



How to communicate effectively to foster climate action: The role of emotions, science education, social norms, and youth movements

OCTOBER 2021

BY DR. HELEN ETCHANCHU, DR. ELSA KASSARDJIAN, DR. ADRIEN JAHIER, ELENA LINCZENYIOVA, AND PAUL LECORRE – RESEARCH SUPPORT

An increasing number of countries around the world are announcing ambitious plans to address climate change. The European Union (EU) made a decisive step with the adoption of the [European Climate Law](#), which sets zero-carbon emissions by 2050 as a legally binding goal for all 27 EU member states. As the next move, the European Commission (EC) announced the “Fit for 55 package,” a set of bold proposals aiming to align key EU policies with the mid-term 55% reduction target by 2030. In the same vein, the UK government announced one of the world’s most ambitious goals of cutting emissions by 78% by 2035 compared to 1990 levels and paving the way to zero emissions by 2050.

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Foreword

The United States has also made bold commitments and pledged to cut carbon emissions by 50%–52% below 2005 levels by the year 2030. This is accompanied by proposed major infrastructure investments and strong emphasis on clean energy, good-paying jobs, and environmental justice.

Over the last few decades, ICF has been at the forefront of helping governments and business to boost public participation and citizen engagement around climate issues. We are currently involved in strategic design, operations, and communications for the [European Climate Pact](#), the main outreach and engagement arm of EU’s climate policy. We have been running several successful public information campaigns to promote climate action and stimulate behavioral change among young people ([DiscoverEU](#), [Ding-Dong Challenge](#)).

With this report, we will explore the new trends, barriers, and challenges in climate communication. In collaboration with our academic partners from COAST Montpellier, we aim to provide expert insights and concrete ways to better engage with citizens and inspire large-scale shifts in human behavior. Ultimately, we want the insights in this report to help governments and businesses educate citizens about climate change and mobilize them to participate in climate solutions.

Introduction

Many governments and businesses around the world are taking action to promote the large-scale behavioral and systems change needed to address climate change. And these governments and businesses recognize that individuals will play a critical role in averting the worst impacts of climate change.

While the transformation of business models and our carbon-intensive economy is key and is the first necessary step that businesses and governments are taking to address climate change, this report will focus specifically on educating and communicating with customers and citizens. Indeed, once business and governments have engaged with climate policy and action, they recognize the need to communicate effectively with their stakeholders to get them on board. Thus, in this report we will address the key issue: How do we best communicate with citizens and customers to help them take action on climate issues?

According to the recent Special Eurobarometer 513 on Climate Change¹ of July 2021, 93% of Europeans think that climate change is a “serious problem.” Yet, even as individuals become increasingly “alarmed” or “concerned” about climate change, they are slow to change their behavior as consumer lifestyles are locked into the current global carbon-intensive economic system. In short, people are aware and care about climate change, but they don’t always act to address it (Doell et al., 2021).

Businesses, policymakers, and journalists play a key role in communicating details of climate change and educating economic and political decision-makers, citizens, employees, and customers. Nevertheless, there is an opportunity to enhance communication around the climate crisis to mobilize individuals and communities so that they take action to mitigate climate change.

In this report, we will present communicators with the latest insights from organizational, behavioral, social, and communication science to help them make their climate communication more impactful. We will discuss the importance of overcoming varying socio-psychological barriers to climate action, grounding climate communication in the best climate science communication models and clarifying key terms often misused by communicators that can cause good intentions for climate action to fall short. We will provide examples of how to most effectively frame messages to motivate behavioral change and discuss specific do’s and don’ts when communicating with younger generations.²

Overcoming socio-psychological barriers to climate action

The great enemy of the truth is very often not the lie—deliberate, contrived, dishonest—but the myth—persistent, persuasive, and unrealistic. John F. Kennedy (cited in Hoffman, 2015)

¹ https://ec.europa.eu/clima/sites/default/files/support/docs/report_summary_2021_en.pdf

² The Communication and organizing for sustainability transformations (COAST) Chair focuses on “communication and organizing,” as these cultural-cognitive and socio-economic aspects are inseparable in order to achieve the necessary transformations to sustainability. This report is complementary to ongoing research.

The Club of Rome recently provided a comprehensive overview of the physical, social, economic, political, technological, and structural barriers to climate action and offered action principles related to natural, personal, societal, and systems levels to overcome these barriers (Berg, 2019). While we clearly run into material barriers of natural resource constraints and challenges to economic development, **the reasons for climate inaction currently are mainly cultural, not material or technical** (e.g., Hoffman, 2015).

In Europe, citizens are generally concerned about climate change but lack the knowledge and motivation to change their behavior. The climate policy simulator [En-ROADS](#), developed by Climate Interactive based on dynamic systems modeling from the Massachusetts Institute of Technology (MIT), provides clear and insightful guidance for political and economic leaders by simulating the impact of diverse climate actions that can be taken to reach a global warming limit of 1.5°C. Integrating the latest scientific insights, this interactive policy simulator shows that technical solutions by themselves are not enough. In order to reach the 1.5°C target, more profound socio-economic changes are required that are only possible if accompanied by cultural-cognitive change. For this, communication is key. In the following we will thus mainly focus on the psychological and cultural barriers to climate action that may be effectively addressed through climate communication.

Transform negative emotions into positive emotional energy

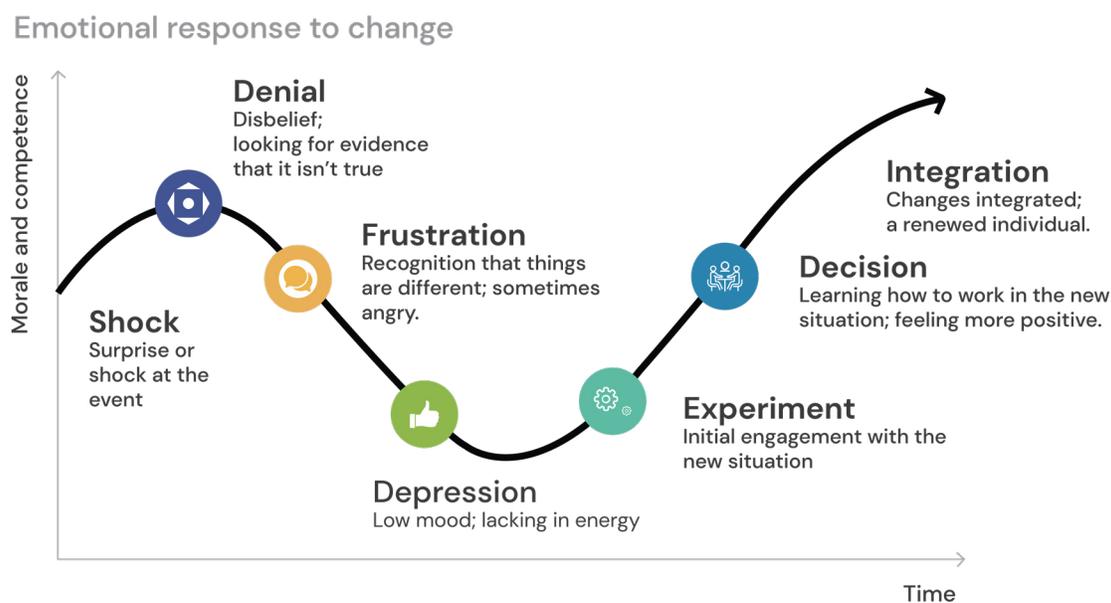
Many individuals feel overwhelmed by the complex and disastrous effects of climate change. They see international climate policy as a huge challenge that needs to be addressed globally. This can create a “doom effect”—the impression that one cannot do much—triggering negative emotions, such as fear, sadness, anger, and disgust, which may lead to inaction due to apathy and denial (Aronson, 2008). While negative emotions may inspire a moral shock that helps raise awareness about an issue, this does not lead to action. Instead, scholars suggest that positive emotions, such as optimism and hope, are useful in provoking environmental behavioral change (Hornsey et al., 2020). Recently, an emotional sequence of negative and positive emotions has been found to increase the likelihood of individuals engaging in positive environmental behavior (Nabi et al., 2018).

Research has found that individual motivation to take climate action is stronger when we feel strong negative emotions about the consequences of climate change (Hahnel and Brosch, 2018). Yet negative emotions may also depress people’s efficacy about being able to act on an issue (O’Neill and Smith, 2014). In contrast, transforming negative emotions into positive ones helps to create energy for action (Barberá Tomás et al., 2019). Thus, **triggering negative emotions that are then transformed into positive emotional energy could be an effective approach to fuel climate action.**

For example, environmental activists often organize campaigns to promote pro-environmental behaviors (Etchanchu et al., 2021; Rao and Giorgi, 2006). Yet changing one’s behavior often involves accepting guilt for past actions (Delmestri and Goodrick, 2016). While guilt has been shown to increase intentions to perform pro-environmental behaviors (Graton et al., 2016), these intentions do not directly translate into actual behavioral change (O’Neill and Nicholson-Cole, 2009). In addition to eliciting strong negative emotions including guilt, these emotions then need to be transformed into positive emotional energy for action to be taken (Barberá Tomás et al., 2019).

