Engagement methods
for climate, energy and mobility transitions

SSH CENTRE

Social Sciences & Humanities for Climate, Energy aNd Transport Research Excellence

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Editorial: using the infosheets toolbox to explore engagement

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This toolbox presents 13 one-page infosheets, each of which describes a different method for engaging stakeholders and citizens in climate, energy and mobility transitions.

The toolbox has been developed by the SSH CENTRE project (*Social Sciences and Humanities for Climate, Energy aNd Transport Research Excellence*) which engages directly with stakeholders across research, policy, business and citizens to strengthen social innovation, interdisciplinary collaboration, transdisciplinary policy advice, inclusive engagement, and SSH communities across Europe, accelerating the EU's transition to carbon neutrality. Our primary objective with the toolbox is to offer a resource that can aid those who want to use stakeholder and citizen engagement methods, and support them in doing so in a responsible and reflexive manner.

Addressing climate change requires us to make rapid, extensive, and unprecedented changes in all areas of society to decrease greenhouse gas emissions. If the EU's ambition to reach carbon neutrality by 2050 is to be reached, it is crucial to acknowledge that this transformation will involve significant interventions into individual lifestyles and societal organisation as we know it. Transitions towards low-emission societies will thus drastically change how we live our lives and require engagement of a broad base of people who are willing and able to advocate for change and make personal efforts to reduce emissions.

Consequently, attention on stakeholder and citizen engagement is increasing and it is now often recognised as a necessary part of decision-making on climate, energy, and mobility issues. Engagement methods are important tools for ensuring that decision-making processes are transparent, inclusive, and informed by the perspectives and needs of the communities affected by the decisions. In this sense, engaging stakeholders and citizens is crucial for successfully implementing new climate, energy, and mobility policies and projects. Not only can they lead to more effective solutions and greater community ownership, but also increase acceptance and trust.

However, whilst engagement methods can create new spaces for deliberation and inclusion, they can also reinforce unwanted social structures and power dynamics. When engaging with stakeholders and citizens it is thus important that we: (i) carefully consider *how* we do engagement, which includes recognising that different methods may be appropriate for different situations; (ii) are attentive towards issues of diversity and marginalisation; (iii) are reflexive about the assumptions that we take with us when we choose a particular engagement method; and (iv) have a clear plan for how the results will be used. If we are interested in creating meaningful interactions, we need to facilitate processes based on dialogue and thus need to build flexibility and feedback channels into engagement design, in order to allow the input to have impact.

We should also remember that conflicting opinions are likely to occur when difficult and complex issues are discussed, and that it is important that input is not down-played even when it may conflict with existing priorities and dominant political interests. Build-

ing trust requires acknowledging that everyone wants their voice to be heard, respected, and reflected (e.g. in measurable actions or discussions) and engagement methods such as those presented in this toolbox provide an opportunity to establish a mutually beneficial relationship by sharing visions, knowledge, expertise, and outcomes.

How to use the toolbox

Social Science and Humanities (SSH) scholars work at the forefront of novel engagement methods that aim to give participants real influence on decision-making. There are numerous methods available nowadays; our toolbox includes infosheets on 13 diverse engagement methods in order to support the selection process and demonstrate the wide variety available. The toolbox is intended to showcase some of the engagement methods particularly suited to address climate, energy, and mobility related issues.

The infosheets offer key information on benefits, participant groups, implementation processes, and expected outcomes for each of the methods. In addition, every method brings its own constraints, and the infosheets deliberately include cautionary notes on the limitations they carry. We hope they can inspire the choice of good solutions for creating participatory processes that are efficient in design and attentive towards the challenges and limitations each method brings.

While the sheets provide insights into the methods (particularly aimed at those new to each method) they do not offer a comprehensive understanding, and there are often various approaches to implementing each method with plenty of room for customisation. Therefore, we have also included real-life examples and a few resources as a starting point for further investigation before starting your own engagement activities[1].

Importantly, it is highly beneficial to involve Social Science and Humanities experts in implementing engagement activities as they can provide valuable insights in creating effective processes, analysing outcomes, and raising issues with decision-makers. Specifically, their involvement may be essential in identifying relevant participants, defining problems that can guide the activities, and rigorously evaluating data obtained from the processes.

Overview of the 13 methods

The 13 engagement methods showcased here have been chosen to cover a diverse range of public engagement approaches, as well as aligning with the expertise within the SSH CENTRE consortium partners. Some of the methods could be considered as wider methodological approaches (e.g. Co-creation), others have significant scope to be flexibly adjusted to different contexts (e.g. Storytelling, Living Labs), while some entail more fixed approaches (e.g. MAMCA, SIS).

