim at filling the gaps of the existing formal education system in Vietnam. Contact: Vu Cahn Toan; WP3
- **Nudie Jeans** is a Swedish denim brand that aims for sustainability by: (1) sustainably producing jeans, and (2) influencing consumption patterns through offering repair, reselling and recycling services for their products. Contact: Kevin Gelsi; WP4
- The **Swedish Global Compact Network** is part of the Global Compact movement under the auspices of the UN that promotes responsible corporate citizenship so that business can be part of the solution to the challenges of globalisation. Organisations who joint the compact make a visible commitment to the initiative's ten universal principles in the areas of human rights, labour, the environment and anti-corruption. WP4

5.2.3 NGOs and other membership organisations concerned with environmental and land use issues

- The **Federation of Swedish Farmers** (**LRF,** Lantbrukarnas Riksförbund) is an interest and business organisation for the green industry with approximately 140 000 individual members. Contact: Kjell Ivarsson; WPs 3, 5, 6, think/do tank
- The **Swedish Hunters' Association** (Svenska Jägareförbundet) is a membership organisation that governs hunting activities in Sweden and represents the interests of hunters. Contact: Bodil Elmhagen; WPs 3, 5, 6; think/do tank
- The **Swedish Sami Organisation** (Sámiid Riikasearvi, SSR) represents Sami interests at the national level. Contact: Jenny Wik Karlsson; WPs 1, 6
- The **Swedish Society for Nature Conservation** (SSNC; Svenska Naturskyddsföreningen) is the most influential environmental NGO in Sweden. Contact: Helena Lundmark, Agnes Vungi; WPs 2, 4, 5
- **Greenpeace International** is one of the world's most known and impactful environmental NGOs. Contact: Sönke Lorenzen; WPs 2, 4, 5; think/do tank.

5.2.4 Arts and the media

- **Swedish Museums** (Sveriges Museer) is an organisation with over 230 museum members and represents a large part of the museums in Sweden. It includes a research network interested in developing communication at museums. Contact person: Maria Olofsson, Mats Persson; WP5
- The **Swedish Artists' Organisation** (Konstnärernas Riksorganisation) represents 3300 professional artists, crafts people and designers in Sweden. Contact: Eva Månsson, Katarina Renman Claesson; WP5
- **Uppsala Art Museum** (Uppsala Konstmuseum) runs exhibitions that reflect expressions of experiences and ideas in a range of times and social situations. Contact: Rebecka Wigh Abrahamsson, Daniel Werkmäster; WP5
- **Biotopia** is the biological museum of Uppsala. Contact: Emil Nilsson; WP5

- **Influencers of Sweden** is the Swedish interest organisation for social media influencers and offers support for bloggers, Youtubers, Instagrammers and other content creators on social media. Contact: Albin Adell Sjöberg; WP5; think/do tank

5.3 Networks

The programme taps into a wide range of networks, including:

- **IECA** (International Environmental Communication Association)
- the **EC-SLU alumni** network
- the County Administrative Boards' network on environmental goals (RUS, **Regional Utveckling och Samverkan i Miljömålsystemet**, http://extra.lansstyrelsen.se/rus/Sv/Pages/default.aspx)
- **Climate Action Network International** (www.climatenetwork.org).

All of these have already expressed their interest in working with us. In addition, we will make active use of our (and the International Advisory Board's) wider professional networks to share our work.

6. Work packages

6.1 WP1: Planning for sustainability transformations - government-led dialogue in natural resource governance

6.1.1 Summary

WP1 focuses on government-initiated dialogue processes within rural and urban governance on sustainability issues. While dialogue processes are a valuable tool for inclusive, legitimate and effective governance processes, their implementation is often fraught with difficulties, usually due to challenges related to power relationships and conflict. This WP works to translate recent research on power and conflict into practice, and together with the societal partners to co-develop ways to design power-sensitive and conflict-aware environmental communication. The following cases will be used: (1) urban development in Uppsala; (2) water management in rural areas in Västmanland; (3) land use planning in Sami territory and (4) dialogue processes in forestry-related conflict management.

WP1 is led by Kaisa Raitio (EC-SLU) and involves Annette Löf, Lars Hallgren and Camilo Calderon (EC-SLU), Martin Westin and Alexander Hellqvist (SWEDESD) and Elin Ångman (CAB Västmanland and Swedish Agency for Marine and Water Management) in major roles. Additional partners are, among others, the Swedish Forestry Agency, Uppsala Municipality, the Water Council of Mälaren, the Swedish Sami Organisation, Nyköping Water Council, Enköping Municipality, Tyréns, SKL and the Swedish Environmental Protection Agency. Further value is added to this work through interactions with and additional analysis in WP6.

6.1.2 Background and relevance to the call

Dialogue-based approaches are increasingly used in governance for sustainability. The idea of such approaches is to involve all relevant actors that represent a variety of perspectives and positions – from businesses to landowners to activists and citizens – to ensure policy interventions that are socially legitimate and effective. In Sweden, dialogue is increasingly used within formalised governance processes, such as spatial planning and natural resource management, as well as in more loosely structured co-management initiatives and public-private partnerships.

While dialogue processes are a valuable tool in governance processes, they are also criticised for their allegedly naïve understanding of conflict and power and therefore seen as inapt to address the challenges posed by contemporary wicked policy issues characterised by inequality, complexity and uncertainty (Purcell 2009, Metzger et al. 2014). Policy makers and planners tend to experience dealing with power and conflict in dialogue processes as difficult.

First, **conflict** in dialogue processes is often intuitively understood to be destructive, as a 'problem' to be 'solved' by dialogue. Indeed, we tend to view dialogue processes and conflict as mutually exclusive phenomena and consequently shift focus to reducing and getting rid of the conflict (Poncelet 2001). This stands in contrast to scholarship in political science and feminist theory that emphasises contestation and conflict as important vehicles for democratic deliberation and change (Young 2001, Mouffe 2005). Understanding conflict primarily as destructive risks undermining pluralism as a basis for democracy and delegitimising activism, protest and resistance as important forms of democratic participation (ibid., Ganesh & Zoller 2012, Peterson et al. 2016). Second, **power** in dialogue processes tends to be understood as domination, thus conflating legitimate and illegitimate power (Haugaard 2010). Recent advances in political science stress the distinction between different forms of power to understand how power can take shape as domination and as empowerment in dialogue processes (Haugaard 2010, 2012).

In line with the above, this WP sees conflicts and power not as problems per se. WP1 turns to the idea of agonistic pluralism to conceptualise conflict beyond instrumental and communicative rationalities (Laclau & Mouffe 2001, Mouffe 2005). Agonism envisions a form of political engagement which sees conflicts as constructive and necessary for democratic politics to function, rather than as detrimental to it. Thereby, agonism suggests the possibility for parties to disagree, but still respect each other's right to hold differing opinions (McClymont 2011). We use the conceptualisation of *power to, power with, legitimate power over and illegitimate power over* (Haugaard 2010, 2012) to understand the workings of the different forms of power. Finally, we draw on discourse theory (Hajer 2006) to understand how politicians, planners and facilitators conceptualise power and conflict and make situated judgments about the design of dialogue processes. Thereby, we can understand how they make sense of the complex situations they encounter, and how their interpretations inform their certain choices. In addition, to investigate how design choices regarding power and conflict affect the perceived legitimacy of dialogue processes among involved stakeholders and wider groups of citizens, we will use quantitative questionnaire-based surveys.

WP1 has high societal relevance for urban planning, watershed and natural resource management in Sweden and beyond. The effectiveness and legitimacy of Swedish policies on, e.g., climate change mitigation and adaptation, sustainable cities, bio-economy and sustainable mining ultimately depend on developing communication and decision-making processes able to deal with multiple claims and discourses on sustainable futures in a legitimate way. Indeed, ensuring more effective and legitimate planning processes is vital both for economic development and the ability to reach environmental and social policy objectives.

WP1 contributes to the programme's overall aims by providing analytical and practical approaches to navigate competing and conflicting aims and perspectives in a way that enables democratic social change towards sustainability. Interactive methodologies and close collaboration between researchers and practitioners are central to this WP, which is enabled by a long-term collaboration between many of the key partners from earlier and on-going projects. The WP brings together scholarship from governance studies, planning theory, conflict mediation as well as feminist and post-colonial theories. Taken together, these provide both a critical and constructive approach to understanding the role of power and conflict in environmental governance. This supports actors to reflect on communication in dialogue processes, and enables re-framing environmental communication in line with the overall aims of the programme.

6.1.3 Aims and research questions

The aim of WP1 is to increase the effectiveness and legitimacy of dialogue processes within urban and rural planning. We ask the question *how can such dialogues be designed so as to enable power-sensitive and conflict-aware environmental communication*? This question is pursued through the following sub-questions:

1) How do politicians, planners and facilitators make situated design choices about inclusion and exclusion of issues and people in dialogue processes?
2) Which discourses of power and conflict are informing these choices?
3) How do these choices affect the perceived legitimacy of these processes among involved actors and the wider public?
4) What are the risks and possibilities associated with approaching power and conflict based on these discourses?
5) Based on these insights, how can dialogue processes best be designed to enable power-sensitive and conflict-aware environmental communication?

6.1.4 Tasks and methods

The WP engages researchers alongside partners within urban and rural governance. Our collaboration strives for the closeness required for productive engagement, and, at the same time, the distance needed for critical analysis. WP1 focuses on cases in four sites:

a) urban development processes in Uppsala city (lead: Martin Westin, SWEDESD)
b) rural development with a focus on water management in the northern Baltic sea river basin (lead: Elin Ångman, CAB Västmanland)
c) land use planning processes in the North (Jämtland, Västerbotten, Norrbotten) that seek to reconcile Sámi indigenous peoples' rights with mining, wind energy and nature conservation (lead: Kaisa Raitio, EC-SLU)
d) conflict management in forestry-related contexts (lead: Lars Hallgren, EC-SLU).

In urban environments, arenas for deliberation are typically created within spatial planning, whereas rural areas are shaped more by land use planning and permit processes for different natural resource sectors that affect the physical environment and local communities. We argue that although these two planning contexts face many related challenges, with potential for mutual learning between planning practitioners, little research has so far examined them comparatively. Cross-site and cross-case comparison will provide us with possibilities to analyse how notions of power and conflict are constructed through situated environmental communication.