The Kübler-Ross change curve is an insightful illustration of the way different emotional states may favor or hinder individual climate action as individuals circle between negative reactions such as moral shock, denial, and frustration toward experimentation and integration of new behaviors.

THE KUBLER-ROSS CHANGE CURVE



Climate change communicators need to be aware of these emotional reactions during the journey of behavioral change and thus be able to guide citizens and customers from negative to positive emotional responses through “emotion-symbolic work.” This is how the anti-plastic movement has enjoyed success when rallying people to its cause. Studying this movement in the U.S., David Barberá Tomás and colleagues (2019) suggest that this process starts with the production of a symbol, which can be easily spread (such as the image of a dead albatross with its stomach filled with plastic). This symbol creates a moral shock and energetic response, a feeling of indignation that urges people to act.

Nevertheless, emotions are not a simple lever that changes people's behavior (Chapman et al., 2017). To convert a negative moral shock into positive emotional energy, individuals need also to learn about simple actions that can be adopted and thus feel empowered to act, for example by cultivating a collective identity. This can be done by framing messages that empower individual action and emphasize that people can collectively address complex environmental problems, which we will briefly discuss at more length in the following section on framing techniques to foster climate action.

Break a big challenge into smaller ones

Climate communication needs to further address the problem that many people don't know how to address climate issues. For example, Semenza et al. (2011) found that the key reasons put forward by U.S. citizens for not changing their behavior despite believing in the value of change were:

- // Not knowing how to change one's behavior
- // Lack of money and time
- // Belief that a change in one individual's behavior won't make a difference

To reduce the doom effect, we suggest encouraging stakeholders to shift their vision of climate policy and actions from one huge task to a range of smaller ones.

This should empower individual stakeholders to act. Climate communication also needs to address the perceived lack of available finances and time required to act accordingly. This is a general conception about change and is not specific to climate action. This issue can be addressed by emphasizing "engaging communication" (Girandola and Joule, 2012), which offers individuals a concrete and easy action that is not costly or time-consuming. Motivating people to take action triggers a positive feedback loop, since action spurs further action. For example, in an experiment in Brussels, citizens were encouraged to save energy with no impact on their quality of life, such

as turning off heating while out of the house or using lids on pans when cooking. Research showed that energy use decreased by 20% thanks to engaging communication in the form of a brochure with energy-saving tips or asking residents to answer five questions about energy use by mail (Moeman et al., 2006).

There are increasing calls to communicate simple actions that can be integrated into everyday lives (De Meyer et al., 2020). Communicators can provide information and direction on how to decrease carbon footprints on an individual basis. Citizens, employees, and customers often intend to adopt climate-based actions but think about activities that are not necessarily the most effective in reducing their carbon footprint. Sharing information about reducing carbon emissions in regard to transport, food, housing, and energy use would not only help empower them but also channel their efforts to where they could have the greatest impact. For example, using a bicycle or public transport twice a week instead of an individual car for regular journeys is one simple method of reducing one's carbon footprint easily but effectively. **Once people start changing their behavior through small actions, it is easier to follow through with more important behavioral changes.** We will further develop the framing techniques to motivate people to adopt environmental behaviors in the section on direct effects of individual action.

Empower individuals across all societal spheres

Climate communication further needs to address the feeling of powerlessness to make a difference. As Hoffman (2015, p. 64) suggests: “To address climate change, we must move beyond a sense that it is too big a problem for individuals to tackle.” Societal change can still occur even if it is started by a few individuals. Indeed, anthropologist Margaret Mead observed: “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.”³ For example, individuals involved in the anti-plastic movement in the U.S. pledged to act publicly and noted how it felt “addictive” to continue to spread the word to others (Barberá Tomás et al., 2019). They adopted message frames that publicly emphasized collective action, such as: “Join us in saving the ocean by pledging to reduce your single-use plastics today!” This visibility and contagion are key levers to inspire large-scale behavioral change (Frank, 2020).

Furthermore, environmental psychologists point to the “green glow” of feeling good when we act for the environment (Taufik et al., 2015). People feel good about engaging in pro-environmental actions that motivate them to change their behavior as they are psychologically rewarded to do so. Acting for climate is hence intrinsically motivating for people. Good climate communication can cultivate this green glow and engender positive feelings of caring for the environment and for others. And through this feeling of altruism and symbiosis of the green glow we also reward ourselves. This may trigger a positive feedback loop. We will develop communication techniques to signal this individual empowerment at length in the section on communicating with social contagion frames.

Avoiding the pitfalls of climate science communication

Companies and governments increasingly recognize the threat climate change poses. Many have set ambitious climate targets to align with the Paris Agreement to reach carbon neutrality—net zero—or to become carbon negative. Different ways of communicating climate change may help facilitate action and behavioral change, including transparency and scientific rigor, adopting the right science communication model, and promoting a positive vision of the future.

Build credibility through transparency and scientific rigor

Building credibility is an essential step communicators must take to gain their audience’s confidence (Rowan et al., 2021). The influence of a sender’s credibility on the persuasiveness of their message is well established in social psychology and communication theory (Cialdini, 1993). Two key dimensions of credibility are trustworthiness and expertise (Wiener and Mowen, 1986). If an audience perceives a communicator to be credible, they place trust in the message. The opposite may also be true (Rhee and Fiss, 2014).

³ Cited in Donald Keys’s 1982 book, *Earth at Omega: Passage to Planetization*.

It is thus advisable that communicators ground their messages in science to increase their credibility. For example, companies can align their economic activities with the Paris Agreement targets using scientifically grounded carbon assessment and reduction tools (e.g., tools developed by [Carbone4](#) or the [Science Based Targets initiative](#)). The most advanced companies are transparent about their efforts, integrate all three scopes of carbon accounting (see Appendix A), and communicate annual emission reduction targets, thus adhering to the IPCC trajectory of 1.5°C, which requires 7.6% annual reduction from 2020 to 2030. Thus, they build credibility through transparency and scientific rigor.

Adopt the right model of science communication

Communicating climate science to ground communication on the climate crisis in fact is essential to (1) understand the dynamics of climate change and the need to change human activities at their origin, and (2) focus on climate actions that can make a real impact. For example, Linnenluecke et al. (2015) found that executives who reported greater engagement with scientific information about climate change expressed greater concern about their company's vulnerability, which also translated into a greater perceived need for adaptation action. Indeed, communicating climate science is an essential first step to raising awareness about why we need to change our behavior. However, we often don't know how to change. Different models of climate science communication may remedy this problem.

Deficit model

A number of scholars argue that citizens don't act on climate change because they lack awareness and understanding of its effects (Pearce et al., 2015; Seethaler et al., 2019). This observation calls for the deficit model of climate science communication, which relies on two key assumptions: (1) Nonscientists are hostile/skeptical/doubtful toward science because they lack accurate scientific information (hence this idea of "deficit"); (2) Providing more accurate scientific information may be enough to change this negative trend.

In forming an opinion on a complex scientific topic, research suggests that other factors and viewpoints play a key role. Such factors include, but are not limited to, health and welfare of family/society, maintaining/preserving the environment, ethical considerations, spirituality (Gamble and Kassardjian, 2008), and ethnic/cultural identity and perception of others' beliefs (Pearson and Schuldt, 2015).

As stated by Priest (2016), people don't need to have ALL scientific knowledge available to them in order to make up their minds; they just need to have "enough" science. Providing too much information is unlikely to increase people's trust in climate science.

Public engagement model

According to Suldovsky (2017), the public engagement model aims to make science a more democratic process by allowing the public to comment on scientific information, directions, and implications. This model relies on the assumption that a greater involvement of the public will lead to more effective public science policy. Nadkarni et al. (2019) showed that even groups that may appear distant from science are likely to engage in fruitful conversations with scientists or communicators if the scientists or communicators have made the effort to learn about them, respect their ways of learning and their experiences, and are receptive to their ideas and questions.