In order to help navigate the collection, in the table on the following page you will find the selected methods with brief descriptions, where the SSH experts responsible for authoring each sheet are also listed. The methods are numbered in alphabetical order.

We hope this set of resources provides a useful window in to the world of engagement, and demonstrates how engaging with diverse perspectives strengthens decision-making processes by bringing both quality and quantity of ideas, as well as credibility and legitimacy.

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1   As a note for those outside academic institutions, who may not have access to academic journals, journal paper authors are usually delighted to provide access to their papers if you email them.

ENGAGEMENT METHOD AND AUTHOR(S)	BRIEF DESCRIPTION
1. Citizens' Assemblies Ester Galende Sánchez	Citizen Assemblies are a type of deliberative mini-public comprised of a group of lay citizens aiming to be representative of the broader society. Citizens undergo a process of learning and deliberation about a specific public problem and try to reach consensus in order to provide policy recommendations to decision-makers.
2. Citizen Science Gisle Solbu	Citizen Science is an engagement method where citizens participate voluntarily in scientific processes as researchers or data collectors. It entails addressing real-world problems with citizens scientists helping to develop research questions, conduct experiments, collect and analyse data or interpret results.
3. Co-creation Imre Keserü	Co-creation is a comprehensive approach to create designs, plans, services or products with the participation of end users. It can include multiple distinct participatory methods to involve people in the stages of problems mapping, co-design, co-evaluation and implementation.
4. Deliberative Forums Alevgul H. Sorman	A Deliberative Forum is a setting or space where a topic is brought up in a way that invites careful reflection and discussion among participants to contemplate lock-ins, actions and strategies forward to a problem in a constructive manner.
5. Horizon Scanning: Delphi Exercises Chris Foulds, Rosie Robison, Ami Crowther	Horizon Scanning draws on expert knowledge to signal future priorities for research, innovation and/or policy communities. This infosheet specifically looks at Delphi Exercises which, by returning multiple times to the same group of experts, identifies and refines recommendations.
6. Living Labs Helena Duchkova	Living Labs include research end users, often in specific locations or communities, to develop and test innovations in a real-life context. Their format is varied and they can be co-creative, or involve citizen science.

ENGAGEMENT METHOD AND AUTHOR(S)	BRIEF DESCRIPTION
7. Multi-Actor Multi-Criteria Analysis Geert te Boveldt	The Multi-Actor Multi-Criteria Analysis (MAMCA) takes stakeholder preferences explicitly into account when evaluating several project or policy options. MAMCA encourages stakeholders to reflect on what they want and on the rationale for these wants, which can facilitate reaching consensus.
8. Participatory Knowledge Mapping Luciano d'Andrea	Participatory Knowledge Mapping includes approaches and tools aimed at identifying and visualizing (through diagrams, graphs, workflows, tables, images, or geographical maps) knowledge residing within or among organisations, or in local communities.
9. Serious Games Christian A. Klöckner, Kristoffer S. Fjællingsdal	Serious Games are games designed to teach citizens about complex, systemic topics such as climate change, in an enjoyable and often sociable format. They can include computer games, board games, card games, role-plays, and games in Virtual Reality
10. Stakeholder-based Impact Scoring Geert te Boveldt	Stakeholder-based Impact Scoring (SIS) is a participatory assessment method used to predict the impact of a policy or project prior to its implementation by quantifying and visualising the negative and positive impacts on stakeholders.
11. Storytelling Sara Heidenreich, Melanie Rohse	Storytelling is a facilitation technique to help stakeholders with different backgrounds, experiences and points of view recognise and learn from the various perspectives that exist. Through facilitation that ensures everyone has a voice, it enables mutual understanding but not necessarily a consensus.
12. Transformation Labs Violeta Cabello	Transformation Labs (T-Labs) are long-term multi-actor processes with a particular emphasis on just and sustainable transformations. They are a new tool whose main value is in their experimental character and focus on reflexivity and learning, rather than necessarily finding solutions, and creating collective agency.
13. Transition Management Marianne Ryghaug, Susanne Jørgensen, Tomas Moe Skjølsvold	Transition Management seeks to enable breaking away from business-as-usual. It does so through developing transition pathways from 'locked in' situations where people and organisations may be stuck trying to addressing persistent problems. A central feature is the Transition Arena: a co-creative learning space whose goal is to develop radical ways of thinking.