Task 1 will be to analyse notions of power and conflict embedded in current dialogue practices, focusing on the design choices of politicians, planners and facilitators. To access their understanding of power and conflict we will conduct narrative interviews to elicit their stories about dialogue processes as well as participant observation during the design and facilitation of dialogue processes. The data will be analysed through a tailored discourse analysis informed by the concepts of power (Haugaard 2010) and conflict (Mouffe 2005).

Group feedback analysis will be used to analyse preliminary results together with the process designers (Heller 1969, 1976). Through a series of focus group discussions, process designers and researchers can learn about the (preliminary) analysis, and discuss the findings together. Not only does this validate the results, but it also has the potential to generate new data with an added level of reflexivity and sharpened direction, which will be analysed as well.

In **Task 2**, partners at three of the sites will design and facilitate dialogue processes based on the findings of Task 1. The partners are responsible for designing and facilitating these processes, while the researchers will support the design by acting as critical friends and exploring the processes through participant observation, interviews and focus groups. The resulting insights and experiences will again be discussed through group feedback analysis. This work will be guided by a revised version of the analytical framework applied in Task 1.

Task 2 will also include a study of how situated design choices across the three sites affect the perceived legitimacy of the dialogues among involved stakeholders and citizens. This study will be based on both surveys and semi-structured interviews, allowing for cross-validation of results. It will be informed by earlier related studies on legitimacy in political decision making and planning (Grimes 2008, Grönlund et al. 2015).

In **Task 3**, partners from the sites and the researchers will jointly draw out practical and theoretical implications from the findings of the previous steps. Cross-site comparison will further inform the analysis.

In **Task 4**, theoretical synthesis and practice-oriented methodologies for designing agonistic planning processes will be developed in close collaboration with WP6.

WP1 participants enrich this work through their extensive academic and practitioner networks, knowledge and skills emerging from existing research projects and other work (e.g., training programmes for facilitators) funded e.g., by FORMAS and public authorities.

Web-based outputs (e.g., blogposts, movies, briefs) will be publicised through the platform produced in WP7, but also in other suitable fora offered by the societal partners and wider programme networks (e.g., IECA).

The training programme for policy makers, planners and facilitators will be coordinated with and feed into the capacity building approaches developed in WPs 6 and 7.

6.2 WP 2: Reframing communication strategies to promote sustainable consumption

6.2.1 Summary

WP2 focuses on communication strategies designed to advance sustainable consumption and lifestyles. While more advanced theories are available in both psychology and sociology, typically, relatively simplistic assumptions form the basis of such strategies. WP2 maps meta-discourses, i.e., implicit and explicit theories of communication and social change that underpin such strategies, identifies the gaps between communicative strategies on the one hand and the latest insights from psychology and sociology on social change on the other hand, and together with the societal partners, experiments with and co-develops procedures for more transformative environmental communication. WP2 is theoretically innovative in combining agential and structural approaches to transformations for sustainability, and in translating them together with societal partners to the practice of strategic communication for sustainable consumption.

WP2 is led by Lars Hallgren (EC-SLU) and involves Maria Johansson (Lund University, LU), Ann Grubbström (EC-SLU) and a 2-year postdoc in environmental psychology (LU). Societal partners that will actively contribute to this WP are: Uppsala Municipality, WSP, Greenpeace and the Swedish Society for Nature Conservation. We will also invite other organisations to contribute with their case studies on communication and sustainable consumption.

6.2.2 Background, relevance to the call and approach

A variety of NGOs, authorities and companies are engaged in strategic environmental communication to influence consumption patterns and increase sustainability. They use, for example, advertisements, consumption guides or apps, social media, environmental profiling and gamification to get individuals' attention and engagement. We argue that there are two reasons why these strategies do not live up to their promise.

First, while there are exceptions, these strategies are often designed based on the knowledge-deficit model (see also Irwin et al. 2018). In such a view, communication is understood as a transmission of messages to receivers of

messages, who will change their behaviour according to the newly received information (Bäcklund 2016, see also Reddy 1979). This model directs attention to the sender and how to formulate and send an effective message, while ignoring the perspectives and interests of the 'receivers' and the social, cultural and symbolic function of consumption practices (Bell and Valentine 1997). Poor understandings of the receivers' emotional, social and material worlds make for a mismatch and naïve communication which, despite the intentions, does not effectively contribute to sustainability goals (Bäckstrand & Lövbrand 2015).

Second, communicative strategies typically address individuals as consumers, and prioritise 'right' ways of consuming as the pathway towards sustainability, while ignoring the structuring role of politics (Maniates 2001, Boström & Klintman 2017, Soneryd & Uggla 2011, DeLind 2011). However, the potential for individual consumers to effect societal change is limited, and crucially and dialectically dependent on broader structural and political change (Shove 2010). While in communication strategies and policies the agency model dominates, the research community fiercely debates on whether to use agency or structure as the point of entry for social change (Whitmarsh et al. 2011, Shove 2011). Few attempts have been made at combining the two approaches in the field of consumption.

Taken together, these two reasons explain how the lack of attention to the complexity of social transformation processes renders a large proportion of this strategic communication ineffective.

Therefore, WP2 takes as its point of departure the premise that transformative environmental communication needs to account for consumption as the effect of the interplay between structure and agency, materiality and discourse, and as deeply enmeshed in individual and social routines in society. WP2 draws on and innovatively combines three perspectives:

(1) Environmental psychology provides insight into the complexity of individuals' cognitive and emotional processes. While largely ignored in current communication strategies, WP2 will highlight the importance of understanding individual goal-frames, habitualisation and contextual cues (Johansson & Neij 2017). WP2 will use goal framing theory (e.g., Lindenberg & Steg 2007) to analyse the often competing goals involved in sustainable consumption that are triggered by different motivational patterns (Onel & Mukherjee 2015, Sörqvist et al. 2016).

(2) Practice theory. WP2 also draws on practice theory, which views practices as the location of the social. This means that meaning is understood to be (re)produced in and through practices (Reckwitz 2002). WP2 will use practice theory to understand the social, cultural and symbolic character of consumption practices (Bell & Valentine 1997) and how these dimensions influence the possible impact of communication interventions.

(3) Discourse theory. We use discourse theory to study how meta-discourses on communication, understood as ensembles of ideas, concepts and categories on how communication works and can effect change, give meaning to environmental communication practice in consumption contexts (Hajer 2006, Carpentier 2017).

WP2 is built on the assumption that transformation towards sustainability goals can only be brought about by combining disciplinary perspectives (Wilson & Chatterton 2011). This WP does not just use these approaches in isolation, but is instead designed to challenge and combine them by identifying tensions and complementarities. These tensions and complementarities are used heuristically for a more advanced understanding of communication in the context of sustainability-oriented consumption (Alvesson & Sköldberg 1994). They will also be translated into communicative procedures that help practitioners understand and apply all three perspectives on social change and consumption.

6.2.3 Aims and research questions

The aim of WP2 is to develop and test *procedures* for communication for sustainable consumption based on recent advances in psychology and sociology. The following research questions have been formulated:

Discourse analysis. What ideas about communication for social change inform current communication practice for sustainable consumption? How are these implicit theories (re-)produced and what discourses, ideologies and materiality are involved?

Environmental psychology. How does organisations' strategic communication influence (or fail to influence) individuals' goal frames and associated motivational patterns in the early phases of consumption processes?

Practice theory. How do individuals negotiate communicative interventions in relation to their consumption? How do they make sense of and respond to them, and what ideas about sustainable consumption are thus (re)produced?

Transdisciplinary investigation, experimentation and development. What procedures for communication for sustainable consumption can be designed that take into account the complexity of consumption and social change? How can agential and structural approaches complement each other? How can these procedures be effectively embedded in wider processes of larger societal transformation?

6.2.4 Tasks and methods

Task 1 (Years 1-3, led by EC-SLU): To establish the meta-discourses and social practices that are in use in instrumental environmental communication, we will use a method triangulation approach with the following components:

a) Semi-structured interviews with communication practitioners from authorities, NGOs and companies about work routines, ideas and assumptions on communication, consumers and social change
b) Participant observation of work procedures and organisational norms related to communication in five cases of sustainable consumption communication, to be selected together with partner organisations

c) Discourse analysis of planning documents, communication strategy documents, grant applications etc to study discourses on (communication aiming to effect) social change for sustainability.

Task 2 (Years 1-3, led by LU): To test the relevance of communication strategies and meta-discourses identified in Task 1, LU will set up a consumption communication laboratory to simulate an online shopping experience in a full-scale mock-up of a (home) environment where the physical and social context can be systematically manipulated. The consumption scenarios to be simulated and researched will be developed in collaboration with societal partners. The experiment will test if and how different communicative strategies interact with goal frames, physical and social environmental cues in the individual's perceptual, emotional and behavioural responses during the early phases of the consumption process. The experiment will provide input for Task 3.

Task 3 (Years 2-3, led by EC-SLU): To identify how communicative interventions are made sense of in consumption practices, ethnographic studies of cases of consumption will be conducted. Together with societal partners, WP2 will identify 3 cases of communication interventions. We will investigate social practices in these consumption situations, as well as the discourses (re)produced in these interventions.

Task 4 (Years 3-4, led by EC-SLU): To develop procedures for reflexive communication strategies, WP2 will organise a series of workshops together with the programme's societal partners. In these, participants will use the results from Task 1-3 to identify steps for designing communicative strategies which consider consumption as the effect of the interplay between structure and agency, materiality and discourse.

6.3 WP3: Science and knowledge (co-)production: Environmental communication embracing diverse ways of knowing

6.3.1 Summary

WP3 examines the capability of communication in scientific and other modes of knowledge production to support the co-design of pathways to sustainable futures in the face of wicked challenges such as climate change. We will deploy a host of co-inquiry approaches in order to stimulate anticipatory imagination of future uncertainties, drawing on intersectionality, post normal science, future studies and systems theory to critically reflect on how environmental communication is practiced under wicked conditions. A number of case studies that focus on climate related action will support a deliberative process of knowledge co-production between researchers and stakeholders.