OVERVIEW OF PROS AND CONS OF THESE TWO MODELS

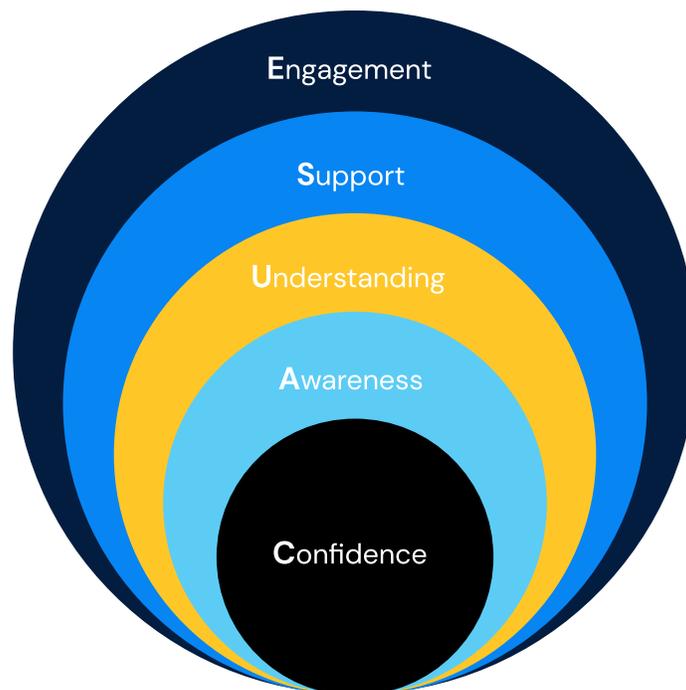
	DEFICIT MODEL	PUBLIC ENGAGEMENT MODEL
Pros	<ul style="list-style-type: none">// Easy to implement: It consists of delivering a message.// This model is optimistic: Providing additional information should be sufficient to convince society of science's validity and legitimacy (Suldoovsky, 2017).	<ul style="list-style-type: none">// Informed by extensive research (Whitmarsh et al., 2013; Suldoovsky, 2017).// Dialogue is associated with positive relationship perspectives, organization identification, and reputation (Lee et al., 2018).// Dialogue during a crisis can improve perceptions of an organization during the crisis recovery phase (Lee et al., 2018).// More likely to create acceptance in policies if they have been developed involving communities (Arvai, 2003).
Cons	<ul style="list-style-type: none">// Providing more information can broaden the knowledge gap, hence contributing to the polarizing effect (Gustafson and Rice, 2016).// Kahan et al. (2012; mentioned in Suldoovsky, 2017) found that individuals with high scientific literacy were much more polarized about climate science than those with low scientific literacy.	<ul style="list-style-type: none">// Can be costly and very difficult to implement effectively (going beyond the simple "ask for feedback" step) (Suldoovsky, 2017).// Very time-consuming and therefore not appropriate for emergencies (Priest, 2016).

Even if dialogic models of communication are effective, the deficit model might still be useful in specific settings. For example, the deficit model may be ill-suited to convince the public of the existence of climate change but is effective in communicating impacts and mitigation strategies to those who already accept its existence. That is the reason why all models may be considered as tools to be used, depending on context.

CAUSE model of science communication

The recently proposed CAUSE model described by Rowan et al. (2021) offers a good "recipe" for effective climate change communication.

THE CAUSE MODEL



C stands for the importance of confidence in communicators: Confidence can be improved if the target groups can identify with the communicators (e.g., they are all the same ethnicity). Equally, groups of advocates diverse in their composition might be more effective when engaging a diverse public and developing solutions for addressing climate change. To earn confidence, Rowan et al. (2021) suggest the following steps:

1. Focus on listening to all parties to learn about their values and concerns.
2. Create face-to-face opportunities for discussions to create a more personal connection, ideally where target groups regularly gather.
3. Address questions raised by stakeholders: To gain their confidence, it's at least as important (if not more so) to answer stakeholders' questions rather than to provide the information that is considered to be most important by scientists.
4. Locate trusted opinion leaders (trusted messengers) and work with them. It is then critical to work as multidisciplinary teams based around scientific communication (scientists, communication experts, practitioners, stakeholders) to ensure trusted messengers are sharing accurate and helpful information.
5. Share information about the scientific process: People are often given scientific results but not the process that led to these results (e.g., the peer-review process) and therefore may not trust them.
6. Encourage lay stakeholders to have confidence in their own abilities and to enjoy contributions to science. This can be achieved, for example, through citizen science projects in which people are invited to conduct experiments.

A stands for awareness of a message: To create awareness, the following steps can be undertaken:

1. Describe impacts of climate change in familiar environments and timeframes. Reporting on consequences of climate change taking place in Alaska, for instance, is less likely to have an impact in Europe than in the U.S. The [Climate Matters program](#) is one effort to localize climate change reports.
2. Display the impacts of climate change with evidence-based stories or photos.
3. Make information on climate change available from familiar communication channels.
4. Lazard and Atkinson (2015; mentioned in Rowan et al., 2021) found that effective graphic design can increase awareness as opposed to purely text formats. Infographics on climate change are available from various sources such as Pinterest ([Profil de World Resources Institute \(WRI\) \(worldresources\) | Pinterest](#)).

U stands for understanding: The messages have to be easily understandable by the target groups, explained in a way that is relevant to them (rationally and emotionally). Climate change is difficult to grasp because it involves a series of studies in numerous scientific fields (biology, marine science, chemistry, and physics, to name a few). With any complex topic, it is important to address four roadblocks that stand in the way of understanding:

1. Lack of familiar terms: Hassol (2008; mentioned in Rowan et al., 2021) suggests, for instance, replacing “anthropogenic sources” with “human activities” to make the point more easily understandable.
2. Key terms not clearly defined: Explaining what a key term does not mean is as important as explaining what it does. It is also useful to give a range of examples and, if needed, to provide an incorrect example of the term and explain why it’s wrong.
3. Help lay stakeholders visualize complex structures and processes: To that end, one can use:
 - // Text and graphic cues (titles, legends, italics) to highlight key elements.
 - // Narratives that have a predictable structure that assists comprehension (problem, complication, resolution). A narrative with a concrete example can help people visualize the effect of climate change. The “mussel story” is one example: It states a problem (many animals are stationary and the Earth is getting warmer), a complication (some species such as mussels have dark shells that absorb heat in much the same manner that concrete does), leaving the resolution open (what can humans do to address this issue?).
 - // Analogies that resonate with stakeholders’ lives, if possible.
4. Address unverified theories: People often have theories that are inconsistent with established science. An example provided by Rowan et al. (2021) is that people often believe that living in a rural setting reduces one’s carbon footprint more effectively than city living. A way around this is to first create dissatisfaction with such theories (by questioning them, for example) and then present established scientific alternatives. For this to be efficient, lay stakeholders have to be open to new information.

S stands for support of decision making: People need to trust the process by which decisions are made and be able to analyze proposed policies to address identified issues. Arvai (2003) found that, even if people tend to disagree with a policy, they are more likely to accept it if it has been developed involving communities. Its development and adoption are then perceived as fair and reasonable, as opposed to when policies are imposed upon communities. Similarly, Rowan et al. (2021) illustrate that if people are provided with several solutions to address a problem (some being on a voluntary basis; others compulsory), they are more likely to find at least one acceptable to them.

E stands for enactment: Even though people are convinced about the necessity of taking action (agreement), they might still struggle to actually take action (enactment). The more integrated a behavior is into everyday life, the more difficult it is to change it. For example, choosing public transportation is a way to have a positive impact on climate change. Yet driving a personal car remains a default option for many.

It is therefore important for groups working to encourage climate change mitigation behaviors to identify numerous steps/actions, some of them easy, cost effective, and popular (such as phone apps that help users find eco-friendly products).

Implementation of the CAUSE model may seem complex. Not all the steps have to be followed precisely, and communicators should choose what is most appropriate to their context. We recommend that, for climate change communication to be effective and ethical, audiences' concerns and values be taken into consideration using the CAUSE model, and then the most appropriate communication objectives, messages, and media can be chosen. (For an overview of pros and cons of different media channels for climate communication, see Appendix B.)

Communicate a positive vision for the future to ensure support and engagement

Communicators may need to develop new strategies to engage the public in climate action beyond awareness and understanding of climate science. Much climate communication currently is either too alarmist or too soft. The "knowledge deficit model" for climate change communication has been widely criticized for being too simplistic, inefficient, and unfair when considering those opposed to scientific activities as uninformed or ill-informed. Yet it continues to be used in science communication in general and climate change communication in particular. For decades climate scientists have struggled to get people to understand climate science that links the impact of human activities releasing carbon emissions to climate change triggering extreme weather events. It is natural and effective to use alarmist messages and wake-up calls to help people understand what is happening. A significant amount of climate communication today is still attempting to make people aware of, and understand, what is happening. At a societal level, early climate communication has thus established the first three steps of the CAUSE model: Credibility, Awareness, and Understanding of climate science. Much of the current communication remains within these initial steps.

Educational tools are increasingly used to educate the general public about climate change, such as the [Climate Action Simulation](#), the [Climate Fresk](#), and the [Carbon Literacy Project](#). As people engage with climate science, they understand that aspects of their current lifestyle could be threatened and will need to change to sustain their well-being in the long term. For example, research using the Climate Action Simulation showed that people improved their knowledge of policies and actions needed to address climate change, and they felt more personally and emotionally engaged and empowered to make a difference (Rooney-Varga et al., 2020).

