

Restoring our senses, restoring the Earth. Fostering imaginative capacities through the Arts for envisioning climate transformations

Diego Galafassi, J. David Tàbara, María Heras

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Art-science approach and ethics

1. Criteria for artworks production

Our goal in developing the artworks for this art-science process was to both bring participants into a powerful aesthetical experience while at the same time illuminating the challenges and opportunities of climate change (Barone & Eisner 2011).

Two guiding criteria were used to ensure that artworks could respond to the overall goal of the process, i.e. promoting aesthetical and emotional reflexivity, learning and empowerment. First, they would be participatory and second they would have a strong component of reflection where participants would be invited to further explore and reflect on the work from the science-led workshops through the qualities of the aesthetical experience.

As in all art-based research, the expressive voice, experience and perspective of the artists-scientists becomes central to the artworks and to the process as a whole. It is based on the experience of the artists involved that we adopted a range of artistic languages and practices from physical theatre, music, performance, film and installation. Had we worked with other artists it is likely that the emerging artworks would have evoked different conversations and reflections than those that were discussed in the research paper. This is in fact to be understood as one of the benefits of art-based approaches in that they produce partial, situated and contextual truths (Leavy 2015).

Another important contribution we explored is to see the artistic practice (in our case performance and installation) as a way to conduct a synthesis of the scientific analysis (based on input from the parallel science-led process) and upon that invite participants to experience that synthesis in the search for novel insights, in a process of “re-search” (Barone & Eisner 2011). For the creation of this synthesis we utilized the notion of “crystallization”. The idea of crystallization is to draw from a variety of sources and across sources which afford different forms of engagements or “takes” on a topic. According to Ellingson (2011) crystallization offers “a deepened, complex, thoroughly partial understanding of a topic. Paradoxically we know more and doubt more what we know. Ingeniously, we know there is always more to know”.

2. Assessing art-based research

Because of their evocative and situated nature, art-based research requires alternative forms of evaluation than those that underpin most conventional approaches to social inquiry. We entered this process fully cognizant of the need to avoid a positivistic approach. Some authors have argued for a move away from ‘rigor’ towards ‘vigor’ in the search of resonance, understanding, multiple meanings and dimensionality (Leavy 2015). We agree with authors that claim the assessment of art-based research requires a move from the question “is this good arts-based research?” towards “what is this art-based research good for?”, in other words focusing on what a particular artwork is capable of illuminating (Leggo 2008).

In order however to ensure that the artworks accomplished both their aesthetic and their evocative roles we used the following assessment approach (drawing from Barone & Eisner (2011), some with more emphasis than others.

- *Incisiveness*: the artwork should strive to go the core of climate transformations;
- *Concision*: a strive towards simplicity and minimal number of elements;
- *Coherence*: from top to bottom the artwork should hold as a unity and promote a coherent experience – our goal was not to disorient and puzzle participants;

- *Generative*: artworks were open to multiple interpretation and suggestive at various levels. Therefore, the artwork would lend itself less to the question “did I understand what it was saying?” and more to the inquiry “what did it help me see?”;
- *Evocation*: artworks would seek to evoke dimensions of climate change that were not (and perhaps could not be) illuminated by the science-led process. The artworks evoked feelings and thoughts.

3. Ethics

To complement more traditional social sciences that tend to focus on cognition and logical analysis, art-based approaches are evocative and seek to bring forth not only thoughts but also feelings. This brings important responsibilities and ethics issues that we discuss here.

The art spaces involve openness and at times vulnerabilities to be exposed and shared. We framed each intervention in an open way and explained that anyone could withdraw at any point without feeling that such gesture would impact the work in any way. Participants were also *invited* to the performances, i.e. they were not part of a formal program. All participation was voluntary, participants provided informed consent and were ensured data would remain anonymous and confidential.

Detailed description of the artistic activities

The four artistic activities presented below were conducted within IMPRESSIONS Iberian case-study. Two other performances were conducted within a final IMPRESSIONS workshop that brought together all case-studies of the project (Hungary, Scotland, Iberia, Europe and Central Asia). We direct the reader to the publication Tàbara, Jäger, Harrison et al. (2018) for further details on the artistic activities of the final workshop. These activities were not included in our dataset because they have been conducted after the first submission of the paper.