Social Sciences & Humanities for Climate, Energy aNd Transport Research Excellence

Acknowledgements

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1. Citizens' Assemblies

Author: Ester Galende Sánchez (ester.galende@bc3research.org), Basque Centre for Climate Change, Spain

A Citizens' Assembly is a model or mechanism of deliberative democracy that brings together members of the public to deliberate on major policy questions and develop collective recommendations. Citizens' Assemblies are designed to improve decision-making processes in democratic states and are especially useful in dealing with highly polarised, contentious or long-term issues, including climate change. They are usually commissioned by public authorities (at any level), working with other partners such as non-profits or research institutions.

CITIZENS' ASSEMBLIES AT-A-GLANCE

- Democratic mechanism to enhance citizen involvement in decision-making.
- Requires significant human and financial resources, as well genuine commitment from decision-makers to receive and implement (at least some) citizens' recommendations.

Benefits

1. Enhances citizen involvement in political decision-making, and can make governance more inclusive.
2. Enriches the wider public debate and encourages informed deliberation on current policy questions.
3. Provides thoughtful policy recommendations and offers a nuanced picture of the decisions citizens would like to see implemented.
4. Can increase trust in democratic institutions and decision-making processes.
5. Helps counteract social polarisation and disinformation.
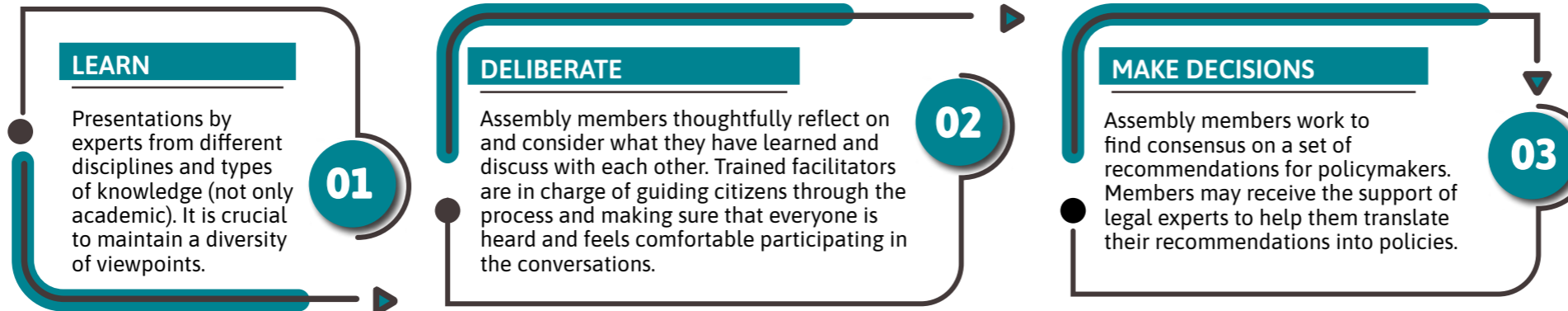
Challenges and limitations

1. **Governance:** Despite having many benefits, assemblies are not a bulletproof solution to all governance problems.
2. **Neutrality:** Offering participants unbiased, diverse and inclusive knowledge is a challenging task.
3. **Legitimacy:** The legitimacy of an assembly can be questioned by wider society if the process is not well run or well communicated.
4. **Trust:** The process may be seen as a tool for public relations or legitimation of policies already in place or being considered. In this case, it also risks decreasing trust levels.

Participants

Citizens' Assemblies involve a random sample of participants, which is usually stratified (e.g. involving individuals from every age bracket, gender or socioeconomic class) in order to try to represent a given population. The selection process needs to be handled with extreme care for the sample to be as representative as possible.

STEPS

In some cases, a consultation process takes place prior to the Assembly, in which the wider public can propose some topics to be discussed.

01 LEARN
Presentations by experts from different disciplines and types of knowledge (not only academic). It is crucial to maintain a diversity of viewpoints.

02 DELIBERATE
Assembly members thoughtfully reflect on and consider what they have learned and discuss with each other. Trained facilitators are in charge of guiding citizens through the process and making sure that everyone is heard and feels comfortable participating in the conversations.

03 MAKE DECISIONS
Assembly members work to find consensus on a set of recommendations for policymakers. Members may receive the support of legal experts to help them translate their recommendations into policies.