Societal debates about climate change are at different stages in different countries. Once a general Awareness and Understanding is achieved, the focus should be on Support and Engagement. An important way to build support is to communicate a positive common vision for the future. We need to communicate *not only why we need to change, but also how and what we wish to change* to improve our current situation. Any change process needs a positive vision of what we aspire to (Appelbaum et al., 2012). Thus, communicators need to essentially change their focus “away from problems” and, instead, adopt a solution focus. This solution focus can open our creative generativity and possibilities we hadn’t thought of before. A growing trend in public communication embraces this vision around the notion of “positive,” “impact,” or “solution” journalism (see, for example, [Sparknews](#)). In short, large-scale systems and behavioral change not only require bold targets but also a positive vision of what needs to be achieved and a realistic roadmap of how to do so.

The role of social norms and social contagion frames to foster climate action

Now that we have clarified what we wish to achieve and how to engage with citizens, we will discuss how we can use framing techniques to move on from awareness and intentions to actions. Indeed, large-scale behavioral change is needed to address climate change. The key question then becomes how we can ensure that changes are socially acceptable and develop into the new norm. How to effectively communicate to ensure this social acceptance and foster climate action is a critical question that concerns every business and political leader.⁴

Motivate pro-environmental behaviors through direct effects of individual action

Individuals must modify their behavior to address climate change so that others may see and emulate them. As previously stated, it is crucial to engage and motivate citizens to undertake pro-environmental behaviors at the individual level.

While many people claim that they wish to make better environmental decisions, pro-environmental attitudes and intentions do not always convert into pro-environmental actions (Yang et al., 2021). Different framing approaches may encourage environmental behavior, according to research in communication and environmental psychology.

⁴ This section is based on ongoing research of the COAST chair and refers to an experiment conducted by Doell et al. (2021).

The most common way of framing climate change is to emphasize the “direct” impact that an individual’s behavioral changes can have; direct frames make people aware of the effects of climate change and how they can act personally to lessen their individual impact (Odou and Schill, 2020). According to this research, people establish their attitudes after carefully considering information available, and these attitudes predict intentions, which convert into actual behaviors if people believe they can accomplish those behaviors effectively. Moreover, individual climate change adaptation behavior is influenced by three essential criteria: People must believe that the climate is changing; that they can respond effectively; and that their efforts help protect them from negative climate change impacts (Hornsey et al., 2016).

Present social norms to fuel intentions to change and encourage behavioral visibility

Communicators can help normalize beneficial climate actions. Social norms prescribe a range of behaviors that are socially accepted within a given group or societal context. Individuals conform to social norms as they seek to be socially accepted and legitimate and thereby imitate others’ behavior (McDonald and Crandall, 2015). Indeed, research has also found that **perceptions of whether others are engaging in climate actions strongly influence intentions to engage in climate action** (Hornsey et al., 2016). Communicators can use these descriptive norms to make people aware of “what is normal,” which encourages them to do the same. For example, communicators could convey that a certain percentage of the given population have decreased their trips by plane, or that people are increasingly using bikes instead of cars.

When individuals engage in environmental behaviors, they not only directly reduce their environmental footprint, but they can also indirectly influence their peers through “behavioral visibility,” which fuels mimicry by others (Leonardi and Treem, 2020). Since individuals act as role models for their peers, they have the power to change social norms (Eskreis-Winkler et al., 2019). For example, when a person rides a bicycle to work, they not only directly reduce carbon emissions but also indirectly contribute to spreading this behavior, as others who observe them may feel encouraged to do the same. The more people adopt a new behavior that is visible to others, the more likely a social norm will change (Iacopini et al., 2019).

Role modeling not only has an impact on others and the establishment of new social group norms, but it also validates one’s own identity as a member of a group, which has an impact on one’s own behavior, especially among peers. This produces a virtuous cycle that further encourages people to make long-term behavioral changes (Eskreis-Winkler et al., 2019). Communicators may thereby create a virtuous cycle if they make citizens and customers aware that they are “role models of climate action.” This framing creates and propagates new pro-environmental behavioral norms, and its impact on individual and collective behavior is also self-reinforcing in the long term.

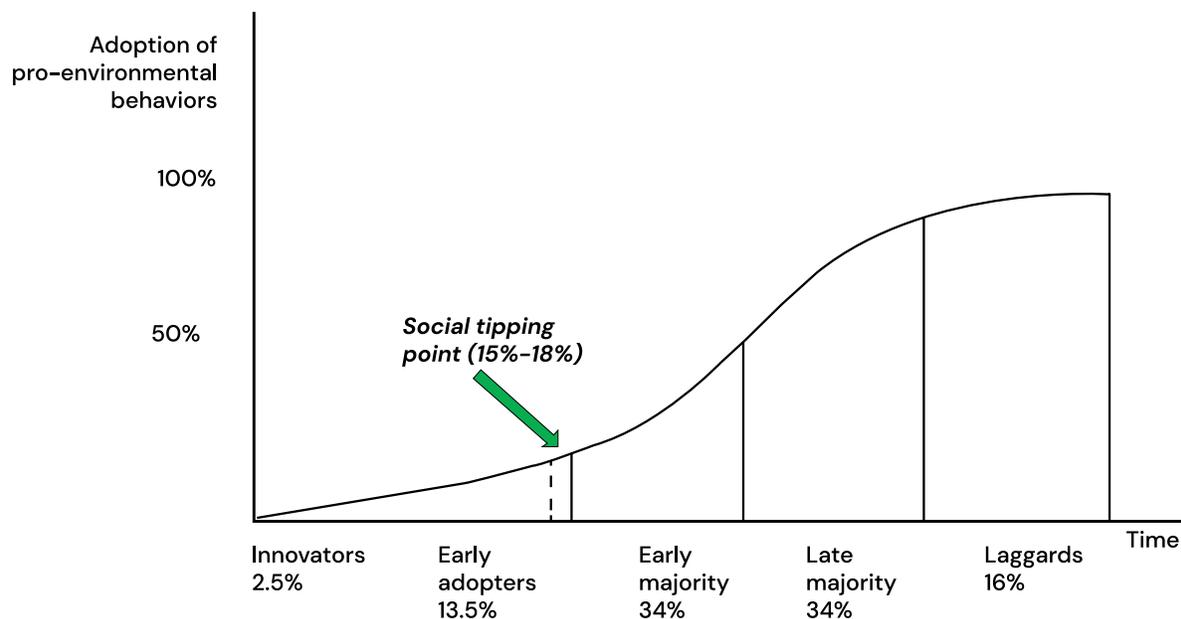
Signal contagion from individual action to the social tipping point to empower citizens

Furthermore, we propose that individuals will be more motivated to not only change their own behavior to have a greater direct impact on climate change, but also to make their activities more “behaviorally visible” to urge others to follow their lead. Every visible action taken by an individual or organization can influence others who observe it and encourage them to do the same.

This emulation of others’ behavior at the individual level spreads social norms at a societal level, a process referred to as social contagion (Frank, 2020). This is a crucial driver for accelerating behavioral change, as the adoption of pro-environmental behaviors by individuals triggers the social desirability and mimicry of these behaviors by others. A recent experiment conducted by the COAST chair at Montpellier Business School shows that framing climate action by making people aware of their influence through social contagion makes them indeed more likely to share their behavior with others (Doell et al., 2021). This could include sharing climate change information online, blogging about their own behavioral changes, having in-person talks with others about climate change, or engaging in visible pro-environmental behavior.

When people increasingly engage in these behaviors, we reach a social tipping point that makes climate action the new social norm (Otto et al., 2020). According to diffusion models, this social tipping point lies between 15% and 18% of the target population and implies the adoption of opinion leaders (Rogers, 1995). After this point we see an exponential increase of adoption, which diffuses the new behavior across the societal majority.