WP3 will be led by Neil Powell (USC/SWEDESD) and involve Kevin Bishop (SLU), Marcus Bussey, a postdoctoral researcher and two PhD Students (USC), Steven Bachelder and Thao Do (Uppsala University), Stina Powell and Sara Holmgren (EC-SLU). Key stakeholders include, among others, Uppsala Municipality, the Swedish Farmers' Federation, Green Collar Australia, the Organic Farmers' Association Uppland, Hanoi Innovative Learning Lab, the Swedish Hunters' Association and the Swedish Forestry Agency.

6.3.2 Background and relevance to the call

The climate discourse is closely aligned with the dominant science tradition, embodied within a techno-centric worldview where social and ecological systems are considered as a dualism (Ison et al. 2011). Within this discourse, environmental communication has tended to take the form of knowledge transfer, attempting to impart partitioned scientific knowledge to e.g., the water, forestry or agricultural sectors. As a critical response to this technocratic, closed and linear way of informing policy and action, the socio-ecological (SE) resilience tradition reframed the perspective of systems as coupled, open and episodic (Holling 1996). For many years, the knowledge produced in the SE resilience tradition was considered too abstract to meaningfully inform climate policy and actions (Capano & Woo 2017). More recently, the planetary boundaries (Rockström et al. 2009) narrative has emerged as a way to make the knowledge generated in this tradition more accessible for policy makers and climate actors. Whilst the planetary boundaries approach has provided a clear and influential narrative, the risk exists that it serves to reproduce technocratic science and pre-existing structures as the subject areas that underpin the respective planetary boundaries mirror, but do not transcend, the existing scientific disciplines and sectors (Powell et al. 2014).

WP3 thus aims to take these approaches a step further and examines how environmental communication could and ought to be framed to do justice to the wickedness of sustainability challenges. We argue that in the interplay of many kinds of knowledge from those considered as experts, laypeople and those of different social, intersectional and cultural backgrounds (Sardar 2010) a rich diversity of perspectives can be surfaced. This way, values and interests are evoked, and views on what constitutes a desirable action are diversified and potentially contested. It is arguably this kind of dynamic, rather than orderly structures of "evidence-based" science that can catalyse the kinds of collective reflexivity needed for substantive transformations within the sustainability arena (Stirling 2014b). In other words, wickedness calls for the need to pay attention to marginalised interests and the less powerful, to enable choices that address multiple benefits for a diverse constellation of stakeholders.

Following this line of reasoning, in WP3, we will use co-inquiry approaches to mediate the reframing of environmental communication by integrating the co-

production of knowledge into transformative processes. In acknowledgement of the controversies, uncertainties and power asymmetries that characterize wicked situations, it will be important that co-design is undertaken in safe and inclusive settings. Explorative methodologies such as serious games (Gugerell and Zuidema 2017), anticipatory narratology (Liveley 2017) and embodied thinking (Henriksen et al. 2015) mimick real world situations. They allow participants to collaboratively engage with wicked situations in an explorative fashion, whilst experiencing the impact of co-designed futures without having real world consequences. We will use these methods with the aim to enhance environmental communication as actors strive for individual, shared and contrasting goals in an anticipatory imagination of sustainable futures.

We build on a number of theoretical perspectives:

a) *Systemic Consequence:* We consider climate change in terms of its potential catastrophic risks with effects on other global challenges such as the security of water, food, energy and other ecosystem services (IPCC 2018), and climate action in relation to its embeddedness in biophysical and socio-economic domains (Ison and Open University 2010)
b) *Equitable Understanding:* Post-colonialist, intersectional and gender perspectives provide collective and contingent epistemologies to reflect on the framing of knowledge co-production as response to wicked challenges such as climate change (DeLoughrey & Handley 2011)
c) *Anticipatory Imagination* disrupts the reproduction of dominant discourse whilst evoking alternative spaces within which to imagine and enact alternative futures (Bussey et al. 2017)

6.3.3 Aims and research questions

WP3 aims to reframe the practice of environmental communication to support knowledge co-production in wicked settings. Research questions include:

1) How can systemic and intersectional perspectives and anticipatory imagination help to shape knowledge production in sustainability and climate change contexts in ways that effectively stimulate both collective and individual action?
2) What are the social and institutional conditions, practices and processes that are required to foster transformative knowledge co-production in the context of sustainability discourses?
3) What is the potential of explorative methodologies to stimulate transformative knowledge co-production?

6.3.4 Tasks and methods

Our overall methodological approach is characterized by systemic co-inquiry: Project stakeholders are considered as co-researchers who contribute to the design, implementation and evaluation of the research (Heron and Reason 2001). The WP will implement a case-based approach, drawing on existing evidence from diverse contexts and geographic localities and in dialogue with stakeholders. Several case studies in three country contexts have been proposed:

- *Bio-economies:* Rethinking environmental monitoring and assessment so that it supports knowledge co-production: The case of forestry in Sweden and its role in enabling a circular bio-economy
- *Carbon farming:* Planning and enacting carbon farming through the co-production of knowledge and transformative practice in Australia and Sweden
- *Non-formal climate change education:* Implementing climate change education in Vietnam.

We envisage that a number of other case studies will emerge after the inception of the programme.

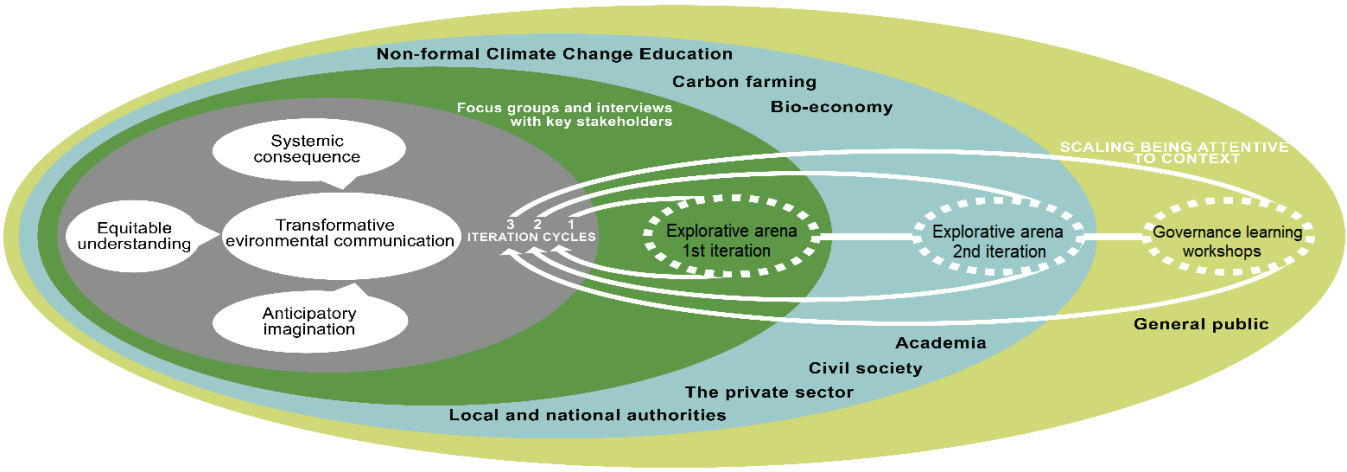
Task 1 (Year 1-2): Using the theoretical lenses *Systemic consequence, Equitable understanding* and *Anticipatory imagination* (grey circle in Fig. 4), we will develop alternative ways to frame knowledge production in sustainability and climate change discourses in the context of the case studies. This task includes:

- Identifying key stakeholders in local/national authorities, civil society organisations, academia and the private sector in the case studies (turquoise space in Fig. 4)
- Conducting focus group discussions and interviews with identified stakeholders in the case studies, eliciting first order data (green space in Fig. 4)
- Analysis of the empirical data from focus groups and interviews
- Designing and populating the first iteration of the explorative arena with insights from the case studies.

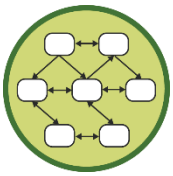
Task 2 (Year 2-3): Mediating a co-inquiry process with key stakeholders through enacting the first iteration of the explorative arena in the case study contexts. In the safe and inclusive setting of the explorative arena, we will use anticipatory approaches to cast light on social and institutional factors, practices and processes that are required to facilitate transformation in the context of climate change. We will also open up a space to learn about how environmental communication can be transformed as a practice. The emergent insights will be analysed and operationalised in the second iteration of the explorative arena in the case studies.

Task 3 (Year 4, the outer ring of Fig. 4): Further understanding of practices, processes and structures required to enable transformative environmental communication will be mediated in several governance learning workshops with a constellation of societal actors from outside the case study settings. This will result in a number of theoretical, methodological and practical outputs that will embody many of key research insights from the work package.

Figure 4. WP3 research design



6.4 WP4: Impacts of contemporary communication on the sustainable practices of market-based organisational networks



6.4.1 Summary

The goal of WP 4 is to understand and assess the impacts of contemporary communication expectations and practices on the willingness and ability of organisations to embrace sustainability. WP4 focuses on organisations' responses to pressures that require them to make their engagement for sustainability visible. It does so in two contexts: (1) the UN Global Compact which works through a reporting approach, where organisations show their progress towards meeting sustainability criteria, and (2) the example of global cotton supply chains where we investigate the effects of intersectoral communication. We will employ a mix of quantitative and qualitative methods and work in close cooperation with relevant organisations and networks. This includes workshops with stakeholders to iterate the results and to ensure that they are translated into useful outputs. By examining disclosure, reporting and partnership against the backdrop of a complex digital and networked communication context, the WP will help reframe environmental communication as multi-modal and multi-nodal. The knowledge produced in this WP will complement the insights into communication and consumption (WP2), and communication in (social) media (WP5). It will also link to the work on intersectoral communication and dialogue (WP1), and feed into programme-wide synthesis work in WPs 6 and 7.

The WP will be led by Shiv Ganesh (UT Austin). Lotten Westberg, Helena Nordström Källström (EC- SLU) and a research assistant (UT Austin) will contribute to the research. Societal partners include, among others, the Swedish Secretariat of the UN Global Compact, Nudie Jeans, RISE, the Swedish Federation of Farmers, Organic Farmers of Uppland, Greenpeace and the Swedish Society for Nature Conservation.