Most Assemblies include at least the following in their governance structure:
- **Advisory group:** Researchers and practitioners in charge of guiding design and implementation. The **facilitation and note-taking group** can be part of this group or another independent group.
- **Knowledge group:** Selects experts for the learning phase (step 1) so that it is as comprehensive as possible. In some cases, members of this group also review recommendations.
- **Secretariat:** In charge of logistics.

Timeframe: *Citizens' Assemblies require a significant amount of time (on average ~20 days) for citizens to deliberate on the issue at hand, as well as preparatory work and report writing. They may for example take place over one weekend per month for up to a year.*

OUTCOMES AND IMPACT

The main outcome is a report of detailed recommendations drafted by Assembly members, and directed to public institutions and authorities. Depending on the scale of the assembly, the reach may vary (local, national, etc.).
The tangible impact of these Assemblies depends on how decision-makers implement (or at least respond) to citizens' recommendations. Additionally, if the Assembly is properly implemented and communicated, it can generate a wider social debate, fostering social learning and deliberation on the policy issue.

RESOURCES NEEDED

All Assemblies require facilitation skills, organisational skills and active listening. In addition, in-person Assemblies require a venue and equipment for streaming plenaries. Online or hybrid Assemblies require a virtual platform for online discussions, software for online meetings, electronic equipment for vulnerable participants, as well as online training in managing these devices.

ONLINE/OFFLINE

Citizens' Assemblies have been conducted in-person, online and with hybrid formats. However, having some sessions in person (at the beginning and/or the end of the process) is recommended.

LEARN MORE +

participedia.net/method/4258 - Method: Citizens' Assemblies

Escobar, O., and Elstub, S., 2017. Forms of mini-publics: An introduction to deliberative innovations in democratic practice. *Research and Development Note,* 4(1-14).

OECD, 2020. *Innovative Citizen Participation and New Democratic Institutions: Catching the Deliberative Wave.* Paris: OECD Publishing.

Sandover, R., Moseley, A., and Devine-Wright, P., 2021. Contrasting Views of Citizens' Assemblies: Stakeholder Perceptions of Public Deliberation on Climate Change. *Politics and Governance,* 9(2), pp76–86.

REAL LIFE EXAMPLE: Citizens' Convention for Climate

Gathered 150 French citizens in 2019-2020 to deliberate on pathways to achieve an emissions reduction of at least 40% by 2030, in a spirit of social justice. Resulted in 149 policy recommendations to the National Government, see website for details.
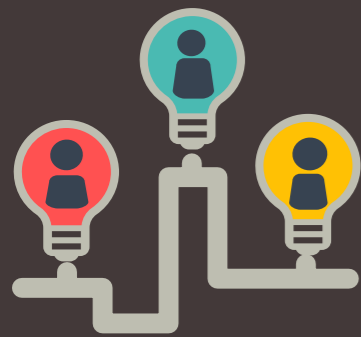
2. Citizen Science

Author: Gisle Solbu (gisle.solbu@ntnu.no), Norwegian University of Science and Technology , Norway

Citizen Science (CS) is an engagement method where citizens participate voluntarily in scientific processes as researchers or data collectors. CS entails addressing real-world problems, e.g. local pollution or climate change, with citizens scientists helping to develop research questions, conduct experiments, collect and analyse data or interpret results. CS often involves crowdsourcing voluntary assistance from a large group of individuals for online, distributed problem solving.

CITIZEN SCIENCE AT-A-GLANCE

- **Provides rich datasets, inclusive, can raise awareness, makes research accessible.**
- **Requires digital platforms and medium-to-long term funding.**

Benefits

1. Can massively increase the data available for monitoring and decision-making at (potentially) low cost.
2. Supports citizen inclusion, with CS participants able to have greater influence in decision-making.
3. Creates platforms for engagement where citizen scientists learn about open research questions and solutions.
4. Democratises research through the sharing of information between researchers and non-researchers.
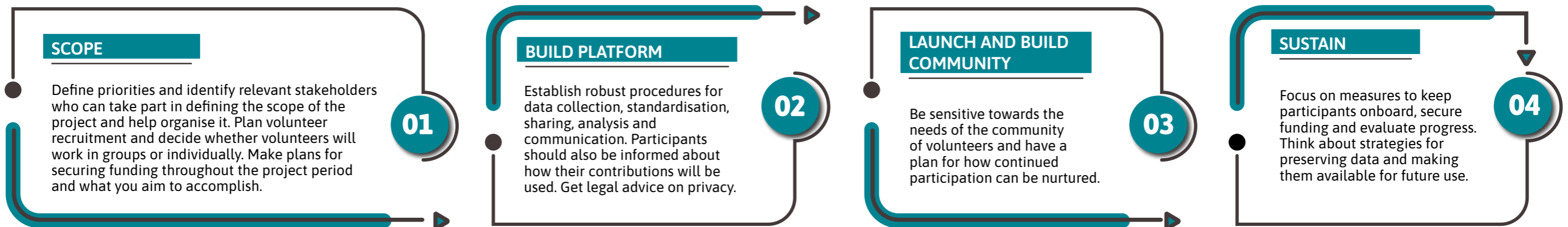
Challenges and limitations