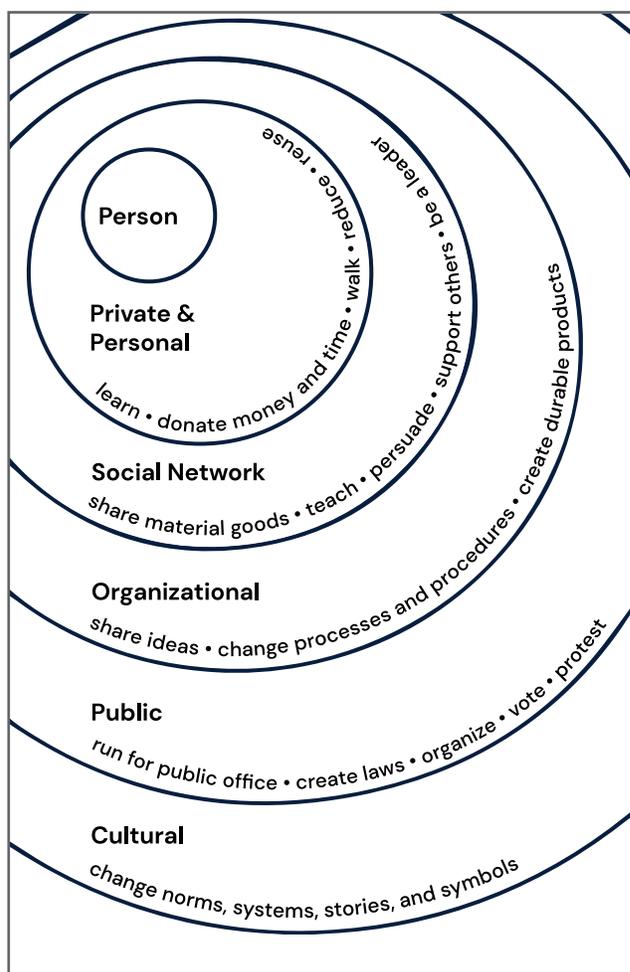
THE SOCIAL TIPPING POINT



Thus, social contagion empowers individuals to create large-scale societal change. When social norms and novel behaviors are posted on social media, allowing a large number of individuals to watch them with little effort, this behavioral visibility can have a significant impact on their diffusion (Leonardi and Treem, 2020).

In addition to influencing their peers through behavioral visibility and mimicry, as discussed above, individuals are empowered to signal to business and government what they want through their consumption choices, votes, or other forms of collective action such as organizing protests or community events. The following illustration by Elise Amel presents the varying levers of action that connect individual behavior to large-scale systems change.

SPHERES OF INFLUENCE AND INDIVIDUAL ACTIONS



This individual influence is even true internationally. For example, individual European and American citizens may collectively have a strong signaling effect to Chinese producers through their consumption choices. If we consider that, according to Eurostat, €383.4 billion (\$445 billion) goods were produced in China and consumed in the EU in 2020, we realize that European citizens are also indirectly responsible for high CO2 emissions of goods produced in China. EU and U.S. citizens thus have the power to influence international supply chains through their consumption choices. The Covid-19 crisis has also brought about increasing calls to re-localize supply chains, and clients increasingly value locally produced goods and services. Climate communication benefits from this trend if it makes people aware that they act for the climate if they consume fewer imported goods and more locally.

Recent research by the COAST chair suggests that, given the importance of behavioral visibility in stimulating the widespread changes in social norms we need to combat climate change, *both the performance and the sharing* of pro-environmental behaviors are important to reach social tipping points for the climate (Otto et al., 2020). Climate communication should include both direct and indirect influence of individuals to trigger large-scale behavioral change. Small actions that can be implemented in everyday routines are powerful in creating long-lasting behavioral change. Moreover, business and governments should **encourage people to engage in sharing their behavior and celebrating successes with others**. This encourages mimicry of those behaviors and creates a self-reinforcing effect on individuals' motivation to adapt their behavior on a long-term basis.

Do's and don'ts of communicating with young generations to engage with climate change

Climate communicators need to focus on the 15- to 25-year-old age group, since this segment of the population is the most concerned with climate change: Some 96% of European youth think that climate change is a "serious problem" (Special Eurobarometer 513 on Climate Change, July 2021).

However, this same generation, along with those over 55 years old, is the least inclined to take individual action to tackle climate change: Some 64% of "Generation Z" in the EU have adopted some climate-friendly activities in the past six months but are outperformed by the 25–39 (66%) and 40–54 (65%) age groups.

Even though those percentages are quite close, there are discrepancies in the 15- to 25-year-old generation between the level of concern about the issue at hand—the highest among all generations in the European Union—and the capacity to commit to everyday actions.

From this perspective, how can one communicate with 15- to 25-year-olds to fully engage with climate change?

It is crucial to focus on this segment of the population: Today's young people are the ones who will shape the future. While handling the negative effects of global warming, this generation will have to take urgent decisions to limit its impact. The latest Intergovernmental Panel on Climate Change report, released on August 9, 2021, insists that "every bit" of action matters.⁵

Climate science communication during the last decade has already displayed tangible results about how to engage this generation. In this section, we will present the most interesting results from this scientific literature with a series of do's and don'ts regarding how best to communicate climate change action.

Generally speaking, our focus is on Europe's Generation Z. However, we will focus on some specific EU member states and on other regions such as the U.S. and Canada. We will also refer sometimes to slightly younger or older age groups than the 15–25 category; when doing so, this will be explicitly stated.

⁵ IPCC report: 10 key takeaways from world's most comprehensive climate assessment, Daisy Dunne, *The Independent*, August 9, 2021.

Before providing some advice about communicating with this generation, we examine some details about their climate change engagement.

The specificities of the 15- to 25-year-old generation toward climate change engagement

The 15- to 25-year-old age group has (a) a very high level of concern toward climate change, but paradoxically (b) does not fully understand it as a scientific phenomenon. This results in (c) a relative low engagement in comparison with other generations. When they are willing to take action, they favor grassroots or community-led projects and consumption.

High level of concern

As stated, the level of concern toward climate change in Europe in comparison with older generations is very high. This outlook is also present in other regions of the world such as the U.S., albeit at a lower level: 70% of young adults between 18 and 34 worry about climate change compared to 56% of those who are 55 or older (Reinhart, 2018). In other words, global Generation Z is preoccupied with climate change.

Lack of deep knowledge

Being aware of an issue does not necessarily mean that it is fully understood. From this perspective, this generation has some difficulties comprehending the full extent of climate change. For example, a large proportion of young audiences—including those between 12 and 15 years old—in different regions of the world such as Europe do not see how climate change is different from the ozone layer depletion (Shepardson et al., 2009; Leiserowitz et al., 2011; Shepardson et al., 2011; Sternäng and Lundholm, 2012).

Consequence: Awareness-action gap

Even though Generation Z is aware of climate change, that awareness has not necessarily led to action among secondary-school students in five EU member states (France, Norway, Italy, the Netherlands, and Spain) (Dijkstra and Goedhardt, 2012). This has led to an awareness-action gap that has also been observed in the U.S. (Kollmuss and Agyeman, 2002; Meinhold and Malkus, 2005). Difficulty understanding it as a scientific phenomenon is one potential explanation. Therefore, explaining climate change as a scientific phenomenon is already an indispensable step, using the communication models presented above. Importantly, communicators then need to choose a preferred level of action to maximize impact.

Levels of action: Grassroots or community-led projects and consumption

From a political perspective, research by the European Council on Foreign Relations and YouGov research (2019) has shown that young Europeans are less inclined to vote than other age groups. Consequently, they are more inclined to commit to “grassroots or community-led projects or volunteering and charitable activities,” as research from the UK has shown (Ipsos Mori, 2013).

From a more business-based perspective, this generation has also discovered solutions to climate change in their roles as consumers. Indeed, research by Selma Kadic-Maglajlic et al. (2019) in Croatia and Slovenia reveals that “pro-environmental engagement and pro-social engagement are significant predictors of young adults’ pro-environmental and pro-social consumption behavior.” However, there is skepticism about how their consumption can have a real environmental impact. With that in mind, how can one urge Generation Z to engage with climate change action? Below are some do’s and don’ts when communicating with young audiences about this matter.

Do's when communicating on climate change with younger generations

Context

// **Do rely on “97% consensus” among scientists on climate change** (Corner and Roberts, 2014a) that gives an overwhelming agreement (free of business, economic, or ideological interests) about the human causes of climate change.

Communicators

// If possible, **do choose young people as messengers or use a trustworthy source like a scientist or a teacher** (Corner and Roberts, 2014a). As shown in Swedish high schools, teachers who discuss climate change in a solutions-oriented manner and from a positive perspective have more chance of inspiring “constructive hope” resulting in pro-environmental engagement (Ojala, 2015).

Target audience

// **Do talk directly to younger generations:** They are the ones that you want to engage on climate change.

// **But do also consider their influencers, e.g., their relatives (especially when dealing with teenagers):** Close relatives of youths shape pro-environmental behavior (see, for example, Grønhøj and Thøgersen, 2009, 2012, Denmark). In Sweden, the more young people talk about climate change with their parents, the more seriously they take it (Ojala, 2013). Unsurprisingly, parents are still the most relevant socialization agents for teenagers when climate change is discussed, according to Swedish (Ojala, 2013, 2015) and American (Stevenson et al., 2016) research.

// **If possible, do target your audience locally:** When communicating on the internet, young adults in the U.S. and Norway are more easily influenced when information fits their social and geographical context (Adams and Gynnild, 2013).

Message framing

// **Do keep your message simple:** If the information is too complex, it will not reach its target audience. Unsurprisingly, conflicting messages do not work, either.