6.4.2 Background and relevance to the call

Organisations that operate on the market and are interested in embracing sustainable practices have historically been businesses that have competed and survived by exerting unilateral control over how they disclose information and who they partner with. Disclosure and reporting was regarded as an approach that would facilitate environmental stewardship (Eisenberg 1984). Such communication practice rested upon easy assumptions about information, knowledge and action (Andonova 2017).

However, the ubiquity of digital communication means that we no longer live in an era of communication scarcity with control over message flows. Instead, we live in an era of multi-modal and multi-nodal communication, characterised by information abundance and volatility, uncertainty and ambiguity (Ganesh & Stohl 2019). Businesses find themselves more visible, and embedded in dynamic and multi-level networks of communication that involve cooperatives, NGOs, certification agencies and public bodies (Contractor et al. 2006). As these organisations become more and more networked, they come into increased contact with dissimilar others, making more unorthodox partnerships, entering into short-lived arrangements, unexpected competitions and new forms of advocacy and resistance. Disclosure therefore informs not only reporting, but also the development of inter-organisational connections that often take the form of partnerships in global supply chains.

The networked and visible character of much organisational work is evident in a range of spaces, from highly networked global supply chains to public demands for transparency. This has considerable implications. For instance, high visibility can paradoxically mean that organisations

become less willing or able to engage in sustainable practice because of the high risks in doing so, where even well-intentioned efforts to engage in sustainability efforts can result in negative reputational impacts (Roper et al. 2015). Also, it is increasingly difficult to establish responsibility in highly networked arrangements where no single actor can be held to account (Czarniawska 2011).

6.4.3 Aims and research questions

The main aim of this WP is thus to understand and assess the impacts of the heightened visibility inherent in contemporary communication practices on the willingness and ability of market organisations to embrace sustainability. Two specific research questions are proposed:

1) What opportunities and challenges do networked reporting arrangements present for environmental sustainability? We will investigate the discourses on and practices related to reporting and visibility, and analyse how these impact on how working towards sustainability is understood and enacted.
2) What communicative dynamics in intersectoral partnerships enable and hinder the accomplishment of sustainable production practice? We will explore how those involved in intersectoral partnerships deal with pressures exacting transparency and control over supply chains, and how this communication affects production practices.

Theories of visibility and networks will inform our work. Theories of visibility (Brighenti 2007) argue that the double-edged sword of visibility has become a master trope for communication and an important guiding category of social analysis. The WP will also draw extensively from theories of networks, understood both as a mode of communicative sociality distinct from markets and hierarchies that emphasises dynamic connections amongst social entities (e.g., Castells 2009), and as a mode of relationality between people, structures and things, as exemplified by actor-network theories (Latour 2004, Kuhn et al. 2018).

6.4.4 Tasks and methods

WP4 will conduct two in-depth studies, one for each research question. To assess *contemporary environmental reporting regimes* that are highly networked and global (Tasks 1 and 2 below), we will use a mixed methods approach to study the recently formed Swedish Global Compact Network (SGCN). Over 300 Swedish organisations, including corporations, public organisations and NGOs, have signed up for the UN Global Compact, which involves an explicit commitment to ten core principles to further the UN Sustainable Development Goals and to provide regular public reports on their activities.

To examine the *communicative dynamics of intersectoral partnerships* (Tasks 3 and 4 below), we will use a qualitative approach that focuses on organic cotton-producing supply chains that include organisations in the Global South, such as the Chetna cooperative in India which supplies cotton to Swedish organisations such as Lindex, Nudie Jeans and Coop.

Study 1

Task 1 (Year 1): In consultation with the Board of the SGCN, we will design and carry out a questionnaire-based survey of Compact members to elicit their views on the benefits of their membership, their practices related to reporting, and the challenges and opportunities that arise from such reporting and the Compact more generally. The survey will also include questions to map their networks (see Task 2). To identify changes in practices that result from the reporting, the reports themselves will be analysed. Preliminary findings will be presented to the network members in a co-inquiry workshop.

Task 2 (Years 2-4): The findings from the survey and workshop will inform the design of interviews (n=30) with network members (representing businesses, public organisations and NGOs) and organisations within the programme consortium that have chosen *not* to join the Compact. These interviews generate in-depth qualitative data on how organisations are framing and enacting the need for reporting in relation to the demand for visibility. The interviews will include qualitative mapping of 'ego-nets' (i.e., looking at the interviewee's organisation as the centre of its respective network) that will be used for qualitative social network analysis to examine not only the structure of the networks (which might also include non-human actors such as regulations, Latour 2004), but also the meanings and qualities of relationships, and how these change over time (Crossley et al. 2015). The analysis will be presented to the SGCN and the feedback included in the production of blogposts and academic outputs.

Study 2

Task 3 (Years 2-3): After consultation with the organisations involved, we will conduct interviews with representatives of these organisations to examine organisational partnerships, identifying and assessing how transparency affects communicative dimensions of the partnership such as intensity, extensiveness, collaboration, mutuality, influence, resistance and control. To understand the relationship between communicative dynamics of the partnership and primary production, we will also investigate through interviews how the cotton farmers themselves experience the effects of the pressures on organisations to be more transparent in their quest for sustainability.

Task 4 (Year 4): As in Study 1, we 'close the loop' by holding a workshop for the Swedish organisations to identify aspects of the North-South partnership that have worked well, aspects that need improvement, and to increase their understanding of agricultural practices in the Global South.

6.5 WP5: Environmental communication in (social) media and the arts: Opening spaces for transformative discursive encounters

6.5.1 Summary

WP5 investigates how mass media, social media and the arts invite and facilitate particular constructions of the environment, environmental problems and solutions, and how actors in these arenas engage in discursive struggles over what legitimate environmental problems are and how they should be addressed. Resulting insights will be used as a basis of a series of transdisciplinary activities in the form of exhibitions, workshops and (video) publications. WP5 will bring together artists, journalists, influencers and academics to: (1) jointly investigate how discourses (and the words, images and metaphors they include) matter in environmental communication; (2) develop thinking tools to identify words, metaphors and discursive patterns that trigger particular discursive responses; (3) design communicative settings that challenge dominant discourses and ingrained discursive patterns and constellations, thereby opening (rather than closing down) debates for new or marginalised perspectives and transformative encounters.

WP5 will be led by Nico Carpentier (CU). Jutta Haider (University of Borås), Sofie Joosse and Erica von Essen (SLU-EC), a PhD student and Vaia Doudaki (CU) will contribute to the academic work. Societal partners involved in this work package include: (1) field specific actors from mass media, social media and the arts, such as Influencers of Sweden (an interest organisation for social media influencers), the Swedish Artists' Organisation, Swedish Museums, Biotopia and the Uppsala art museum; (2) environmental actors, namely Greenpeace, the Swedish Hunters' Association, the Society for Nature Conservation and the Federation of Farmers (LRF).

6.5.2 Background and relevance to the call

This WP directs our attention to civil society and everyday life as important societal fields for the circulation of sustainability discourses. It examines the role of mass media, social media and the arts, where journalists and media producers, ordinary people (i.e., non-professionals, non-experts) and artists produce, reproduce and contest ideas about the environment. These arenas differ from scientific platforms and policy publics in that they are partly emancipated from state decision-making and constitute platforms for dissenting voices and marginal perspectives. By focusing on struggles over meaning, we move away from an exclusive focus on dominant discourses, and can show the richness of how sustainability discourses operate in society.

WP5 combines three bodies of theory. Firstly, it draws on (post-)representational theory and cultural theory to investigate the construction of social and material realities through (social) media and the arts (Burr 2003), including e.g., work on the role of metaphors in the construction of social representations (Selge and Fischer 2011). Secondly, our emphasis on signification and the construction of meaning draws on semiotics and discourse studies (Bignell 1997, Crow 2010, Wodak & Meyer 2016, Van Brussel et al. 2019). Finally, we use theories of materiality, including new materialism (Carpentier 2017) to bring out the role of the material, such as the environment, but also media and arts products and their infrastructures, including the digital materiality of algorithmic information infrastructures (Haider 2016) in environmental communication.

6.5.3 Research questions

WP5's aim is twofold: (1) to understand the formation and nature of environmental and sustainability discourses as expressed in Swedish arts and media, and how they influence scope for individual and collective action; (2) in a transdisciplinary team, to develop thinking tools to examine and challenge discourses in order to open up existing discursive patterns and constellations for a constructive engagement with new or marginalised perspectives. We address the following research questions:

Linked to the first aim:

- What (mass/social) media and arts products on sustainability have recently featured in Sweden? How do these products construct the environment, how humanity relates to it, what responsibilities humanity has towards it, and how environmental problems are seen to affect humans?
- Which words, metaphors and images are central in these constructions? What specific discursive, affective and behavioural responses do they trigger? What roles do the different discursive elements play in discursive struggles and contestation?

Linked to the second aim:

- What strategies can we develop to increase sensitivity and awareness of the role sustainability discourses play in practice and specifically how and when specific constructions of sustainability are triggered? What strategies can we develop to open up existing discursive patterns and constellations for a constructive engagement with new or marginalised perspectives?
- How can the constructions of, and discursive struggles over, the environment be communicated in an accessible and understandable way, through exhibition and alternative media formats?

6.5.4 Tasks and methods

Task 1 – Quantitative inventory. To answer the first research question, the WP will perform a quantitative analysis of recent mass media, social media and arts produced in Sweden. The inventory will target *mass media* through documentaries and TV programmes, *social media* through blogs/YouTube channels and Facebook groups

(Joosse & Brydges 2018), and *arts* through exhibitions and environmental art projects. The selection will consider ideological diversity, and will be accompanied by contextual analyses of the different fields, including their habitus (Bourdieu 1977) and infrastructures, such as the search engines that lead to these media/arts products (Haider & Sundin 2019). The inventory builds on *mapping methods* (Carpentier et al. 2014, Voniati et al. 2018). Through a basic *quantitative content analysis* the core position of each media/arts product will be identified. This will allow for (i) an informed selection of material to be analysed in the next stages and (ii) the production of an overview that is relevant in its own right.

