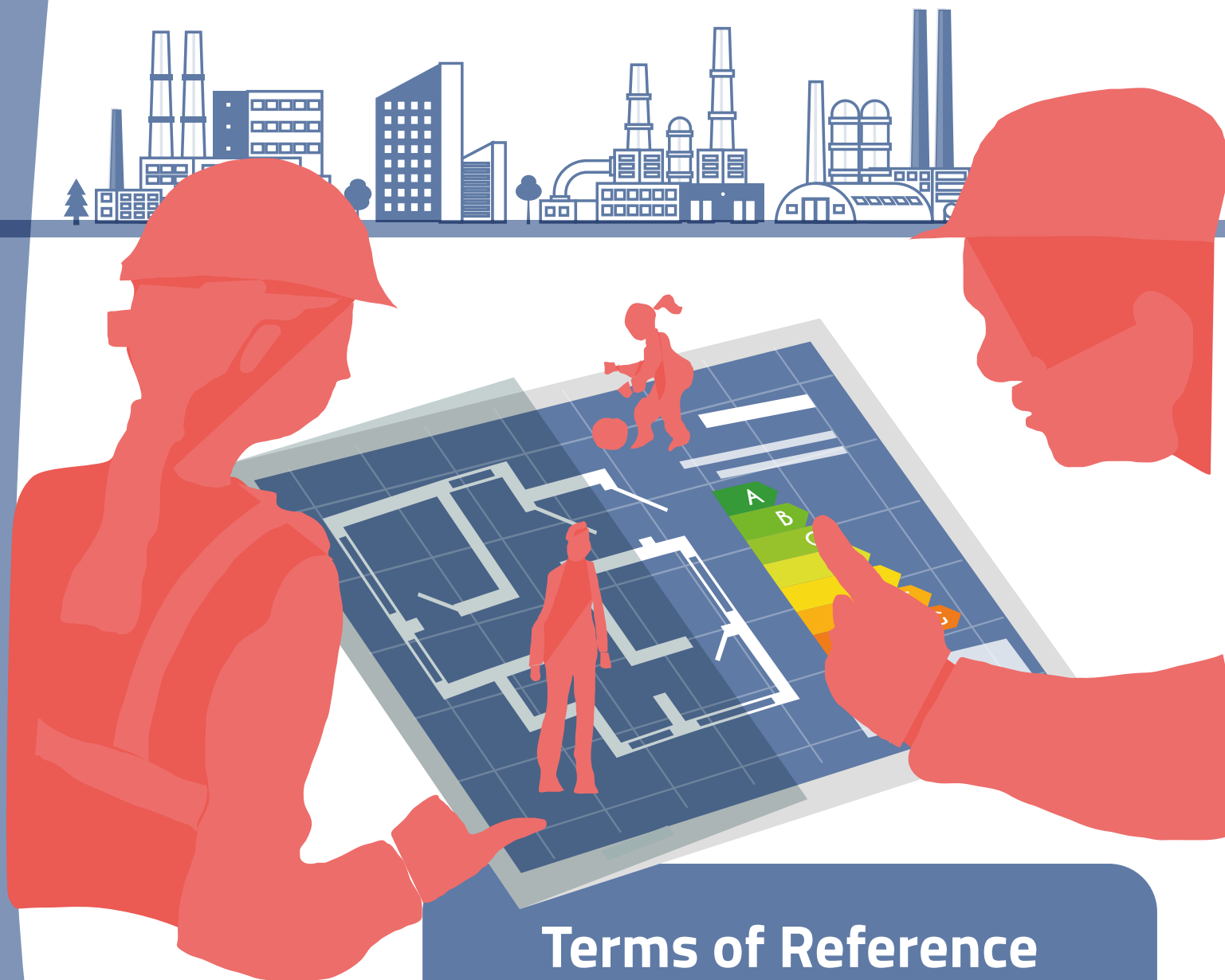




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# Terms of Reference

*Energy-SHIFTS*

*Working Group 3 – Energy Efficiency*



**Energy-  
-SHIFTS**

ENERGY  
SOCIAL SCIENCES &  
HUMANITIES  
INNOVATION  
FORUM  
TARGETING THE  
SET-PLAN

Chris Foulds  
Quentin Genard  
Thomas Berker  
Zareen Pervez Bharucha

November 2019

# Terms of Reference

## *Energy-SHIFTS Working Group 3 – Energy Efficiency*

November 2019

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# 1. Introduction

- 1.1.** The Energy-SHIFTS Working Groups – of which there are four<sup>1</sup> – will run from Autumn 2019 to Summer 2020. These will provide a detailed list of energy-related Social Sciences and Humanities (energy-SSH) priorities for the future of EU-funded research and innovation, specifically under its forthcoming Framework Programme 9: Horizon Europe<sup>2</sup>. This set of Working Group activities form part of the wider Energy-SHIFTS project<sup>3</sup> that aims to significantly improve the profile of and opportunities for energy-SSH in EU energy research and innovation funding policymaking. Energy-SHIFTS has a direct policy advice role to the European Commission’s Directorate General for Research and Innovation (DG RTD), and this Working Group will submit its recommendations to the Ecological and Social Transitions (C5) and the Clean Energy Transition (D1) units. There is real interest within these units to better understand what the energy-SSH research interests are from the energy-SSH research communities themselves.
- 1.2.** Horizon Scanning is a widely used set of methods that are used to gain ‘foresight’ about emerging opportunities and risks, identify knowledge gaps at the frontiers of fast-evolving phenomena, and set strategic priorities for decision-makers or researchers. Horizon Scanning is well-established within Europe, and most particularly within the

UK, where policymakers have recognised the need for taking heed of ‘early warning signs’ and taking a more proactive (rather than reactive) approach to complex problems. A variety of methods exist to do this, from exploring existing literatures to surveying experts in a field. The method we use in our Energy-SHIFTS Working Groups is a slightly adapted version of the Delphi technique previously used to identify, for instance, the top 100 questions for biodiversity, conservation and global agriculture<sup>4</sup>. This involves canvassing subject experts and their networks for their opinions on key knowledge priorities, categorising the answers, and reaching a joint consensus on the most important questions (up to a list of a 100, though shorter lists of say 10 key priorities, have also been produced).