// **Be specific in your message:** When inspiring young people to take specific actions to tackle climate change, it is important to be as precise as possible. For example, it is better to talk about “reducing the use of fossil fuels” as opposed to “decarbonizing the economy” (Corner and Roberts, 2014a).

- // **Do show how climate change is affecting everyone's lives:** In general (and this goes beyond the young population discussed here), people find more relevant immediate risks than future ones (Weber, 2006). In other words, do insist that climate change is happening now and is affecting their lives.
- // **Focus on what young people care about in their daily lives:** Strong evidence, within the British and American young populations, exists that climate change does impact “things people love” (Corner and Roberts, 2014b): family, friends, hometown, holiday destinations, etc. Therefore, relying on scientific facts about climate change is a mistake; creating human stories that refer to the daily lives of young people, their families, and their surroundings is the key. In brief, address what matters to your audience.
- // **Add some link to nature, such as animal life:** Climate change is about the deterioration of our environment. Making a link to the negative effects on animals increases pro-environmental activities by most adults (Schultz, 2000; Swim and Fraser, 2014), and Generation Z is no exception.

Communication medium

- // **Be visual:** Strong emotions can motivate teenagers to act after watching documentaries, such as “An Inconvenient Truth,” as UK research showed (Beattie, Sale, and McGuire, 2011). Research in Sweden by Ballantyne et al. (2016) and Strandbu and Skogen (2000) confirmed the importance of visual aids and intellectual TV shows in conveying a climate-related message to young audiences.
- // **Be playful:** Research shows (Feldpausch-Parker et al., 2012; Walsh et al., 2016) that using visualizing techniques in a game—like associating energy savings with economical costs—influences young adults’ attitudes to climate change. From this perspective, Ouariachi Peralta et al. (2017) have also confirmed the interest in using online games to educate and engage young generations in Spain. Simulation tools such as the Climate Action Simulation and the Climate Fresk mentioned above could be particularly appropriate.

Communication style and tools

- // **Be participatory:** Younger generations in different regions of the world are more likely to engage with climate change activities if they can do so through some educational or social means (Kagawa, 2007; Chawla, 2009; Senbel et al., 2014). From this perspective, peer-to-peer methods of engagement are key, such as sharing experiences of climate campaigns via social media (Senbel et al., 2014, Canada; Andersson and Öhman, 2017, Sweden). A recent study (Doyle, 2020), which targeted a group of 14- to 15-year-olds in the UK, drew some interesting conclusions: “Creative and participatory approaches encouraged sociocultural and emotional engagements with climate change, increasing young people’s feelings of efficacy.” When young people are encouraged to engage through participatory approaches, it helps them to act more effectively. These results have also been echoed by recent experiments featuring Montpellier Business School students in France (21- to 22-year-olds) and the participatory climate education workshop Climate Fresk (Doell et al., 2021).

Don'ts when communicating on climate change with younger generations

Context

// **Do not take for granted that climate change vocabulary is widely understood by younger generations.** This is obviously a consequence of the lack of deep knowledge about climate change that was described previously; communicating climate science is necessary to show how actions have impacts.

Message framing

// **Do not overuse negative messages:** Negative messages—including apocalyptic scenarios—about the consequences of climate change (intense heatwaves, flooding, etc.) are counter-productive: The lack of positive messages dealing with climate change in media and other communication channels leads to “pessimism” and “disempowerment” for young adults, according to research in the UK (Hibberd and Nguyen, 2013). However, you may still use negative content to grab your audience’s attention if it is complemented by positive messages.

// From the same perspective, **don’t convey messages designed to inspire guilt** (Corner and Roberts, 2014a).

Communicators

// **If you are a corporate organization, do not emphasize it:** Messages conveyed by corporate organizations are less likely to work on younger generations, according to research in the UK (Percy-Smith and Burns, 2013).

Communication style and tools

What about the role of celebrities?

—
There are very few studies about the role of celebrities in Europe.

In the U.S., celebrities may have an impact on people (and not only on Generation Z): Many Americans declare they are willing to be part of a campaign urging elected politicians to take action on climate change with public figures such as Greta Thunberg, Bill Nye “The Science Guy,” and Leonardo DiCaprio (Leiserowitz et al., 2019).

Furthermore, celebrities play an important role on social media platforms such as Twitter: When they quote the speech of green activists like Thunberg with their respective audience, the influence of the climate activist is multiplied (Jung et al., 2020).

// **Do not forget humor:** As surprising as this might sound with such a serious topic, using comedy to discuss climate change has been mentioned as a tool to engage young people in the U.S. (Osnes, Boykoff, and Chandler, 2019): When American students are part of the creation of comedy, they can convert negative emotions into positive ones and themselves become climate communicators. From an American perspective, Amy Becker and Ashley A. Anderson (2019) have studied experimental data with 141 persons (regardless of their age) and found that “one-sided satire offered by [satirical news website] The Onion ironically claiming that global warming is a hoax encourages viewers to engage in greater message elaboration and counterarguing.”

Conclusion

This report presented various aspects of communication as a key lever to support cultural-cognitive change for climate action. It discussed the role of emotions and how to address socio-psychological barriers to addressing climate action. We suggested transforming negative emotions into positive emotional energy through emotion-symbolic work, breaking a big challenge into smaller ones through engaging communication, empowering individuals across all societal spheres through collective action frames, and appealing to psychological well-being by focusing on happiness and cultivating intrinsic motivation to engage in environmentally positive behavior. Triggering negative emotions that are then transformed into positive emotional energy could be an effective approach to fuel climate action. To convert a negative moral shock into positive emotional energy, individuals need to also learn about simple actions to adopt and feel empowered to act, for example by cultivating a collective identity. This can be done through message frames that empower individual action and emphasize that people can collectively address complex environmental problems. Climate communication may also seek to overcome an overly materialistic understanding of happiness and instead insist upon psychological well-being that ensures more enduring forms of happiness that can intrinsically motivate environmental behavior.

We further discussed the role of science education and how to overcome barriers caused by miscommunication. We suggested building credibility through transparency and scientific rigor, adopting the right model of science communication, and communicating a positive vision for the future to ensure support and engagement. We proposed the CAUSE model of science education as an effective way of structuring climate communication processes to engage with customers and citizens. Accordingly, communicators need to first build credibility, then awareness, understanding, support, and finally engagement of their stakeholders. We proposed different ways of following the CAUSE model, and communicators can choose how to best adapt these steps in their context. We also suggested that communicators change their focus “away from problems” to “turn toward solutions,” since a solution focus opens creativity and new possibilities.

We discussed the role of social norms and social contagion frames to foster climate action. This can be undertaken by motivating pro-environmental behaviors through direct effects of individual action, presenting social norms to fuel intentions to change, encouraging behavioral visibility and indirect effects to foster long-term change, and signaling contagion from individual action to the social tipping point to empower citizens. We suggested that societal change can only occur if it is started by a few individuals who continue to spread the word to others. Behavioral visibility and contagion of individual actions is one of the key levers to diffuse large-scale behavioral change. Leveraging this contagion effect in climate communication is a useful technique to motivate long-term environmental behavior and spread the word about its benefits.

Finally, we proposed do’s and don’ts when communicating specifically with youth. In general, youth are very concerned about climate change but do not fully understand it and have, therefore, some difficulty finding the best path to action. Influencing them requires two levels of activity that are related with community-life/grassroot movements and consumption. From these two perspectives, it is essential to use young persons or trustworthy messengers (like scientists or teachers) to target Generation Z (with the option of considering their relatives). The message must be simple and specific and must demonstrate how climate change is happening now and has a direct impact on what youth are passionate about in their lives. Constructive hope must be central to the message for them to take action. Therefore, overuse of negative and guilt-inducing messages does not work. Adopting a visual, playful, and participatory approach is key.

This summary of the most interesting results of climate science communication of the past decade still does not cover some more specific questions: e.g., what is the precise impact of social networks such as Instagram to influence Generation Z on climate-related issues? A research in progress put forward by Felix Brünker, Fabian Deitelhoff, and Milad Mirbabaie (2019) has analyzed 1,129 comments on Instagram related to “Fridays for Future,” the movement of school students who skip Friday classes to participate in climate demonstrations. They demonstrate that participants “express group cohesion and emotional attachment rather than solidarity” in their collective identity but with no tangible conclusion yet for any organizations that would like to understand how they can influence Generation Z. Hopefully, more research will be published in the future about this pressing issue.

Appendix A: Aligning talk and action through complete carbon assessment and reduction

An exhaustive assessment of greenhouse gas emissions consists of accounting for all the direct and indirect emissions attributable to an organization’s activity. The recognized method for carrying out a complete carbon balance audit is based on the categorization of emissions into three scopes.⁶

Regulatory carbon footprint:

Scope 1: Direct emissions, released on the premises of the company by its installations and equipment. For example, a machine may require the combustion of fossil resources.