1. The Bond You Hold

The first year the process was conducted over a period of 4 months. A team formed by a physical theatre performer (Magdi Winnerstam), a film-maker and researcher (Diego Galafassi) and a sustainability researcher and theatre performer (María Heras), were invited by IMPRESSIONS researcher David Tàbara to contribute to one of these workshops through a performance to support the collective exploration. We engaged in a research process with the performer, integrating cutting-edge climate change knowledge from the Impressions project with body movement, video projections and sound. As a result, we created ‘The Bond You Hold’, a multi-sensorial physical theatre performance about transitions in Earth systems, embodying the dynamic relation between climate and humans in a world beyond 2°C warming:

<https://vimeo.com/219431632>

The performance included a debrief session at the end of the show. We asked each participant to write down a salient feeling and use that to explore the performance during the debrief (Figure 1). In doing so, we intended to bring fresh insights to discussions within the science-led workshop, by inviting other ways of thinking and acting in relation to climate change, more related to the emotional and affective responses that thinking about dystopic futures creates.

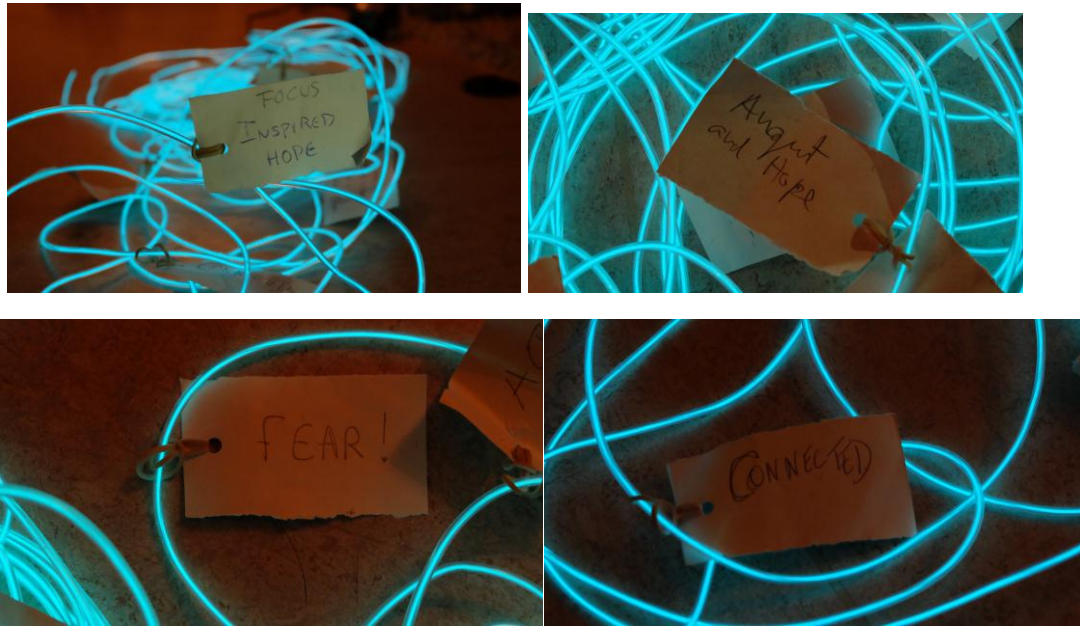


Figure S1. Some of participants tags used after the performance for the debrief session. Photo: Diego Galafassi

2. Wow Worlds!

In the second year, we explored the visual aspects of climate change, making use of a range of visualization techniques to foster a reflection on the kinds of images that motivate stakeholders to act, and images they hold about desirable futures.

2.1 Identifying visual narratives

We explored how various kinds of visual imagery affect stakeholder's motivations and sense of empowerment to act even in the context of difficult circumstances that HECC pose. We conducted an adapted form of Q-method analysis based on (O'Neill 2013) to identify visual narratives from the ground-up, i.e. how stakeholders narrate the ways in which certain sets of imagery empower or disempower their sense of agency in the face of difficult circumstances of HECC (Figure S2).



Figure S2. Participant during Perform2 conducting a q-method sorting. Photo: Diego Galafassi

2.2 Visualizations

We used various subjective process of visualization to tap into multiple sources of inspiration, emotional patterns and insights that underpin individual's visions. In one activity, during a travel activity along the Tagus river, we built on the relaxed atmosphere to stimulate lateral thinking and spontaneous emotional responses. In this space, a question was put "What does your desired future look like?". After a period of reflection participants were asked to describe through any means they pleased the types of images that were surfacing to their minds.