- 1.3.** This particular document outlines the ‘Terms of Reference’ for Working Group 3 on energy efficiency. Specifically, we cover the main tasks, roles, responsibilities and ultimately boundaries of the work envisaged for this Working Group, and thereby also the steps it will take in conducting an Horizon Scan. This is one of the first publications associated with our Working Groups, and we hope it emphasises our ambitions to be policy-relevant, but also to crucially allow space for SSH ideas to take the lead in e.g. constructively reflecting on the assumptions embedded within associated energy policy and governance agendas.

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1 The set of four Terms of Reference follow a standard template, with identical content for all sections other than sections 2, 3.1, and 5, which are tailored.

2 For more details on the forthcoming €100bn EU Horizon Europe programme, see: [https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme\\_en](https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme_en)

3 [www.energy-shifts.eu](http://www.energy-shifts.eu)

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4 E.g. Pretty, J. et al., 2010. The top 100 questions of importance to the future of global agriculture, *International Journal of Agricultural Sustainability*, 8(4), 219-236.



## 2. Preliminary description of 'Energy Efficiency'

### 2.1. EU Energy Union and SET-Plan context

Energy efficiency is a central plank of the EU's Energy Union ambitions. The 2012 Energy Efficiency Directive was updated with an amending directive in 2018<sup>5</sup>; the headline energy efficiency target for the EU is now of at least a 32.5% improvement by 2030, in comparison to the 2007 modelling projections for 2030. As such, the EC slogan – 'energy efficiency first' – has morphed into strategically important energy policy design principle in recent years.

Energy efficiency also sits as one of the four core research and innovation priorities, within the fifth dimension of the EU Energy Union Strategy that aims to drive effective research and innovation. This energy efficiency priority then feeds into two of the 10 Strategic Energy Technology Plan (SET-Plan) 'Actions'<sup>6</sup> (p.12): "Action 5: Develop new materials and technologies for, and the market uptake of, energy efficiency solutions for buildings"; and "Action 6: Continue efforts to make EU industry less energy intensive and more competitive".

Based on these Actions, there have been two SET-Plan Working Groups with endorsed Implementation Plans relating to energy efficiency: "Working Group 5: Energy Efficiency Solutions for Buildings"<sup>7</sup> – interestingly, there is a dedicated section on 'non-technological issues', with some

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5 Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency. Available: [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L\\_.2018.328.01.0210.01.ENG](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.328.01.0210.01.ENG) [Accessed 22 November 2019].