Task 2 – Case studies based on transdisciplinary case-selection. In order to ensure societal relevance and narrow the scope of further empirical research, the societal and academic partners will together select 18 cases from the quantitative inventory to focus on. This could, e.g., include media/arts products related to the youth climate strikes or the role of the Swedish wildfires for the public discussion on sustainability. For each media/arts product, at least 3 producers representing different levels will be interviewed. Each part of the discourse analysis will be supported by a contextual analysis, taking cultural and infrastructural components into consideration. This stage thus combines *qualitative content analysis* and *interview analysis*, driven by (at a more overarching level) *discourse analysis*, and supported by a *contextual analysis*. For studying social media, ***netnography*** will be used as means of data collection, examining communicative interactions on e.g. Facebook.

Task 3 – Transdisciplinary investigation and experimentation. The third stage feeds back the results of the analysis to the interviewees and societal partners through *group feedback analysis* (Heller 1969, 1976). Preliminary analyses will be shared in a series of focus group discussions. In these discussions participants will jointly investigate the development of discourses; develop thinking tools for recognising discursive 'turning points' and patterns, and for converting them into discursive opportunities; and based on these, develop inclusive and constructive approaches to environmental communication. Not only does this validate the results, but it also generates new data with an added level of reflexivity and sharpened direction, which will be analysed as well.

Task 4 – Exhibition and outreach. The fourth and final stage communicates the results of the project. We aim for one high-level publication for each of the research questions (4 in total). Apart from these academic publications, this task also aims to create a series of learning experiences for particular target groups (e.g., farmers and hunters), and the general public. A first tool that will be used are modules for training workshops. These will be developed in collaboration with WPs 6 and 7 and address professional and non-professional communicators. At least 10 training sessions will be conducted (in cooperation with WPs 6 and 7). These aim to create an awareness of the complexities of discursive struggles and provide rhetorical and practical approaches for meaningful discursive engagement. This could, for example, include exercises in taking unconventional perspectives or experimenting with a range of alternative metaphors. Connected to these training workshops is a series of 4 short videos for publication on the web for the wider interested public, showcasing specific discourses, dissecting them, demonstrating discursive 'turning points' and patterns and suggesting tools to open up discursive spaces in an inclusive and constructive way. A third tool is the organised exhibition (Carpentier 2019) on environmental communication. It will render visible, in an accessible and engaging way, the discursive patterns that structure debates about environmental and sustainability issues, and highlight alternatives that foster constructive debate. This 4-week long exhibition will also deploy the fourth tool: guided visits to the exhibition (minimally 20), providing educational moments for, in particular, secondary school children and university students. Importantly, as added value, the fourth phase will be integrated in the research itself, for instance, through the principles of *arts-based research* (Leavy 2015) that will allow to reflect about the new knowledge generated through the exhibition.

6.6 WP6: Synthesis

6.6.1 Summary

This WP builds on the work of WPs 1-5 and the think/do tanks to further examine the contributions of the programme to a reframed understanding and practice of environmental communication. It provides the space for reflection, theoretical and conceptual integration across the five fields of practice covered by WPs 1-5, and synthesises the work of the programme to directly shape communication practices. WP6 will produce outputs for both academic (e.g., journal articles) and non-academic audiences (e.g., capacity building workshops) and also provides content for additional shared outputs in WP7 (e.g., the international multi-hub conference).

WP6 is led by Anke Fischer (EC-SLU) and involves members from all WPs to ensure effective integration: Kaisa Raitio, Lars Hallgren, Sofie Joosse and Lotten Westberg (EC-SLU), Eva Friman (SWEDESD), Nico Carpentier and Vaia Doudaki (CU), Neil Powell (USC) and Maria Johansson (Lund). To further strengthen the methodological and reflexive aspects of the WP, the team also includes Hanna Bergeå (EC-SLU), Keri Facer (CCL-UU/Bristol University), René van der Wal (Ecology-SLU) and WSP, and societal partners for the development of specific activities such as communication strategies (e.g., Swedish Hunters' Association, the Swedish Forestry Agency, LRF, SSR, SEPA, Tyréns, SKL).

6.6.2 Background, relevance to the call and approach

MISTRA Environmental Communication is structured to cover a range of fields of communication practice, using different disciplinary and conceptual lenses. To add further value to the work in the WPs and think/do tanks, and to interrogate their insights in terms of their wider applicability, WP6 will identify focal areas for synthesis and

integration, developing higher-level insights (e.g., on meta-discourses) on overarching issues. In addition, for our work to be transformative, we need spaces for (self-)reflection and sharing of experiences and insights throughout the programme's lifetime. WP6 provides such spaces for critical reflection of our assumptions and aims, drawing on the empirical and conceptual work across the programme. It also acts as a space to synthesise findings and jointly translate them into outputs designed to shape communication practice, such as material for training courses and capacity building workshops (see also WP7). WP6 thus consolidates the insights developed in the programme, and enhances the programme's impact and transformative potential. By critically examining and reflecting on communication across the five fields of practice, including our own work, WP6 strives to contribute to the reduction of inequalities (Sustainable Development Goal 10) and the adoption of communication practices that enhance inclusivity in societies (SDG 16).

In conceptual terms, WP6 will revisit the programme's five principles for a reframed environmental communication (Section 2.2), namely **(a)** understanding environmental communication as a field of discursive struggle, and sustainability as an inherently contested concept, **(b)** understanding communication as multimodal and multilateral practices, **(c)** foregrounding social practices and structures that produce environmental problems, **(d)** considering both constitutive and instrumental aspects of communication and **(e)** taking account of the role of power and conflict in knowledge production and communication. WP6 will analyse the programme's contributions and insights along four interconnected conceptual dimensions that reflect and further elaborate on these principles:

1) **Agonistic pluralism** (see WP1): How can communication deal with the diversity of discourses, perspectives and interests, with resistance, conflict and power differentials, and what are the implications for environmental governance in democratic contexts? (Principles a, b, e)
2) **Participation and justice** (see WPs 3, 5): How is environmental communication as examined by WP1-5 working to include or exclude actors? (Principles a, b, e)
3) **Values and emotions** (see WP2): What is the role of values and emotions in environmental communication, including our own communication activities? (Principles a, c, d)
4) **Discourses and materialities of communication** (see WPs 1, 2): What are the meta-discourses on communication and theories of change across the different fields of practice (WPs 1-5), and how do they change over time? How are these meta-discourses connected to the materialities of communication? (Principles b, c, d).

Research aiming to create more democratic and participatory modes of inquiry is not immune to producing knowledge hierarchies and reproducing existing structural inequalities through its own practices (Facer & Enright 2016, Mirowski 2018, Anderson & Westholm 2019, Bryan et al. 2018). To mitigate this risk, it is increasingly recognised that such projects require intentional spaces of co-inquiry and reflection (Banks et al. 2014). Such spaces can act as a resource for the development of ground rules for interaction, for addressing tensions and emerging concerns and for ensuring that the complexity of collaborative research is acknowledged and worked through. In fields such as climate change, such work also needs to address the emotional labour and the affective challenge of working on issues that provoke both fear and anxiety; recognising that these projects convene teams around not only matters of concern (Latour 2004) but matters of care (de la Bellacasa 2017). At present, strategies to hold and acknowledge both tensions and emotional challenges are the preserve mainly of psychodynamic approaches to climate work (Bradley et al. 2014, ACF n.d.). Here we propose to collate existing methods of reflection and examine their potential utility in a research context as a means of working with the emotional as a core part of environmental communication, both within our own research teams and in wider society.

6.6.3 Research questions

WP6 aims to synthesise the work of the entire programme and to provide a space for critical reflection on the programme's own communicative practice. Research questions include:

- What are the programme's contributions to a reconceptualisation of environmental communication?
- How does the work of the programme represent and enact environmental communication, how do these diverse ideas, meta-discourses and practices relate to, amplify or contradict each other, and how might this have changed over the course of the programme?
- How can these reconceptualisations help improve the effectiveness of communication in sustainability transformations?
- What are effective approaches to bridge the gap between theory and practice in environmental communication?

6.6.4 Tasks and methods

WP6 begins its work at the very start of the programme, to identify convergences as well as tensions in approaches, and to harness the potential for integration and synthesis where possible. WP6 will design and coordinate a methodology to enable such synthesis, co-inquiry and reflection throughout the runtime of the programme.

Task 1 (Year 1): Developing an approach that allows both reflection on and synthesis of the work, building on approaches such as co-inquiry (Banks et al. 2014) and structured reflection in practitioner inquiry (Stevens et al. 2016). This will include:

- The design of 'sharing the science' meetings in regular intervals, to coincide with the consortium meetings organised in WP7, and to provide a forum for discussing substantive ideas, concepts and theories, and how these play out in our work
- The design of a method to discuss and critically reflect on the inter- and transdisciplinary process of work, including ethical and emotional issues
- The operationalisation of a number of concrete 'integration projects' that will lead to academic (see the conceptual dimensions above) and practice-oriented outputs (see below). This will require an identification of 'data' needs and suitable approaches to analysis (e.g., how will insights and findings from the different WPs be pulled together?). For example, this could entail a concrete plan to synthesise insights on, say, agonistic pluralism or meta-discourses across the programme

Task 2 (Years 1-3): Carrying out meetings as described above; data collection and analysis. Dependent on the 'data' needs identified, the participants of individual integration projects will, for example, observe and document relevant activities in WPs 1-7 and the think/do tanks, and compile, examine and summarise insights as material for shared outputs. Additional insights for these analyses could come from interviews conducted with the actors in and around the programme, including the societal partners.

Task 3 (Years 3-4): Joint production of outputs for academic and non-academic audiences, including:

- Manuscripts for peer-reviewed international journals, addressing the four dimensions above as well as methodological questions (e.g., on transdisciplinarity, communication research or co-inquiry)
- Research summaries for a range of audiences, e.g., blogposts, research briefs
- Transdisciplinary development of strategies for transforming environmental communication in contexts relevant to programme partners, e.g., developing input into organisational strategies for communication
- Drawing on existing training programmes at EC-SLU and SWEDESD, and in collaboration with WP7, develop approaches for communication capacity building and reflection that include insights and lessons learned from across the programme, and expand their scope to audiences that have not previously been included. WP6 will develop approaches and carry out sessions for non-specialists in communication (such as academics, or staff of governmental bodies), to engage scientists (and others) in a broader reflection on how they communicate with non-scientists about the environmental issues covered in their work (see WP7 for additional target groups)

Our synthesis work will be further enriched and informed by insights and findings from research projects on environmental communication run by EC-SLU, which are funded by, e.g., Formas, the Swedish Forest Society Foundation, Vinnova, Kone Research Foundation, the Wildlife Research Fund at SEPA, Nordforsk and the Swedish Energy Agency, as well as an SLU-funded PhD studentship supervised by Anke Fischer, which will start in early 2020.