1. **Organisation:** lack of volunteer interest, participant drop-out, maintaining funding over an extended period.
2. **Data collection:** fragmentation or inaccuracy, inconsistent participant approaches. This can lead to mistrust in the credibility and comparability of CS data. Need to ensure robust legal protection of personal data.
3. **Data use:** lack of uptake of CS data due to collection concerns or availability restrictions. Some scientific journals pose restrictions on the use of volunteer-collected data.

Participants

CS initiatives are often open to everyone, regardless of age, profession, background, and skill. Whilst they may be more likely to attract volunteers who are already interested in the subject, they can also be used to engage new groups, for example by targeting design for school classes. They typically seek the largest possible number of volunteers. Digital platforms enable CS to be organised around issues which are geographically spread.

STEPS

SCOPE

Define priorities and identify relevant stakeholders who can take part in defining the scope of the project and help organise it. Plan volunteer recruitment and decide whether volunteers will work in groups or individually. Make plans for securing funding throughout the project period and what you aim to accomplish.

01

BUILD PLATFORM

Establish robust procedures for data collection, standardisation, sharing, analysis and communication. Participants should also be informed about how their contributions will be used. Get legal advice on privacy.

02

LAUNCH AND BUILD COMMUNITY

Be sensitive towards the needs of the community of volunteers and have a plan for how continued participation can be nurtured.

03

SUSTAIN

Focus on measures to keep participants onboard, secure funding and evaluate progress. Think about strategies for preserving data and making them available for future use.

04

Timeframe: CS initiatives require substantial planning which make them more suited for mid-term to long-term (e.g. 5+ year) projects

OUTCOMES AND IMPACT

CS produces large datasets; examples of data include photos and geo-tag registrations of climate impacts or plastic waste at beaches. Both qualitative and quantitative data can be collected, but CS methods are most beneficial when data collection is labour-intensive or involves field-based activities over extensive spatial and temporal scales. Results from CS initiatives can generate knowledge used to inform decision-making on local, national and global level levels and push scientific progress, while also involving the public in sustainability issues.

RESOURCES NEEDED

Specific equipment needs will be based on CS topic but generally include a robust technical and organisational infrastructure for data collection, data storage, data processing and data analysis. In addition, CS initiatives will often demand scientific skills related to data collection, data management, analysis and communication; training of volunteers; knowledge of digital platform use.

ONLINE/OFFLINE

CS often involves participants collecting or registering physical evidence. Digital platforms for registration and categorisation of material are highly beneficial.

LEARN MORE +

https://www.ecsa.ngo/ecsa-guidelines-and-policies/#documents – The European Citizen Science Association has produced 10 principles of citizen science

https://scistarter.org/citizen-science - database collecting CS initiatives from around the world

Bonney, R., Cooper, C. B., Dickinson, J., Kelling, S., Phillips, T., Rosenberg, K. V., & Shirk, J. (2009). Citizen science: a developing tool for expanding science knowledge and scientific literacy. *BioScience*, 59(11), 977-984.

Conrad, C. C., & Hilchey, K. G. (2011). A review of citizen science and community-based environmental monitoring: issues and opportunities. *Environmental monitoring and assessment*, 176(1), 273-291

REAL LIFE EXAMPLE: ISeeChange

www.iseechange.org is generating a community record of climate change and local pollution by combining observations and photos from citizens with cross-referenced real-time data on weather conditions. The project operates on a global scale, demonstrating the potential for CS projects to address problems that are geographically dispersed.

3. Co-creation

Author: Imre Keserü (imre.keseru@vub.be), Vrije Universiteit Brussel, Belgium

Co-creation aims to solve physical or social issues that affect people's lives (e.g. unsafe roads, lack of greenspace) by actively involving the public in the identification of the problem, designing and evaluating solutions, and then implementing them. It refers to forms of public participation where there is a high-level of citizen involvement rather than just informing or consulting them after solutions have been designed by experts. It can be implemented as part of a research-led 'Living Lab', or to support planning processes led by local authorities, civil organisations or private entities.