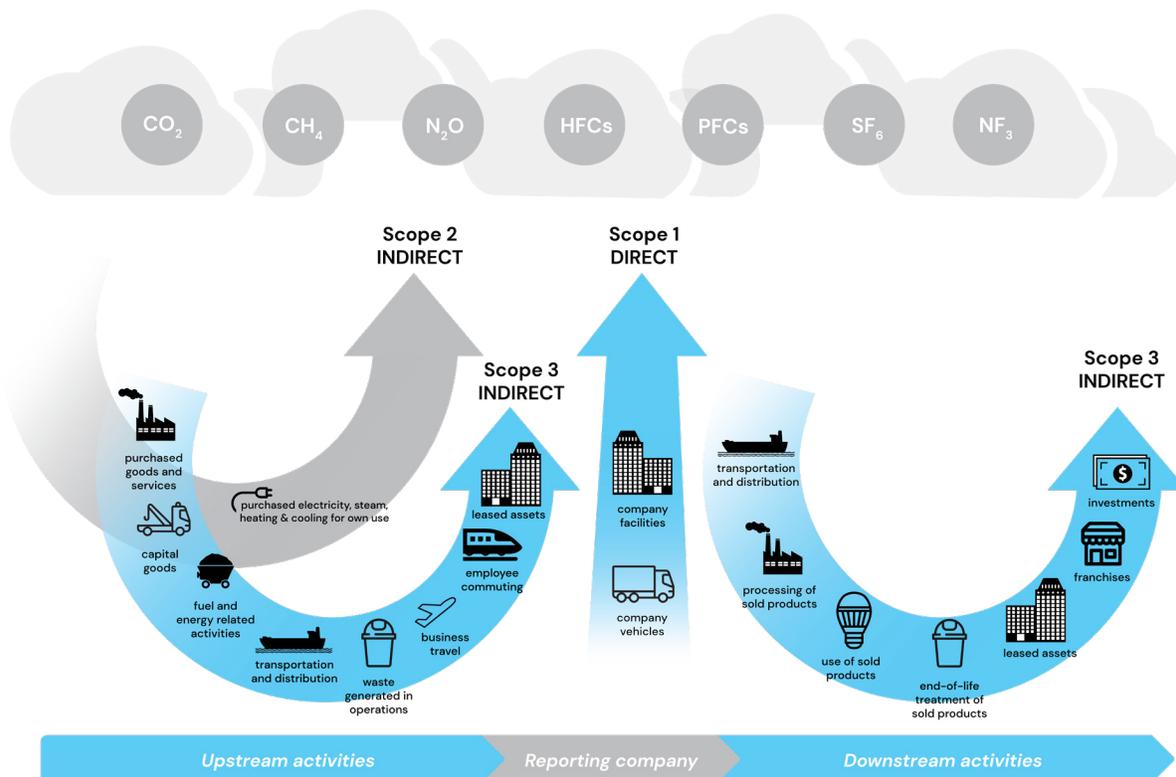
Scope 2: Emissions due to indirect energy consumption. For example, when a company consumes electricity, it does not directly release CO₂ on its site; it was emitted during production, upstream.

Complete carbon footprint:

Scope 3: For a carbon footprint to be complete, it is necessary to go beyond the regulatory framework and calculate its scope 3 emissions. There are upstream emissions due to the manufacture of products that the company acquires, and downstream emissions caused by distribution, processing of products sold, etc.

⁶ Green House Gas Protocol—Technical Guidance for Calculating Scope 3 Emissions—2013.

EMISSIONS CATEGORIZATION



In the industrial sector, as defined by the IPCC, scope 3 applies to more than 70% of its total emissions (Hertwich and Wood, 2018). In a report from the Science Based Target initiative,⁷ scope 3 is described as representing several times the weight of these two scopes combined; the Green House Gas Protocol states that this scope can account for 90% of the emissions of certain companies.

Despite its preponderance, scope 3 is not mandatory in the regulatory greenhouse gas emissions report. This means that a company can claim to be carbon neutral by omitting a whole portion of the emissions it should attribute to its activities, an issue that is receiving increasing attention from activists and legislators, as discussed above.

Nevertheless, better knowledge of scope 3 emissions can be very beneficial for companies: Awareness of the indirect emissions that an entity “inherits” from their choice of partners through the purchase of products or services creates an opportunity for all involved to take action over climate change. Working with suppliers is an effective way to increase a company’s impact by helping others reduce emissions, referred to as the “supply-chain multiplier effect” (e.g., Muller et al., 2012).

⁷ https://sciencebasedtargets.org/resources/legacy/2018/12/SBT_Value_Chain_Report-1.pdf Science Based Target—Best Practices in Scope 3 Greenhouse Gas Management—2018.

Appendix B: Advantages and disadvantages of various media channels

The table below provides examples of possible advantages and disadvantages of various media in terms of climate change communication. It is a summary of the literature review undertaken by Suldovsky (2017).

ADVANTAGES	DISADVANTAGES
Websites and blogs	
<ul style="list-style-type: none"> // Make information readily available to a large number of people. // Information can easily be updated. // Are generally inexpensive to create, maintain, and disseminate, allowing for a broader diversity of voices to have a platform. 	<ul style="list-style-type: none"> // Are passive platforms (users eventually choose if they want to be exposed to the messages) and thus suffer from selectivity bias. // Are fairly weak in their ability to persuade audiences who are not already in agreement with their messages. // Do not allow for targeted communication strategy across different groups. // Difficult for laypeople to distinguish credible scientific information from other information available (creating suspicion).
Social media	
<ul style="list-style-type: none"> // Allows communicators to connect with conversations outside of climate change and connect climate change with those issues in real time. // Can effectively connect climate change to other current events. // Broad dissemination and social amplification of a message (snowball effect). // Can sometimes function as a platform to create organizations to communicate about climate change.⁸ // Communicators can see what methods of communicating climate change information are trending or gaining traction with their audiences. // Allows for public dialogue and commentary between communicators, although there is no guarantee it will happen and it might not be done in a safe way. // Are generally inexpensive to create, maintain, and disseminate. 	<ul style="list-style-type: none"> // Can limit the amount of content one is able to post and could therefore lead to misinterpretations or be misleading. // Suffers from selectivity bias. // The amplification effect on social media can function to decentralize a message and remove it from the creator's control. As a result, social media can put messages at risk for lacking credibility.

⁸ For example, a climate change communication institution called the Climate Council was created via crowdfunding support on social media in Australia.

Mobile applications	
<ul style="list-style-type: none"> // Allow information to be mobile, where communicators can send and receive information wherever they go. // Can be continuously updated to reflect current trends and debates. // Allow users to examine their own climate impact in a way that is tailored specifically to their own activities and lifestyles. // Can make learning about climate change an interactive and fun process.⁹ // Cost effective. // Can easily move beyond the deficit model and integrate other models of public engagement if the creators choose to do so.¹⁰ 	<ul style="list-style-type: none"> // Apps also suffer from the selectivity bias. // Do not allow for a great deal of tailored communication or audience segmentation. // Engagement with mobile applications dedicated to climate change may decay over time given the singular focus of the apps, even for the most interested users.
TV and print news media	
<ul style="list-style-type: none"> // Have a very large audience base, giving them significant control over the way (and how often) the public thinks about climate change. They can thus influence the conversation about climate change at a global scale. // Media tend to be skilled at communicating to broad publics in comprehensible ways, and may therefore be more successful in making climate science accessible. 	<ul style="list-style-type: none"> // Journalistic norms of balance can lead the public to think there is no consensus within the scientific community, when there actually is. // People have different levels of trust in media, particularly about climate change. // Bring different perspectives to the way they frame climate change and ultimately affect the way their audiences understand it.¹¹

⁹ For example, the app [Skeptical Science](#) allows users to browse facts and common myths about climate change and connect with social media sites so users can easily pair information found on the app with their social media accounts.

¹⁰ Secchi, for instance, is a mobile app that encourages mariners to collect and upload data on phytoplankton so scientists can better understand the effect of climate change on marine habitats.

¹¹ For instance, Fox News has a dismissive tone toward climate change; therefore, viewers tend to be more skeptical toward the issue.