6.7 WP7: The programme commons - coordination and knowledge sharing

6.7.1 Summary

WP7 provides the programme-wide infrastructure for the work carried out by the WPs and think/do tanks. Details of the management structure are given in Section 4.3, and the programme's general approach to communication and implementation is described in Section 8. Here, we provide an operationalised summary of the corresponding tasks and deliverables.

WP7 is led by Eva Friman (SWEDESD), and all members of the management team (i.e. all WP leads, the communicator and other key programme participants, see Section 4.3) will actively contribute. The Association of Local Authorities and Regions will be instrumental in supporting outreach to public authorities all over Sweden. The overall responsibility will lie with the programme directors.

6.7.2 Aims

Through the programme commons, we aim to create optimal conditions for all participants to work collaboratively towards the aims of the programme (Section 1), and to ensure the best possible short- and long-term impacts of our work.

6.7.3 Tasks, outputs and expected impacts

We have grouped WP7 activities into four tasks which will run in parallel: (1) Management and administration, (2) Internal communication, (3) Monitoring, evaluation and adaptation and (4) Education, learning and external communication (see Section 9.7 for details).

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PART B

8. Time plan

WP TASKS	YEAR 1				YEAR 2				YEAR 3				YEAR 4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
WP 1																
1. Analysis of dialogue practices in at least 3 sites																
2. Design and facilitation of power sensitive and conflict aware dialogue processes in 3 sites																
3. Practical & theoretical implications from findings. Cross site comparison and analysis																
4. Theoretical & practice-oriented synthesis for designing agonistic planning processes																
WP 2																
1. Meta-discourses and social practices in environmental consumption communication																
2. Consumption communication laboratory																
3. Ethnographic studies of consumption communication																
4. Communication strategies																
WP 3																
1. Alternative framings of knowledge production																
2. A co-inquiry process																
3. Governance learning workshops																
WP 4																
1. Survey of Compact members																
2. Interviews Study 1																
3. Interviews Study 2																
4. Workshop																
WP 5																
1. Quantitative inventory																
2. Case studies																
3. Transdisciplinary research																
4. Exhibition and outreach																
WP 6																
1. Develop a co-inquiry approach for reflection and synthesis																
2. Meetings & workshops following formats developed in Task 1; data collection & analysis																
3. Joint production of outputs for academic and non-academic audiences																
WP 7																
1. Management and administration																
2. Internal communication																
3. Monitoring, evaluation and adaptation																
4. Education, learning and external communication																

9. Work package outputs and expected impacts

9.1 WP 1 - Outputs and expected impacts

YEAR	TASK	OUTPUT	EXPECTED IMPACT AFTER FOUR YEARS
1	Analysis of dialogue practices in at least three sites (by Month 12)	i) Blog post reflecting on preliminary findings through lenses of power and conflict ii) A web based practice brief on power and conflict in dialogue processes iii) Scientific paper on process designers' notions of power and conflict in urban planning iv) National workshop with policy makers, planners and facilitators focusing on process design choices	Increased capacity among involved policy makers, planners and facilitators to make conscious choices in the design of dialogue processes
2-3	Design and facilitation of power sensitive and conflict aware dialogue processes at three sites supported by researchers as critical friends (by Month 36)	i) Blog posts reflecting on the wicked problems at the three sites and possibilities to tackle these ii) Short movies with process designers iii) Scientific paper on transdisciplinary research in urban governance iv) Scientific paper on the challenges of co-management of water resources v) National workshop with policy makers, planners and facilitators	Increased reflective capacity within the partner organisations More power sensitive and conflict aware policies within the partner organisations Power and conflict are on the agenda in the national planning discussions
4	Draw out practical and theoretical implications from the findings of the previous steps. Cross site comparison will inform the analysis Theoretical synthesis and practice-oriented methodologies for designing agonistic planning processes will be developed in close collaboration with WP6 (by Month 48)	i) Blog posts reflecting on the lessons learned ii) Short movies with process designers and participants iii) Scientific paper on agonistic planning processes in urban development iv) Scientific paper on agonistic planning processes in rural areas v) Scientific paper on cross-site comparison vi) Training programme for policy makers, planners and facilitators vii) Web based handbook for the design of power sensitive and conflict aware dialogue processes	Increased focus on power and conflict in debates within the academic environmental communication community and the planning theory community A more practical theorisation of agonistic planning and a plural theory of power in planning

9.2 WP 2 - Outputs and expected impacts (M=Month)

OUTPUT	EXPECTED IMPACT
4 co-authored manuscripts for peer-reviewed international journals (2 by M42, 2 by M48), 2 manuscripts led by LU, 2 manuscripts led by EC-SLU	WP2 stimulates scholarly debate between agential and structural perspectives and on the role of communication in social change to constructively harness tensions and synergies The research field of environmental communication recognises the role of meta-discourses in the performance of environmental communication.
Report on results on meta-discourses in the field of consumption communication for further analysis in WP6 (by M32), led by SLU-EC	
3 research summaries for non-specialists (2 by M36, 1 by M42), led by EC-SLU and LU with societal partners	Environmental organisations use reflexive models that consider both structure and agency for planning communicative interventions to influence consumption.
Co-developed input into consumption-oriented communication strategies for at least three different organisations (e.g., Uppsala Municipality, Swedish Society for Nature Conservation, Greenpeace) (coordinated with WP6) (by M48), led by EC-SLU in close collaboration with relevant partners	
Development and delivery (by M40) of a 2 day course on reflexive communication strategies for environmental communication officers working on sustainable consumption in municipal authorities, environmental NGOs and companies (in coordination with WP7), led by EC-SLU in close collaboration with relevant partners	
3 pod-casts on reflexive communication and how to use the tension between agential and structural assumptions on communication and consumption in a productive way (by M46), led by EC-SLU	

9.3 WP3 - Outputs and expected impacts (M=Month)

TIMELINE	TASK	OUTPUT	EXPECTED IMPACT
Years 1-2 (M1-M18)	1	2 blog posts reflecting the findings of the case studies Issue framing workshops in the respective case studies 1st iteration of the explorative arena with insights from the case studies	WP3 will help reframe environmental communication to subsume both the production of knowledge and processes of transformation in "wicked" situations. It will contribute to reframing environmental communication that will be more attentive to systemic consequences, equitable understanding and anticipatory imagination. WP3 will also enable social learning between the researchers and stakeholders. Our work will develop capacity of environmental communication to support the co-production of knowledge and transformation towards sustainability.
Years 2-3 (M19-M36)	2	Workshops to cast light on social and institutional factors, practices and processes required to facilitate transformation in the climate change context (1 workshop per case study; and a cross-case workshop) Blog post reflecting on findings from the workshops Scientific paper on alternative frames (Task 1) and social and institutional factors required for knowledge co-production within the climate discourse 2 conference presentations to share WP3 insights with national and international audiences 2nd iteration of the explorative arena with insights from the case studies	
Year 4 (M37-M48)	3	4 workshops to enact the second iteration of the explorative arena (case-specific workshops plus a cross-case workshop) Blog post on emergent findings from the workshops A scientific paper on practices and processes to foster co-production of knowledge within the climate discourse Governance learning workshops with constellations of stakeholders from beyond the case study settings	

9.4 WP4 - Outputs and expected impacts

OUTPUT	EXPECTED IMPACT
4 co-authored manuscripts for peer-reviewed international journals (1 by Month 30, 3 by Month 48) Led by TU at Austin and EC-SLU, respectively	Environmental communication is increasingly and widely understood as multi-modal and multi-nodal, and includes the role of visibility in formal and informal organisational networks and how it might enhance or constrain sustainability transformations.
At least 3 conference presentations that share insights with national and international audiences (by Month 48), led by TU at Austin and EC-SLU	
3 workshops with study participants (1 by Month 12, 1 by Month 32, 1 by Month 48), led by EC-SLU	Partners are able to assess and manage contemporary pressures to disclose sustainability-related information and to partner with organisations of high sustainability standards. This has helped organisations to (a) develop robust forms of environmental reporting, and (b) develop global production partnerships that rely on a communication infrastructure that discloses both what is under control and what is not
4 blogposts for the programme platform (WP7) as well as for other fora such as civichall.org, natcom.org/communicationcurrents and thelocal.se, in both Swedish and English (2 by Month 24, 2 by Month 24) Led by TU at Austin and EC-SLU, respectively	
Input into the design of capacity building sessions and other joint outputs (WPs 6 and 7) (by Month 48) Led by EC-SLU	

9.5 WP 5 - Outputs and expected impacts

OUTPUT	EXPECTED IMPACT
4 co-authored manuscripts for peer-reviewed international journals (#1 by Month 15, #2 by Month 36, #3 and #4 by Month 48) Each manuscript led by one of the researchers	The academic debate now includes arts and media as important arenas for the production of sustainability discourses. WP5 will contribute to EC methodology through its transdisciplinary and experimental approach, translating EC, ensuring EC insights that are firmly grounded in societal arenas.
At least 3 conference presentations that share insights from WP5 with national and international audiences (by Month 48)	
Design of training modules for non-specialist audiences, and contributing to training sessions described in WPs 6 and 7 (by Month 48) Led by the academic partners in collaboration with societal partners	Actors in social media, mass media and the arts have increased their sensitivity and awareness of the complexities of discursive struggles and can use tools for meaningful, constructive and inclusive discursive engagement.
Organised exhibition on discursive struggles in environmental communication (by Month 48) Led by CU in close collaboration with relevant partners	
4 short videos for publication on the web; development (by Month 30), publishing (Month 42) Led by CU in close collaboration with societal partners.	