CO-CREATION AT-A-GLANCE

- **Improves the outcomes of design and planning processes through a high level of citizen participation.**
- **Requires organisational, workshop facilitation, consensus building and negotiation skills, as well as expertise in supporting citizens to test their ideas.**

Benefits

1. Improves the outcomes of design and planning processes by involving end-users.
2. Empowers communities and builds community capacity to facilitate bottom-up innovation.
3. Builds consensus around solving concrete problems by considering the needs and ideas of all stakeholders.
4. Supports the democratisation of planning by involving citizens in developing solutions rather than just informing them.
5. Develops shared ownership of problems and solutions.

Challenges and limitations

1. **Longer timeframe** than traditional planning approaches.
2. **Decision deadlock** if there are too many conflicting ideas without consensus.
3. **Requires significant investment** in resources as the process is recommended to be led by an experienced facilitator.
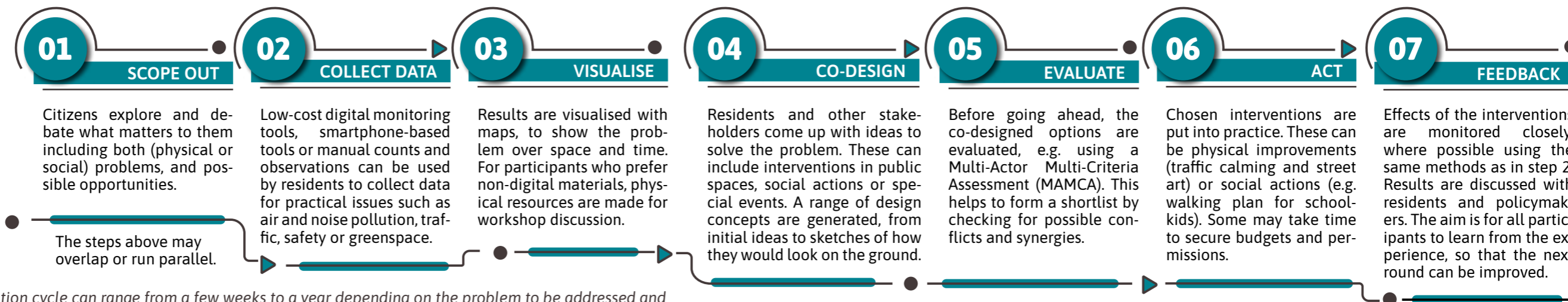
Participants

Co-creation should ideally involve all relevant stakeholders who are affected by or have a significant influence on the project, policy, or service being considered – including citizens, businesses, policy makers and researchers. Co-creation can be adapted to the needs of specific stakeholder groups. **Those implementing co-creation usually aim to engage all parts of the community, particularly those who are often excluded in some way.**

STEPS

This example co-creation process was developed by the Looper project – see 'Real Life Example' for further details:

01 SCOPE OUT
Citizens explore and debate what matters to them including both (physical or social) problems, and possible opportunities.

The steps above may overlap or run parallel.

02 COLLECT DATA
Low-cost digital monitoring tools, smartphone-based tools or manual counts and observations can be used by residents to collect data for practical issues such as air and noise pollution, traffic, safety or greenspace.

03 VISUALISE
Results are visualised with maps, to show the problem over space and time. For participants who prefer non-digital materials, physical resources are made for workshop discussion.

04 CO-DESIGN
Residents and other stakeholders come up with ideas to solve the problem. These can include interventions in public spaces, social actions or special events. A range of design concepts are generated, from initial ideas to sketches of how they would look on the ground.

05 EVALUATE
Before going ahead, the co-designed options are evaluated, e.g. using a Multi-Actor Multi-Criteria Assessment (MAMCA). This helps to form a shortlist by checking for possible conflicts and synergies.

06 ACT
Chosen interventions are put into practice. These can be physical improvements (traffic calming and street art) or social actions (e.g. walking plan for school-kids). Some may take time to secure budgets and permissions.

07 FEEDBACK
Effects of the interventions are monitored closely, where possible using the same methods as in step 2. Results are discussed with residents and policymakers. The aim is for all participants to learn from the experience, so that the next round can be improved.

Timeframe: A co-creation cycle can range from a few weeks to a year depending on the problem to be addressed and the number of people involved. It is, however, advisable to keep activities compact in time in order to avoid losing participants due to long breaks between different stages.