A total of 28 personal visualizations were created (out of how many participants), each representing one aspect of a desired future (Figures S3). A qualitative analysis was conducted by identifying themes appearing in these visualizations.



Figure S3. An example of a participant visualization during Perform2. Photo: Diego Galafassi

2.3. Reflexivity and Expressivity

During the science-led workshop dialogues, often participants would express desired aspects of the future. We collected these aspects and printed pictures that represented them. During one evening activity, a collection of 80 "images of aspects of desired futures" were offered to participants and instructions were given to choose images that best represented an aspect of the future they wanted. With these images a collective mural was developed. The primary objective of this tool was not develop a collage of the future, but to enact a reflection on the range of emotional and cognitive responses that different images created.



Figure S4. Participants have created a "visions mural" based on chosen images of desired future aspects. Photo: Diego Galafassi

A blank journal, an envelope and postage costs were given to each participant with the instruction to capture everything and anything they would regards as relevant for creating a future we want. Participants took their journals with them for a period of 6 months and posted by regular mail back to the research team.



Figure S5. Participant personal journals. Photo: Diego Galafassi

Table S1. Summary of multi-method approach with methods and practices used in the process.

Method	Motivation	Output
2.1 Identifying visual narratives	To understand the set of images that motivate people to act even under difficult circumstances	15 individual visual narratives about the ways in which visual imagery affect personal empowerment
2.2 Visualizations	To research for abstract images associated to dimensions of a vision	25 images described in text or sketch, one for each participant
2.3 Reflexivity and Expressivity: Personal journaling	To provide an open channel of expression	25 journals, one for each participant
2.3 Reflexivity and Expressivity: Vision mural	To co-create an associative mural of images related to the vision	Image-based vision mural

3. A-CORDA installation

The third year we worked with an interactive installation, open to the public exploring the four possible Iberian futures (as devised by the science-led process).

A-CORDA is a participatory installation inviting visitors to imagine the future that may unfold and also the future one would like to create. Transformative visions are required to generate the energy and momentum for change across scales as a response to climate change. Concept and installation was conceived and implemented by Diego Galafassi with concept collaboration with David Tàbara and drawings by Tone Bjordam.

At the center of the room, a rope spirals upwards from a table and opens up in mid-air into its four component strands. Each strand shoots out towards each of the four walls of the room. They split up further into their component strands forming a branching structure that nally connects to 4 drawings of possible Iberian futures. Each drawing captures the essence of the four possible futures developed

within Impressions Project knowledge co-creation process amongst scientists and practitioners from various societal sectors.

The table at the center is an interactive space where visitors are invited to contribute their dreams and visions for the future of the Iberian Peninsula.

A rope is composed of component strands which are twisted in the opposite direction of the rope. It is through the opposing forces and friction of the different strands that the whole stays together. The rope was used as a metaphor for how different visions and innovative solutions, not always going into the same direction, can work together to create a sustainable future.

Presented at Garcia Matos cloister at San Francisco Cultural Complex in Cáceres, Spain during September and October 2017.