9.6 WP6 - Outputs and expected impacts

OUTPUT	EXPECTED IMPACT
6 co-authored manuscripts for peer-reviewed international journals (1 by Month 42, 5 by Month 48) Each manuscript led by a different researcher in SLU-EC, SWEDESD or CU	The programme shapes future academic debate by reframing the understanding of environmental communication in relation to the five principles listed above, and by contributing to the development of appropriate methods for environmental communication research.
At least 3 conference presentations that share insights from WP6 with national and international audiences (by Month 48) Led by SLU-EC and SWEDESD	The work will help establish MISTRA Environmental Communication as a national and international focal point and hub for research on environmental communication.
4 summaries from the synthesis work for non-specialist audiences (2 by Month 36, 1 by Month 42, 1 by Month 48) Led by SLU-EC and SWEDESD, in collaboration with societal partners	MISTRA Environmental Communication will help shape organisational strategies and build capacities for environmental communication that effectively supports sustainability transformations. The work will help establish MISTRA Environmental Communication as a national and international focal point and hub for research on environmental communication. The methods developed in WP6 will constitute a legacy that could be further developed and evaluated in a potential second phase of the programme.
Co-developed input into communication strategies for at least three different organisations (e.g., LRF, the Wildlife Research Fund at SEPA, Swedish Hunters' Association) (by Month 48) Led by SLU-EC in close collaboration with relevant partners	
Development (by Month 30), piloting (Month 36) and delivery (Month 42) of capacity building and reflection sessions for non-specialists in communication in at least three different contexts, such as SLU, SEPA and interested municipalities Led by SLU-EC in close collaboration with WSP, Tyréns and all relevant partners.	

9.7 WP7 - Outputs and expected impacts

OUTPUT (BY DATE: M=MONTH; Y=YEAR)	DESCRIPTION	EXPECTED IMPACT
	TASK 1: MANAGEMENT AND ADMINISTRATION	
Consortium agreement (M4)	Develop and agree on a consortium agreement	The programme has structures in place that allow it to run smoothly
Staff in place (M4)	Recruit and set up ways of working with the financial administrator (35%) and the communicator (50%)	
Programme plan and reports to MISTRA (Y 1-4)	Develop, review and annually update the programme plan; liaise with the programme board as appropriate; report to MISTRA as required on activities and outputs from WPs and think/do tanks, and financial administration	
	TASK 2: INTERNAL COMMUNICATION	
Digital platform (M2)	Set up a digital platform for internal communication (e.g., Slack) to support invitations for events and joint working within and across WPs and facilitate direct access to the whole consortium, including societal partners	Communication between programme partners is clear and transparent while allowing active and creative debate, scientific advances, methodological innovation and productive work overall
Structure for think/do tanks (M4)	Set up a structure and a modus operandi for think/do tanks (Sections 3.2, 4.2)	
International scientific advisory group (Y1-4)	Set up and liaise with the international scientific advisory group (Section 4.3)	
Consortium meetings (Y1-4)	Organise 3 consortium meetings per year (via video conferencing where appropriate) – these could be combined with specific WP or think/do tank meetings and the annual Environmental Communication (EC) gathering, and include 'sharing the science' parts that explicitly focus on developing joint work (WP6)	
Internal newsletters (Y1-4)	Half-yearly internal newsletters on progress and impact achieved through MISTRA Environmental Communication	
	TASK 3: MONITORING, EVALUATION AND ADAPTATION	
Approach for impact monitoring (M4)	Develop and implement system to record evidence of impact (e.g., stakeholder statements, see Section 3.2)	The programme is able to assess its impact over time and can use this information to adapt its plans and processes
Partner dialogues (M2, M14, M26, M38, M48)	Continue partner dialogues as an (at least annually) recurring conversation between members of the management team and each of the participating societal partners to investigate the relevance of the programme for the partner organisations, identify windows of opportunities and possibilities for synergies (e.g., contributing to activities planned by partner organisations), map programme impacts on the work in the partner organisation, and identify ways to increase impact. These conversations could be integrated into existing meetings	
Report on partner dialogues (Y1-4)	Annual internal reports compiling findings from partner dialogues to be used as input for revisions of the programme plan, adaptation of the work, and reflection in the WPs (especially WP6)	
	TASK 4: EDUCATION, LEARNING AND EXTERNAL COMMUNICATION	
Digital platform (M4)	Develop digital platform that will feature training material, research briefs, short films, news releases, events calendar, blog and twitter feeds and any other digital outputs by the programme	The programme achieved its aspired impacts as set out in Sections 1 and 3
Blog (set up by M4; Y1-4)	Set up, coordinate and curate a blog with contributions from programme partners and invited guests	
Twitter account (Y1-4)	Set up and curate an active twitter account	
Annual EC gathering (Y1, 2, 4)	The annual Environmental Communication (EC) day will be instrumental for spreading the latest insights and tools from across the programme and to foster networking between practitioners and researchers. It will include seminars and training modules that translate findings into practice, and be open to all interested actors. In addition, we will contribute to events at partner organisations where the opportunity arises	
Multi-hub and virtual EC conference (Y3)	An EC conference that aims to take stock of programme findings, engage in debate with international scholars and practitioners, and ensure impact in the wider EC community. The conference will scope out avenues for continued work in a potential Phase 2 of the programme. It is timed to avoid clashes with the biennual IECA conference (COCE), and will pilot a virtual and multi-hub format (hosted in Uppsala as well as in the locations of the international consortium partners) to reduce travel yet facilitate productive encounters. It will be complemented by local sessions for policymakers and practitioners.	
Integration of programme findings into the EC Masters course at SLU (Y1-4)	As the host of the first International Masters programme on Environmental Communication and the only in Europe, EC-SLU is uniquely positioned to test and further develop new ideas emerging from MISTRA Environmental Communication, and to share lessons learned with these future generations of EC researchers and practitioners. Students will also be offered opportunities to write their dissertations on programme-relevant questions. The existing internship module will further harness and strengthen connections to our societal partners	
Capacity building and training courses and workshops (Y2-4)	MISTRA Environmental Communication will update and substantially expand the scope of practice-oriented training courses previously offered by EC-SLU and SWEDESD. While these have so far been oriented at communication in government-led dialogues, we aim to tailor courses based on each of the 5 fields of practice addressed in WP1-WP5 (see also WP6). These will be run at partner organisations but also be available to wider audiences	
Meetings with other MISTRA programmes (M12, M42)	Two 'pressure cooker' events with participants in other MISTRA programmes (Sustainable Consumption, Sports, Future Forests, Environmental Humanities, etc) to identify synergies and scope for future work, and produce joint outputs, e.g., blogposts and research summaries	
Knowledge sharing through national and international networks (Y1-4)	Identify ways to involve and share insights and approaches with existing networks such as IECA, the EC-SLU alumni network, etc (see Section 5.3)	
Material and methods	Methods and reflective tools in written and digital form as developed by WPs 1-7 (such as manuals and guidance documents; the serious game in WP3), shared through the digital platform as a programme legacy	

10. Deliverables

Table 10.1. Summary of MISTRA Environmental Communication deliverables. Internal and procedural outputs, such as consortium meetings, internal newsletters and management structures, are not included in this table (see WP7 for details). 'X' denotes unquantifiable amounts.

	SCIENTIFIC OUTPUTS		POPULAR SCIENTIFIC OUTPUTS		PRACTITIONER-ORIENTED OUTPUTS					PLATFORMS
	SCIENTIFIC PAPERS	CONFERENCE PRESENTATIONS	EXHIBITION	BLOG POSTS	TRAINING PROGRAMMES AND HANDBOOKS	VIDEO CLIPS/ PODCASTS	WORKSHOPS AND EVENTS	PRACTICE/ POLICY ORIENTED RESEARCH BRIEFS	INPUT TO STRATEGIES	INTERACTIVE WEBSITE, TWITTER AND BLOG
WP1	6			min. 5	2	2 sets	2	1		
WP2	4				1	3		3	min. 3	
WP3	2	2		4			>10			
WP4	4	3		4	x		3			
WP5	4	3	1		x	4				
WP6	6	min. 3			1 *			4	min. 3	
WP7				2**	x		4			1
Think/ do tanks				x			x	x	x	

* Applied to min. 3 organisations.
** From pressure cooker events.

11. Communication and implementation

The purpose of the communication and implementation processes within MISTRA Environmental Communication are (i) to provide an enabling environment to synthesise lessons emerging from the case studies, (ii) to communicate new theoretical and practical insights in the field of environmental communication and (iii) to advance sustainability transformations in Sweden and internationally, also beyond the immediate reach of the empirical work carried out in the programme. The programme will adopt an approach that moves beyond the traditional science communication conceptualised as a means to fill pre-defined knowledge gaps. Instead, knowledge will be mediated between researchers, policy makers, organisations and interest groups by way of a dynamic and iterative process (Gibbons et. al. 1994, see also Section 4.1, and Sections 2.2 and 3.2 for audiences). Here, the boundaries between science and society are viewed as fuzzy, allowing for transdisciplinary learning and the co-production of knowledge (Turnhout et al. 2008).

WP7 ('the programme commons') provides the structural framework for internal and external communication and implementation and will develop a detailed communication plan as part of the programme plan. However, the communication and implementation activities themselves are an integral part of all WPs and think/do tanks (see WP descriptions in Section 6).

MISTRA Environmental Communication applies the concept of **'scaling'** to underpin its strategy for effecting change beyond the immediate contexts addressed in WPs 1-5 and the think/do tanks. Our scaling activities build on a validated framework, RESOLVE, for scaling of new theoretical and practical insights (SWEDESD 2018). Drawing on a variety of evidence standards that include innovation, a promising practice (anecdotal reports and testimonials), a model (positive evidence in a few cases), a good practice (clear evidence from several settings or evaluations), best practices (evidence of impact from multiple settings, meta-analyses, expert reviews) and a policy principle (proven in multiple settings, considered widely applicable), the plan assures that the results meet at least 'good practice' or 'best practice' standards while aiming at the highest possible standard (Cooley & Linn 2014).

WPs 1-5 apply their theoretical lenses to their respective fields of practice to develop the reframing of environmental communication in a diverse set of wicked contexts. These lenses enable cross-case narratives describing the orchestration of a diverse set of approaches to environmental communication (WPs 6, 7). Theoretical and practical innovations are, where appropriate, applied in the organisational contexts of the programme partners, and scaled to foster and advance desirable sustainability transformations, both within Sweden and internationally.