OUTCOMES AND IMPACT

Co-creation generally results in policies, services, products, or new designs for public or private space (e.g. transforming roads to pedestrian areas). It can help to support: democratic decision making; behavioral change by co-creating strategies for the reduction of carbon emissions; and the emergence of new ideas through bottom-up innovation

ONLINE/OFFLINE

Co-creation can take place online and/or offline. One of the advantages of online co-creation is that it can allow the participation of a wider range of people at a time that suits them. There is, however, a requirement of internet access and a suitable device. Offline, i.e. physical co-creation can be implemented through workshops and events, where the number of participants may be reduced, but the interaction between them may be more intensive

RESOURCES NEEDED

Experienced facilitation is essential in order to support citizens through the complex co-design steps outlined above. Several steps may require specific software or design tools

LEARN MORE

https://civitas.eu/resources/big-messages-lessons-for-co-creative-mobility-initiatives-in-neighbourhoods - Lessons from four projects: Cities-4-People, METAMORPHOSIS, CIVITAS SUNRISE, and LOOPER
https://cities4people.eu/en/citizen-mobility-kit/index.html - Citizen mobility kit with links to tools and methods for each stage
Pappers, J., Keserü, I., and Macharis, C., 2020. Co-creation or public participation 2.0? An assessment of co-creation in transport and mobility research. *Towards User-Centric Transport in Europe 2: Enablers of Inclusive, Seamless and Sustainable Mobility*, pp.3-15.

Tatum, K., Cekic, T., Landwehr, A., Noennig, J., Knieling, J., and Schroeter, B., 2020. Co-creation of local mobility solutions: Lessons from the mobility lab in Hamburg-Altona. *Towards User-Centric Transport in Europe 2: Enablers of Inclusive, Seamless and Sustainable Mobility*, pp.16-27.
Pappers, J., Keserü, I., and Macharis, C., 2021. Participatory evaluation in transport planning: the application of Multi-Actor Multi-Criteria Analysis in co-creation to solve mobility problems in Brussels. *In Transport in Human Scale Cities* (pp. 216-230). Edward Elgar Publishing.
Puerari, E., De Koning, J. I., Von Wirth, T., Karré, P. M., Mulder, I. J., and Loorbach, D. A., 2018. Co-creation dynamics in urban living labs. *Sustainability*, 10(6), p.1893.

REAL LIFE EXAMPLE: LOOPER

The Learning Loops in the Public Realm (LOOPER) project developed a co-creation toolkit (accessible at www.looperproject.eu) and provides practical advice on how to implement the different stages of the co-creation process with examples from Manchester, Brussels and Verona. They also produced a brief overview document.

4. Deliberative Forums

Author: Alevgul H. Sorman (alevgul.sorman@bc3research.org), Basque Centre for Climate Change, Spain

Deliberative forums are spaces where a topic is brought up in a way that invites participants to carefully contemplate lock-ins, actions, and strategies forward to a problem in a constructive manner. In the context of climate-energy-mobility, topics may cover reducing dependence on fossil fuels, promoting alternative modes of transportation, just renewable energy transitions or climate mitigation/adaptation strategies. Forums are typically kept small and can either consist of a range of actors or a specific group of participants with knowledge on particular issues.

DELIBERATIVE FORUMS AT-A-GLANCE

· Provides a space for informed and structured discussion among diverse or select actors.
· Requires good facilitation and willingness from participants to deliberate.

Benefits

1. Increases participation in social change in an easy to implement and potentially low-cost way.
2. Can support the acceptance of public policies through agency and ownership.
3. By including a diversity of opinion in a constructive manner, can generate increased understanding, trust and social cohesion.
4. Demonstrates the value of informed and respectful deliberation as an objective and process in itself without the need of reaching a consensus.