6 COMMUNICATION FROM THE COMMISSION – Towards an Integrated Strategic Energy Technology (SET) Plan: Accelerating the European Energy System Transformation. C(2015) 6317 final. Available: [https://ec.europa.eu/energy/sites/ener/files/documents/1\\_EN\\_ACT\\_part1\\_v8\\_0.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/1_EN_ACT_part1_v8_0.pdf) [Published 15 September 2015].

7 SET-Plan Temporary Working Group 5 (2018) *Energy Efficiency Solutions for Buildings: Implementation Plan*. SET-Plan Information System: Brussels. Available: [https://setis.ec.europa.eu/system/files/set\\_plan\\_buildings\\_implementation\\_plan.pdf](https://setis.ec.europa.eu/system/files/set_plan_buildings_implementation_plan.pdf) [Accessed 22 November 2019].

SSH-lite considerations; and "Working Group 6: Continue efforts to make EU industry less energy intensive and more competitive"<sup>8</sup> – with particular reference to the steel and iron sector; chemical and pharmaceutical sector; heat-cold recovery; components; and system integration.

### 2.2. Definition of 'Energy Efficiency'

As a starting point for understanding the framings inherent to energy efficiency policies, we follow a conventional (yet broad) definition of energy efficiency, as laid out in the EU's 2012 Energy Efficiency Directive<sup>9</sup>: "energy efficiency means the ratio of output of performance, service, goods or energy, to input of energy" (article 2, point 4; p.10).

We recognise that 'energy efficiency' is also explicitly and implicitly used in EU policy documents to additionally denote energy saving behaviours. We, however, will not be using it in such a way; the starting point for our work will be the technological change associated with attempts to improve the input-output ratio of energy.

We further acknowledge that energy efficiency can be 'measured' and investigated at a range of scales – e.g. from changes to specific units of energy-consuming activities, such as cooking with an appliance, to changes to economy-wide or sectoral energy intensity. We thus remain open to considering ideas of energy efficiency at any and all scales.

Similarly, energy efficiency should be considered in terms of both the primary energy (i.e. not

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8 SET-Plan Temporary Working Group 6 (2017) *Implementation Plan: Continue efforts to make EU industry less energy intensive and more competitive*. SET-Plan Information System: Brussels. Available: [https://setis.ec.europa.eu/system/files/set\\_plan\\_ee\\_in\\_industry\\_implementation\\_plan.pdf](https://setis.ec.europa.eu/system/files/set_plan_ee_in_industry_implementation_plan.pdf) [Accessed 22 November 2019].

9 Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC. Available: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399375464230&uri=CELEX:32012L0027> [Accessed 22 November 2019].



accounting for the transformation and distribution of energy) and/or the final energy (i.e. at point of end-use, such as by the household in the home). This is reflected by the EU's absolute energy efficiency targets including measurements for both these aspects.

As per EU policy priorities, energy efficiency will also be considered in terms of both buildings (including energy used in e.g. the service or residential sectors) as well as industry (including energy used in e.g. the manufacture of goods and processing of raw materials).

### 2.3. Working Group example debates and scope

It is essential that we do not close down this Working Group's deliberations before they have even began, and, as such, herein we only provide some provisional ideas and illustrative examples for how SSH may engage with 'energy efficiency' as a (usually normatively-led) research topic.

**Beyond techno-economics:** we expect SSH to demonstrate its capacity to thematically move beyond questions of e.g. information provision, cost effectiveness, pricing strategies, social acceptance, etc.

**Evolution of energy services:** much of the SSH literature appreciates that the introduction of energy efficiency technology 'improvements' do actually represent an intervention in the lives of those that 'use' said technologies – whether in a professional or household sense. We hence expect that many SSH researchers may implicitly appreciate that the energy service evolves upon the introduction of energy efficiency technologies.

**Efficiency within wider discourses and systems:** efficiency arguments are often recognised as being embedded within wider discourses of modernity, progress, growth and competitiveness – as made clear within EU energy policy documents, such as the Clean Energy for All Europeans Package – as opposed to assuming that ideas and insights on (energy) efficiency can be unique to only energy.

**Beyond energy efficiency:** we expect complementary approaches may arise that go beyond the strict focus on improving a given input-output ratio – even as a starting point of relevance for the research – to, for example, load shifting, sufficiency, circularity, etc. Moreover, there has been much SSH debate on the value of chasing energy efficiency goals, rather than more deeply questioning why societies fundamentally demand energy.