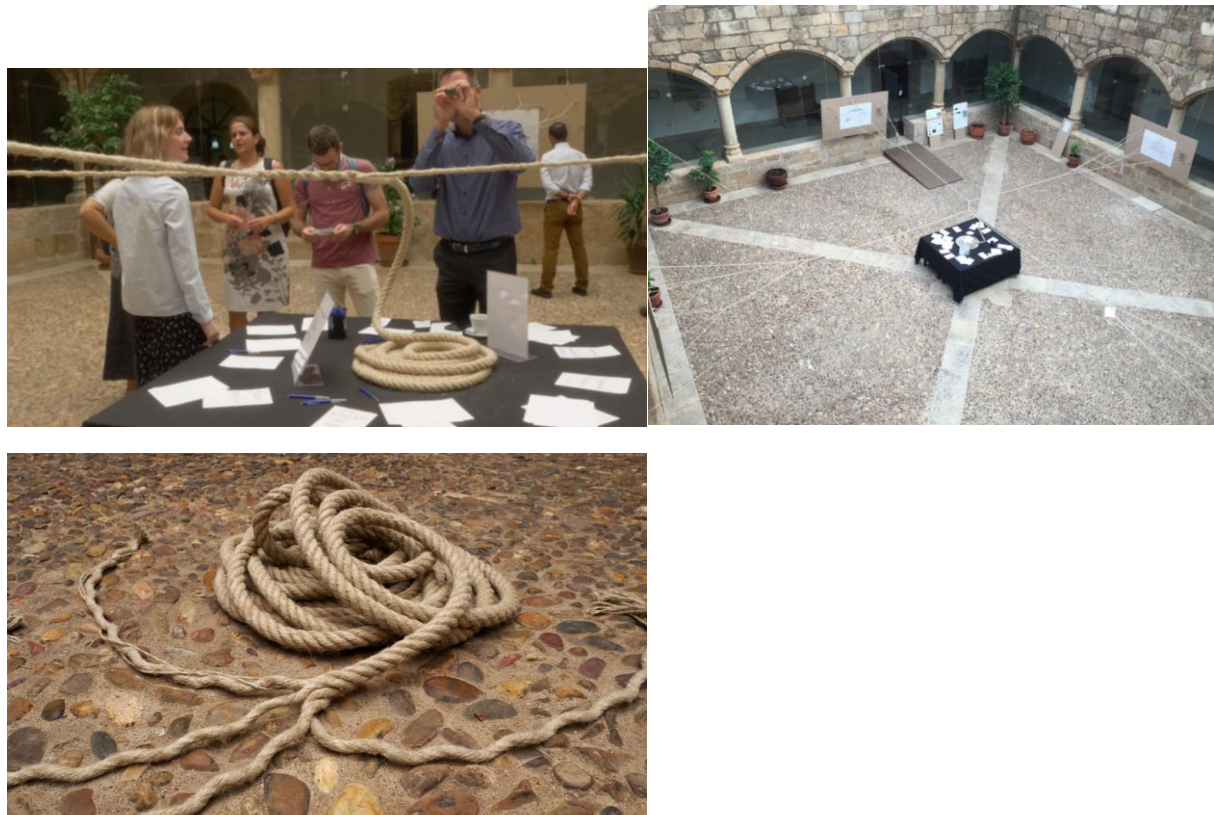


Figure S6. A-CORDA installation during public opening. Cáceres, September 2017. Photo: Diego Galafassi



Figure S7. Four Iberian scenarios interpreted by Tone Bjordam. See (Tàbara et al. 2017) for description of narratives. Photo: Diego Galafassi

4. WE ARE KNOT

WE ARE KNOT is an open-ended participatory performance exploring the edge of human motivation and willingness to act. Audience was brought up the stage where two actors were ‘bundled’ in an intricate web of knots. Initially audience was passive and only watched it passively. As the performance developed, following visual cues from actors, participants initiated to untangle the knot, up until the majority of participants became involved in the task. When actors were ‘untangled’ they utilized the whole space and by their movement brought together participants to the center of the stage. The final act was the projection of images from around the world and natural environments on the ceiling of the Auditorium. A debrief session started right after the performance, first in a bigger group and then in smaller groups.

Artistic production Diego Galafassi, Tiina Lehtimäki, Simon Deschamp and David Tàbara.

Performance space and one moment during the performance.