Documentaries and films	
<ul style="list-style-type: none"> // Using attention-catching visuals, audio, and narrative, they can elicit intense emotional responses from audiences, potentially leading to behavioral change.¹² // Documentaries and films can put pressure on government and regulatory agencies to respond. // They can shape popular culture and public dialogue about climate change and are capable of functioning as media agenda-setters. 	<ul style="list-style-type: none"> // They, too, suffer from the selectivity bias. // Their audiences can be small, and therefore they are unlikely to produce broad shifts in public opinion. // Can be extremely costly to produce and disseminate. // Films could lead people to regard climate change as a fictional issue.¹³
Books and literature	
<ul style="list-style-type: none"> // Can provide in-depth information about complex issues. // Communicators can frame climate change in any manner they choose, something they are less able to do with other communication media. 	<ul style="list-style-type: none"> // Can suffer from selectivity bias. // Audiences are fairly small and selective, given the effort required from them. // While books about climate change by solo authors generally do not represent the opinions of the scientific community as a whole, they may give audiences a faulty perception of scientific opinion. // Books can take a long time to create and are not easily updated, meaning they can quickly become irrelevant. // Books can be costly to write, print, and distribute.
Scientific publications and technical reports	
<ul style="list-style-type: none"> // Can fit a lot of information in one document. // They generally represent the perspectives of experts and opinion leaders on climate change, boosting the information's credibility. This is a key component to successful climate change communication. 	<ul style="list-style-type: none"> // Can be difficult for lay audiences to read and understand. // Can take a lot of time to compile and edit before being distributed to relevant audiences. // Can be costly to create and distribute. // Rely solely on the deficit model in that they focus almost exclusively on information dissemination to audiences who (presumably) lack that information.

¹²Jacobsen (2011) found that in areas where the film “An Inconvenient Truth” was shown, there was a 50% increase in the purchase of voluntary carbon offsets within two months following the release.

¹³The 2004 blockbuster “The Day After Tomorrow” showed global natural disasters as a consequence of climate change. Lowe et al. (2006) found that UK viewers experienced difficulty in distinguishing science fact from dramatized science fiction. As a result, they were less likely to believe in the likelihood of extreme climate events happening.

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About the Authors



Dr. Helen Etchanchu

—

Dr Helen Etchanchu is Associate Professor and Co-chairholder of the Communication and organizing for sustainability transformation (COAST) chair at Montpellier Business School, where she is also coordinator of the sustainability lab research and pedagogy group and referent for the UN Principles of Responsible Management Education (PRME). Her research explores the role of language, meaning, and legitimation dynamics in the sustainability transformation of our societies. Helen is member of several scientific councils and co-founder of OS4future. She published numerous professional articles, book chapters and research articles that appeared in *Journal of Business Ethics* and *European Management Review*.



Dr. Elsa Kassardjian

—

Dr. Elsa Kassardjian joined Montpellier Business School in March 2017 as the Head of Research Valorisation.

She defended her PhD in Education science in 2002 between Lyon (UCBL) and Paris (ENS Cachan) in France. During her PhD, she studied public perception of scientific topics such as GM food.

After a year as a Public and Government Affairs Specialist in Bayer CropScience (France), she worked as a consumer scientist and a consultant specialised in science commercialisation in Auckland, New Zealand. She kept working on public perception of science. She then spent more than 8 years at the University of Auckland as a senior project manager in charge of all strategic research-related projects (funding applications, science education, research communication...).



Dr. Adrien Jahier

Freelance consultant & trainer in ecological redirection and communication for Belgian, French and EU organisations

Main clients & partners : IHECS, hub.brussels, Time for the Planet, Scope (Intrasoft International), ICF Climate Center, GOPA Com., Sarbacane Software, EFAP Lille, Neoma Business School, Ecole Centrale de Nantes, The Climate Collage, Montpellier Business School, Université de Toulouse, Institut Rousseau, etc.

Lecturer (Polytech Mons) and guest professor (IHECS)

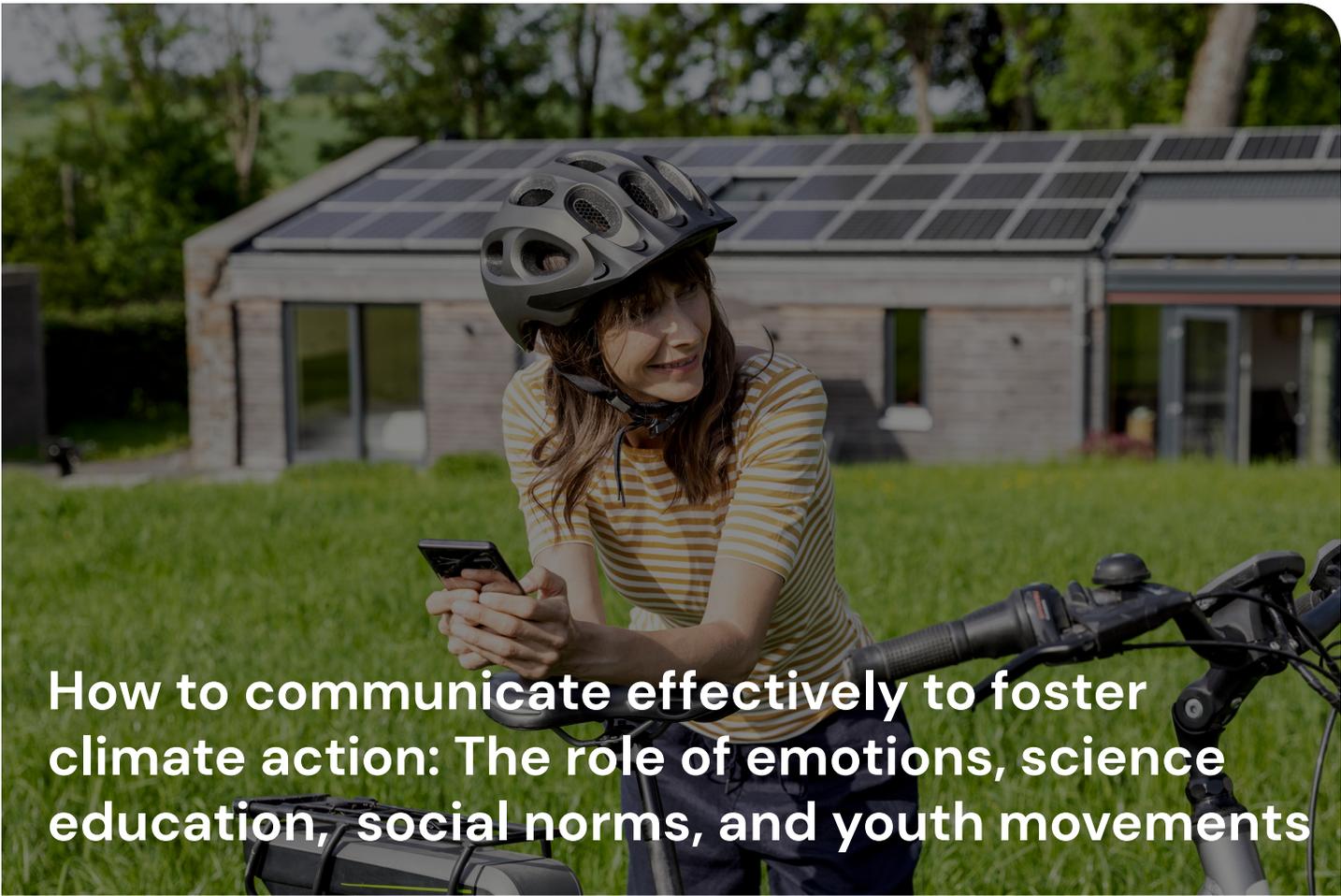
Keywords: ecological redirection, ecological communication, environmental communication, green communication, responsible communication, sustainable development, corporate social responsibility, climate change adaptation, carbon footprint, consulting, training, teaching

Mots-clés: redirection écologique, communication écologique, communication environnementale, communication verte, communication responsable, développement durable, responsabilité sociétale des entreprises, adaptation au changement climatique, bilan carbone, conseil, formation, enseignement



Elena Linczenyiova

Elena plays an integral role in the development of the project's communication and content strategy. Her role consists in analyzing the EU policymaking, providing in-depth policy expertise in wide array of policy areas (climate change, environment, energy, agriculture, health, green economy and digital transformation). Since 2019, Elena's priority focus is the EU climate policy and climate communication. She has been working on green public information campaigns (e.g. (DiscoverEU, Ding-Dong Challenge),) and specific climate-related challenges (sustainable corporate governance, CO₂-neutral certification, psychology of climate change, etc.). Elena is also the Senior Fellow at ICF Climate Center, the cross-company initiative which drives global reflection on climate change and brings under the same umbrella more than 2,000 in-house experts from across the world, specialising in climate, energy and environment.



How to communicate effectively to foster climate action: The role of emotions, science education, social norms, and youth movements

FOR MORE INFORMATION CONTACT:



DR. HELEN ETCHANCHU

H.ETCHANCHU@MONTPELLIER-BS.COM

+33 (0)4 67 10 60 54

DR. ELSA KASSARDJIAN

E.KASSARDJIAN@MONTPELLIER-BS.COM

+33467102815

DR. ADRIEN JAHIER

ADRIEN@JAHIER.BE

+32 4 67 12 42 37

ELENA LINCZENYIOVA

ELENA.LINCZENYIOVA@ICFNEXT.COM

+32 (0) 2 537 44 00 | +32 (0) 472 71 01 70 MOBILE

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