### 2.4. Boundaries with the other three Working Groups

We now detail synergies and boundaries with the other three Energy-SHIFTS Working Groups.

**Renewables (WG1):** there are few obvious overlaps, given that renewables are predominantly a supply-focused issue, and energy efficiency is predominantly a demand-focused issue. CHP would likely be included in energy efficiency considerations.

**Smart Consumption (WG2):** similar techno-economic arguments are commonly made for both efficiency and smart technologies, whereby either individuals should e.g. rationally see the sense of purchasing efficiency/smart improvements to their home, or individuals should be bypassed by efficiency/smart technologies due to difficulties in getting people to 'see sense'. Efficiency and smart are therefore usually intertwined in the same arguments regarding energy demand reduction. This slight blurring is only compounded further when e.g. smart technologies are used as a means for delivering energy efficiency solutions, as the SET-Plan Working Group 5's Implementation Plan highlights, in the context of 'Digitalisation of construction' as a strategic issue for tackling industrial energy efficiency.

**Transport (WG4):** given that our primary focus will be on energy efficiency in buildings and industry, the energy efficiency of e.g. vehicles will not be tackled, unless raised in the context of wider framing/systemic issues.





## 3. Organisational structure and responsibilities

**3.1.** Working Group 3's activities will be organised and led by a Steering Committee, which will be made up of the following individuals:

- Chair: Chris Foulds, Global Sustainability Institute, Anglia Ruskin University (chris.foulds@anglia.ac.uk).
- Co-chair: Thomas Berker, Department of Interdisciplinary Studies of Culture, Norwegian University of Science and Technology (thomas.berker@ntnu.no).
- Critical Policy Friend: Quentin Genard, E3G - Third Generation Environmentalism (quentin.genard@e3g.org).
- Early-Stage Researcher: Efthymia Nakopoulou, Department of History and Philosophy of Science, National and Kapodistrian University of Athens (nakopoul@phs.uoa.gr).

**3.2.** The role of the Critical Policy Friend is to inform the Working Group of relevant ongoing policy debates. In particular, they will:

- Provide advice on initial setup and problem framing of the Working Group, as part of feeding into the Horizon Scan's original point of departure.
- Provide written comments on strategic important milestones (e.g. categorisations of the questions) and key outputs (e.g. final list of research questions) to ensure relevance for current policy debates and to suggest alternative framings if required.
- Sit in on 1-3 of the Working Group member interviews, to contextualise their understanding of SSH histories associated with energy efficiency.
- Reflect on the Working Group processes, debates and outcomes, as part of completing fieldnotes at selected moments.

**3.3.** The Working Group will include one Early-Stage Researcher (ESR). This ESR will not be participating in the Horizon Scan itself, but will be an invaluable

part of the Steering Committee co-ordinating the Working Group activities. Exact contributions and activities will be decided upon discussion with the Chair and Co-Chair. As a minimum, they will likely support on identifying further potential Working Group members, in addition to providing their own reflective fieldnotes.

**3.4.** The Working Group itself will be made up of 25-30 Social Sciences and Humanities researchers, from different disciplines and countries, working on various aspects of energy. All these Working Group members are expected to participate in the following ways:

- Respond to Horizon Scan questions, which focus on (1) identifying top energy-SSH research needs for Horizon Europe, and (2) providing supporting justifications. This is the mandatory, core requirement as a Working Group member. Members would also be encouraged to canvas their wider networks for input (e.g. their university's research groups, their professional associations, or even through relevant meetings they attend, etc.).
- Provide reflections that aid the Steering Committee in categorising the questions received and narrowing down the final list of questions to 100, through an iterative process of around three rounds.
- Sign off on the final list of e.g. 100 questions, including the opportunity to attend a virtual meeting to discuss these final questions with other Working Group members
- Whilst individual Horizon Scan responses will by default be anonymously presented, the Working Group members will automatically be entitled to be co-authors of the Energy-SHIFTS recommendations report (submitted to the EC DG RTD's energy strategy unit), as well as the subsequent journal paper. There is no an expectation to be actively involved in the writing of the final report, but there will be the opportunity to feed in beyond mere



participation in the Horizon Scan (should there be appetite).