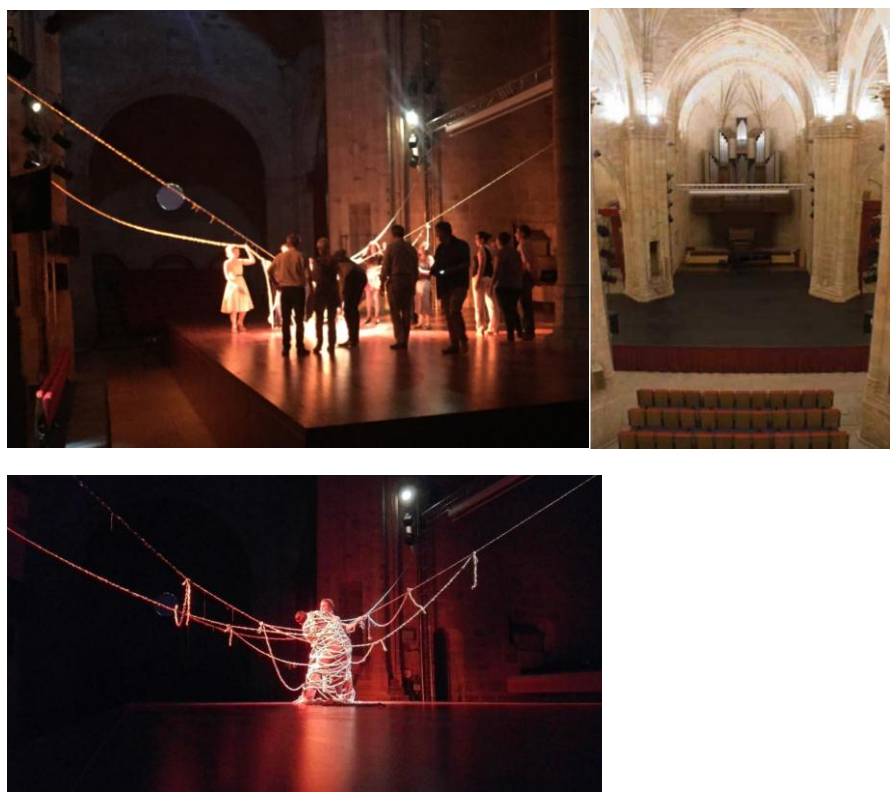


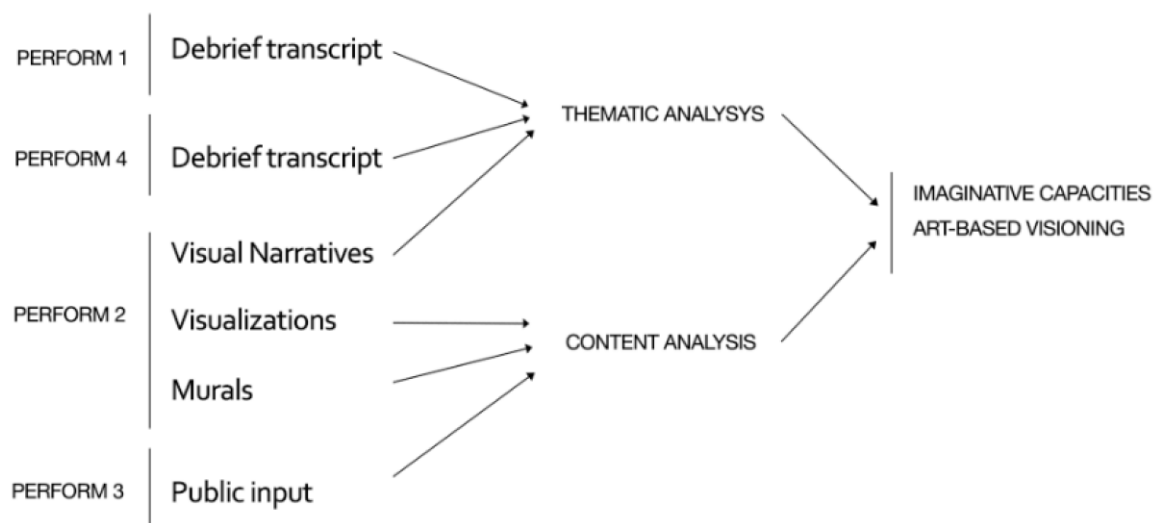
Figure S8. The venue and moments of WE ARE KNOT performance. Photo: Diego Galafassi



Figure S9. WE ARE KNOT debrief moments after the performance. Photo: Diego Galafassi

Summary of methodology and research process

The research process can be summarized in the following manner.



Coding sheet

List of primary questions for data analysis and the associated coding scheme used for each question. Quotes reflecting each code were selected and saved in Atlas.Ti software.

1. What climate-related themes were mentioned?

- Climate responses
- Colonialism
- Leadership
- Dynamics of collective action
- Understanding the will to act
- What hinders transformative thinking
- The power of understanding the problem
- Agency
- Visions for the future
- Self-identity

2. What are emotions mentioned?

- aha!
- anguish
- anxiety
- awe
- beauty
- connection
- curious
- empowerment
- fascination
- fear
- good
- hope
- joy
- pain
- peace
- power of emotions
- preoccupation
- pressure
- suffocating
- the will to act
- trust
- urgency

3. What are the perceived effects of this process?

- Connecting to next generations
- Creating metaphors
- Developing trust
- Developing trust and sense of togetherness
- Developing will to act
- Doing not talking
- Doing something together
- Empowerment
- Liminal spaces
- Linking knowledge and emotions
- Making knowledge tangible
- Opening up to the world
- Power of emotions
- Realizing agency
- Reflecting on owns behaviour
- Stepping out of reality
- Understanding the problem