In practical terms, the processes and activities included in WPs 6 and 7 will enable such scaling. This includes, first, the continuous monitoring of impacts through the partner dialogues which allows us to adapt our work to the aspirations and needs of our partners (WP7). Second, through continuous interaction between researchers and societal partners, we will be able to identify emerging windows of opportunity for MISTRA Environmental Communication to shape agendas and organisational strategies, help develop solutions for emerging problems, and provide input to policies. Some of these have already been described in the partner dialogues (WP7) that were part of the proposal development and have found reflection in the WPs and think/do tanks, and we will

continue this process throughout the runtime of the programme. This will also include the identification of opportunities outside the realm of the organisations directly involved in the programme, e.g., with the help of the Association of Local Authorities and Regions. Third, the annual Environmental Communication gatherings (in Years 1, 2, 4) and the international multi-hub conference in Year 3 will include sessions drawing on the RESOLVE framework to structure scoping exercises. These, as well as the reflection processes described in WP6, will be used to identify scaling opportunities and appropriate action.

MISTRA Environmental Communication will follow the **ethical guidelines** established by the Swedish Research Council (Vetenskapsrådet), including their Good Research Practice guide. We will collect and store personal data according to the regulations of Personuppgiftsregistret and the EU GDPR (General Data Protection Regulation). However, it is unlikely that this data is sensitive (i.e., concerning race, ethnicity, political views, religious and philosophical convictions, health and sexuality). Personal data will be stored in such a way that only authorised personnel will have access. All planned work will be carefully considered and reviewed. Should the need for potentially sensitive personal data (e.g., on political views) emerge, or if ethically sensitive issues arise in the case study work outside Sweden where other understandings of ethics might apply (e.g., in WPs 3 or 4), we will submit an application to the Regional Ethics Review Board (and appropriate other institutions) for review and approval.

All conversations, including stakeholder meetings and workshops, will only be recorded if prior written or oral (documented) informed consent from all participants is obtained. All data will be anonymised, and results will be published in a form that minimise backwards identification of research participants, unless we have the express agreement of the participant (e.g., a societal partner who is a co-author of a paper) that they can be named.

12. Budget

The total programme budget is SEK 60,446,449 (Tables 9.1-9.4). Out of these, SEK 6,446,949 are co-funding from universities and societal partners and SEK 54,000,000 are funded by MISTRA. As part of this, a strategic reserve of 6 million SEK is available for the programme board to use for future strategic research needs. MISTRA-funded staffing over the 4 years will amount to 45.6 personyears (shown as fulltime equivalents FTE in Table 12.4) who will be working in 7 work packages (WPs) and a series of 'think/do tanks'. WP7 is the WP dedicated to programme management and communication.

WP7 will cost SEK 11,740,754 (direct costs, Table 12.4). The payroll of WP7 includes the programme directors (1 FTE), a communicator (0.5 FTE) and financial administrator (0.35 FTE), as well as time for all researchers to contribute to joint activities and administration, and remuneration for programme board members in line with MISTRA guidelines.

Running costs of WP7 include travel costs related to programme-wide activities and the programme board. Running costs for WP 5 include costs for an arts exhibition in Year 4. Costs of open access publications are included in the budgets of WPs 1-6.

All co-funding is in kind. Non-eligible overheads are not included in the in-kind co-funding amount, and not shown in the budget tables below. Non-eligible overheads amount to SEK 12,200,440 of which SEK 3,850,260 incur to EC-SLU.

Table 12.1. Budget overview – total budget

TOTAL BUDGET, SEK	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL BUDGET	WHEREOF MISTRA	WHEREOF CO-FUNDING IN-KIND
WP1 – Government-led dialogue	1 372 997	1 388 667	1 404 655	1 420 965	**5 587 285**	5 101 285	486 000
WP2 – Consumption	1 563 926	1 817 515	1 133 164	906 823	**5 421 427**	5 232 427	189 000
WP3 – Science and knowledge production	2 372 027	2 919 209	2 562 269	2 353 311	**10 206 815**	5 968 789	4 238 026
WP4 – Organisational networks	1 452 455	1 479 837	1 508 042	1 537 094	**5 977 428**	5 851 428	126 000
WP5 – Arts, mass and social media	1 035 907	1 944 634	1 451 723	1 849 548	**6 281 812**	5 975 812	306 000
WP6 – Synthesis	1 032 962	1 297 261	1 413 862	1 481 055	**5 225 141**	4 735 218	489 923
WP7 - Programme management and communication	3 162 192	3 390 870	3 440 605	3 491 373	**13 485 040**	13 485 040	0
Think/do tanks	565 500	565 500	565 500	565 500	**2 262 000**	1 650 000	612 000
Strategic programme reserve	1 462 627	1 487 213	1 512 291	1 537 870	**6 000 000**	6 000 000	0
TOTAL	**14 020 592**	**16 290 707**	**14 992 110**	**15 143 539**	**60 446 949**	**54 000 000**	**6 446 949**

Table 12.2. Funding per partner

FUNDING PER PARTNER, SEK	YEAR 1	YEAR 2	YEAR 3	YEAR 4	BUDGET TOTAL	WHEREOF CO-FUNDING IN-KIND - PAYROLL COSTS	HOURS	TOTAL CO-FUNDING
MISTRA	**12 508 159**	**14 636 874**	**13 304 907**	**13 550 060**	**54 000 000**			
Companies, municipalities, NGOs and others	**528 750**	**528 750**	**528 750**	**528 750**	**2 115 000**	**2 115 000**		**2 115 000**
Havs- och vattenmyndigheten	112 500	112 500	112 500	112 500	450 000	450 000	500	450 000
Länsstyrelsen Västmanland	90 000	90 000	90 000	90 000	360 000	360 000	400	360 000
Tyréns	9 000	9 000	9 000	9 000	36 000	36 000	40	36 000
Greenpeace	15 750	15 750	15 750	15 750	63 000	63 000	70	63 000
Konstnärernas riksförbund	45 000	45 000	45 000	45 000	180 000	180 000	200	180 000
Lantbrukarnas riksförbund	220 500	220 500	220 500	220 500	882 000	882 000	980	882 000
Svenska jägareförbundet	36 000	36 000	36 000	36 000	144 000	144 000	160	144 000
Universities and research institutes	**983 684**	**1 125 082**	**1 158 453**	**1 064 729**	**4 331 949**	**4 331 949**	**FTEs**	**4 331 949**
Inst för stad och land, SLU	36 383	147 565	149 630	30 345	363 923	363 923	0.25	**363 923**
Inst för vatten och miljö, SLU	157 967	160 776	163 641	166 564	648 948	648 948	0.40	**648 948**
University of the Sunshine Coast, Australia	789 334	816 742	845 182	867 820	3 319 078	3 319 078	2.07	**3 319 078**
TOTAL	**14 020 592**	**16 290 707**	**14 992 110**	**15 143 539**	**60 446 949**	**6 446 949**		**6 446 949**
MISTRA	12 508 159	14 636 874	13 304 907	13 550 060	54 000 000			
Co-funding	1 512 434	1 653 832	1 687 203	1 593 479	6 446 949			
Co-funding - share of total funding %					11%			

Table 12.3. Funding from MISTRA per partner

FUNDING FROM MISTRA PER PARTNER, SEK	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL BUDGET	DEPARTMENT
Univerzita Karlova, Czech Republic	997 085	1 011 026	1 025 246	1 519 752	**4 553 110**	Department of Media Studies
Lunds Universitet, Sweden	1 142 061	1 393 817	707 617	479 411	**3 722 905**	Institutionen för miljöpsykologi
SLU, Sweden	63 927	65 030	66 156	67 304	**262 416**	Institutionen för ekologi
SLU, Sweden	4 850 706	5 579 460	5 736 892	5 867 553	**22 034 611**	Institutionen för stad och land
Högskolan i Borås, Sweden	30 091	540 380	31 094	31 611	**633 176**	Biblioteks- och informationsvetenskap
Uppsala Universitet, Sweden	1 646 946	1 915 796	1 955 566	1 996 313	**7 514 620**	SWEDESD
University of Texas Austin, USA	1 152 339	1 178 800	1 206 147	1 234 409	**4 771 696**	Moody College of Communication
University of Bristol, UK	0	29 451	29 980	30 520	**89 951**	School of Education
University of the Sunshine Coast, Australia	937 377	1 210 902	808 918	560 318	**3 517 515**	Sustainability Research Centre
Konstnärernas riksorganisation, Sweden	45 000	45 000	45 000	45 000	**180 000**	
Samernas Riksförbund, Sweden	67 500	67 500	67 500	67 500	**270 000**	
WSP, Sweden	112 500	112 500	112 500	112 500	**450 000**	
Strategic programme reserve	1 462 627	1 487 213	1 512 291	1 537 870	**6 000 000**	
TOTAL	12 508 159	14 636 874	13 304 907	13 550 060	54 000 000	

Table 12.4. Funding from MISTRA per WP

FUNDING FROM MISTRA BUDGET PER WORK PACKAGE, SEK	WP 1	WP 2	WP 3	WP 4	WP 5	WP 6	WP7 Management	Think/do tanks	Strategic programme reserve	TOTAL FUNDING FROM MISTRA
Number of full-time equivalents over 4 years (FTEs)	4.2	4.2	9.4	4.2	8.4	3.8	11.1	0.3		45.6
Direct costs										
Payroll costs	3 601 285	3 777 427	4 006 328	4 116 428	3 433 510	3 310 056	10 742 499	450 000		**33 437 534**
Travel costs	310 000	210 000	850 000	700 000	300 000	210 000	300 000	50 000		**2 930 000**
Costs of materials	30 000	30 000	42 200	40 000	55 909	30 000	78 255	10 000		**316 364**
Equipment and other direct costs	460 000	480 000	250 000	260 000	1 200 000	560 000	620 000	1 140 000		**4 970 000**
Total direct costs	**4 401 285**	**4 497 427**	**5 148 528**	**5 116 428**	**4 989 419**	**4 110 056**	**11 740 754**	**1 650 000**		**41 653 899**
Contribution to indirect costs	700 000	735 000	820 261	735 000	986 393	625 161	1 744 286	0		6 155 414
Strategic programme reserve									6 000 000	6 000 000
Total costs funded by MISTRA	**5 101 285**	**5 232 427**	**5 968 789**	**5 851 428**	**5 975 812**	**4 735 218**	**13 485 040**	**1 650 000**	**6 000 000**	**54 000 000**