- 10 members will be interviewed by the Chair and Co-chair. The aim of this interview is to get expert perspectives on the development of SSH research relevant to the Working Group topic, including important and emerging debates or ‘splits’, as well as the interviewee’s perspectives on how particular perspectives (if any) have been ‘mainstreamed’ into policy, why, and to what effect. The interviews will also provide an

opportunity to identify the new Working Group members, in filling the remaining final positions. This is optional and not a requirement for all Working Group members.

- Possibility of attending the SET-Plan 2020 Conference and/or the end-of-project Energy-SHIFTS 2021 Conference, to exchange ideas with the Energy-SHIFTS consortium as well as others involved in all four Energy-SHIFTS Working Groups. This is optional and not a requirement for all Working Group members.





## 4. Recruitment of Working Group members

**4.1.** To be eligible for Working Group membership, one must:

- Be invited to participate by a member of the Steering Committee, with sign-off from both the chair and co-chair necessary.
- Self-identify as a researcher, whether based in e.g. industry or academia.
- Currently work in SSH, even if their original training (e.g. PhD) was in Science, Technology, Engineering and Mathematics (STEM) disciplines.
- Currently work in a research role based in a country that is eligible for Horizon 2020 funded, i.e. EU member state or Horizon 2020 'Associated Country'<sup>10</sup>.
- Have significant insights in energy efficiency, evidenced through a clear track record in e.g. publications

**4.2.** Whilst we will primarily be recruiting Working Group members through targeted invitations, we also welcome informal approaches to the Steering Committee. We note that our priorities for recruitment of Working Groups members include:

- Gender balance, with at least 40% (target of 50%) non-male.
- Geographical balance in terms of the organisation's location, particularly regarding spread across the North, South, East, and West regions of Europe<sup>11</sup>. Within this, a diversity of countries is also essential.
- SSH disciplinary diversity, with at least 10 SSH disciplines included, as well as some selected previous experiences of working in STEM disciplines.
- Gatekeeper roles, whereby they e.g. manage research groups, run journals, have active roles in professional networks, etc.
- Frontrunners, who are e.g. challenging the status quo within the research field and ultimately advancing SSH perspectives – through, for instance, meaningfully pushing the boundaries of developing and applying novel theoretical perspectives.

<sup>10</sup> [https://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/3cpart/h2020-hi-list-ac\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cpart/h2020-hi-list-ac_en.pdf)

<sup>11</sup> As per the UN's Geographic Regions classifications for Europe's regions <https://unstats.un.org/unsd/methodology/m49/>.



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## 5. Names of initial Working Group members

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- Tessa Dunlop, Joint Research Centre, European Commission, Italy.
- Kirsten Gram-Hanssen, Danish Building Research Institute, Aalborg University, Denmark.
- Catherine Grandclément, R&D Department, Électricité de France (EDF), France.
- Eva Heiskanen, Consumer Society Research Centre, University of Helsinki, Finland.
- Florian Kern, Institute for Ecological Economy Research, Germany.
- Patrizia Lombardi, Interuniversity Department of Regional and Urban Studies and Planning, Politecnico di Torino, Italy.
- Ruth Mourik, DuneWorks, The Netherlands.
- Michael Ornetzeder, Institute of Technology Assessment, Austrian Academy of Sciences, Austria.
- Harald Rohrer, Department of Thematic Studies, Linköping University, Sweden.



## 6. Indicative timeline for Working Group activities

DATE	ACTIVITY
Sep 2019	Working Group ESRs selected.
Nov 2019	Working Group 'Terms of Reference' published.
Dec 2019	Methodological guidelines for horizon scanning approach published.
Jan 2020	Interviews (10 per Working Group) undertaken.
Jan-Feb 2020	Final recruitment of 25-30 Horizon Scan participants (i.e. Working Group members) per Working Group.
Feb-May 2020	Horizon scanning process to take place with Working Group members.
Jun 2020	Write-up and final analysis of Horizon Scans.
Jul 2020	Submit report of energy-SSH research needs for FP9 (Horizon Europe) to the European Commission's Directorate General for Research and Innovation (DG RTD).
Sep 2020	Publish accompanying Annotated Bibliography (one per Working Group).
Autumn 2020	SET-Plan annual conference, with possibility of side-event to formally announce the Working Group recommendations to the EU SET-Plan policy communities.



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## 7. Acknowledgements

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