4. What characterized the art experience in the performances?

- Beauty
- Complexity
- Contradictory
- Equality in contribution
- Fascinating

- Liminal
- Material - Physical
- Movement
- Paradox
- Participation
- Powerful
- Suffocating
- Strong

5. What imaginative capacities are mentioned and perceived as important?

- Creativity
- Opening the mind
- Questioning the current system
- Realising and questioning agency and role
- Feeling empowered
- Connecting to others
- Linking to climate change
- Climate change beyond technical

Supplementary Results

1. Illustrative quotes from thematic analysis of Performances debriefs

<p><i>“one thing is how you react individually and another how you react in a group. In an uncertain situation, we look very much to what the others are doing and just at that moment when someone realize, oh that’s what we need to do and then everyone goes. But it is often not an individual decision, it is something you decide by looking at other people” –</i></p>	<p>Linking art experience to climate knowledge: Imagination and knowledge co-creation through art experiences</p> <p>Theme > decision-making</p> <p>Perform2</p>
<p><i>P1: I think that also [taking a decision] depends on the mix of rationality and emotion, because he was visibly sweating, you feel like hum.. there is something wrong. But then indeed, we tend to analyze all the time so we think rationally. When do we reach the point in which we feel, ok I need to do something?</i></p> <p><i>P2: that moment when you decide to do something it is like a conversion. It is not a result of a multi-criteria analysis, it is like a moment when you go “I have to do it. Let’s do it!”</i></p>	<p>Linking art experience to climate knowledge: Imagination and knowledge co-creation through art experiences</p> <p>Theme > decision-making</p> <p>Perform2</p>

	Trust
<i>"It is important to link the academic research with the personal experiences of climate change. Societal change comes from combining great ideas with powerful emotions – the event helped bringing the two together."</i>	Linking knowledge and emotions > More-than-rational Perform1
<i>"I've seen that graph about the rising global temperature many times but this is the first time I've really felt it. You see.. the Earth is breathing in and out.. it actually created very strong emotions" - Climate Scientist</i>	Linking knowledge and emotions > More-than-rational Perform1
<i>"It is very hard to comprehend what is happening, and to get out of the reality that you are immersed in day-to-day. And today this experience made me take a very small step outside that reality that surrounds me. But this is a lot! It is very little, but is a lot."</i>	Stepping out of reality > Paradoxes and Ambiguities Perform1
<i>There is an incredible sense of urgency to the whole debate, and we are already doing this in many other projects, so we know this, we know [unreadable words]. But it is the first time that I really feel this happening and.. it creates the feeling of being trapped in something and the chances to find solutions are diminishing day by day and you made this very tangible [others agree]. And I think this is incredibly powerful to generate a sense of urgency that I think we need to have these types of projects, so really congratulations to this. Incredibly powerful.</i>	Emotions > Urgency Perform1
<i>Now "everything" is climate change, but not all is. We need to know who we "are" to improve our actions and to be taken seriously. – Perform2</i>	Self-identity Perform2

2. Visualizations analysis (Perform2)

Key themes characterising the visions identified via qualitative analysis:

- "Harmony with nature"
- "Healthy ecosystems"
- "Rich biodiversity that future generation can experience"
- "room for everyone"
- "a more just world"
- "tolerance and equal opportunities"
- "back to the origins"

References

- Barone, T. & Eisner, E.W., 2011. *Arts based research*, Sage.
- Ellingson, L., 2011. *Engaging Crystallization in Qualitative Research*, 2455 Teller Road, Thousand Oaks California 91320 United States of America : SAGE Publications, Inc.
- Leavy, P., 2015. *Method meets art: Arts-based research practice*, Guilford Publications.
- Leggo, C., 2008. Astonishing silence. *Handbook of the arts in qualitative research*, pp.165–174.
- O'Neill, S.J., 2013. Image matters: Climate change imagery in US, UK and Australian newspapers. *Geoforum*, 49(C), pp.10–19.
- Tàbara, J.D. et al., 2017. Exploring Institutional Transformations to Address High-End Climate Change in Iberia. *Regional Environmental Change*
- J. David Tàbara, Jill Jäger, Paula Harrison, Katharina Hölscher, Simona Pedde, Marco Grasso, Diana Mangalagiu, Kasper Kok, Francesco Lamperti, Ian Holman, Pam Berry, Jens H. Christensen, and Diego Galafasi (2018). *Design of Transformative Strategies*. EU FP7 IMPRESSIONS Project Deliverable D5.4.