Challenges and limitations

1. **Good facilitation:** Balancing interests and power relations between participants is needed, otherwise some topics or voices may dominate.
2. **Participation:** There is a risk of participants bringing their existing biases; lack of willingness of participants to take different points into account may also lock certain discussions in.
3. **Ensuring impact:** If not binding or linked beforehand to specific public policy outcomes, deliberation results may only have a limited impact.
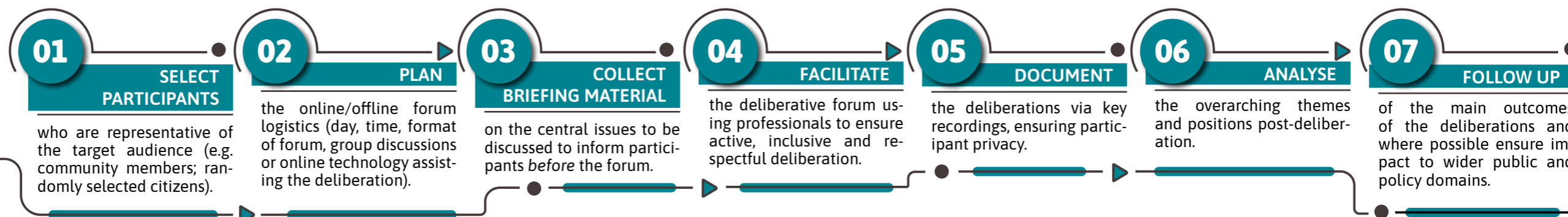
Participants

Types of Forums include: (1) Community Forums for engaging with residents and (2) Deliberative Mini-Publics where a group of citizens develop policy recommendations. Forums can range between 8-12 participants who are affected by the topic of focus (although larger groups can be involved if you have several facilitators). Participants can be of all ages (usually adult), backgrounds, and genders with either a focus on diversity , or representative of a specific target audience e.g. with knowledge on particular issues. Mini-publics should target a representative sample of the population, randomly selected.

STEPS

Deliberative Forums do not have set guidelines, however suggested steps consist of:

In addition, a pre- and post-forum survey may optionally be conducted to observe whether having an opportunity to deliberate with others changes participants' perceptions.

01 SELECT PARTICIPANTS who are representative of the target audience (e.g. community members; randomly selected citizens).

02 PLAN the online/offline forum logistics (day, time, format of forum, group discussions or online technology assisting the deliberation).

03 COLLECT BRIEFING MATERIAL on the central issues to be discussed to inform participants *before* the forum.

04 FACILITATE the deliberative forum using professionals to ensure active, inclusive and respectful deliberation.

05 DOCUMENT the deliberations via key recordings, ensuring participant privacy.

06 ANALYSE the overarching themes and positions post-deliberation.

07 FOLLOW UP of the main outcomes of the deliberations and where possible ensure impact to wider public and policy domains.

The **OECD Good Practice Principles for Deliberative Processes for Public Decision-Making** (link below) encourages: (i) defining a neutral and clear task purpose, (ii) being accountable that deliberation outcomes impact public decision-making, (iii) being transparent and public, (iv) being inclusive, (v) being representative, (vi) being informative, giving participants equal access to evidence, (vii) ensuring group deliberation, (viii) giving enough time for deliberation, (ix) ensuring integrity, (x) ensuring participant privacy (GDPR), (xi) evaluating post activity.

Timeframe: Deliberative Forums can take place across a day or two, or span several weeks, with planning and analysis needed before and after this.

OUTCOMES AND IMPACT

Depending on the specific goals, Deliberative Forums may result in direct policy recommendations and/or action plans at the community level. Overall they add to improved understanding, capacity building and collective communication.

Having spaces to deliberate in is linked to increased community engagement and opening up processes for more democratic participation and social change. For participants, deliberation may lead to increased awareness, knowledge and capacity building.

ONLINE/OFFLINE

Cost, time, and geographical coverage are important factors in judging whether to hold deliberations face-to-face or virtually. Offline (face-to-face) deliberations have the possibility of establishing intimacy, connections, and trust. Online (virtual) meetings have the advantage of reaching a wider geographical scope, however, have the trade-off of losing computer illiterate/inaccessible audiences.

RESOURCES NEEDED

Facilitation skills are the most critical, in addition organisers may need technical infrastructure for data collection, and/or software for data analysis.

LEARN MORE +

https://www.oecd.org/gov/open-government/good-practice-principles-for-deliberative-processes-for-public-decision-making.pdf - Short flyer which outlines 11 principles for deliberative processes
https://participedia.net/method/4345 - Method: Deliberative Forum
Escobar, O., and Elstub, S., 2017. Forms of mini-publics: An introduction to deliberative innovations in democratic practice. *Research and Development Note*, 4 (1-14).
Fishkin, J., 2009. *When the People Speak: Deliberative Democracy and Public Consultation.* Oxford: OUP.
OECD, 2020. *Innovative Citizen Participation and New Democratic Institutions: Catching the Deliberative Wave.* Paris: OECD Publishing.

REAL LIFE EXAMPLE: SEARBO project

This three-day forum in the Philippines deliberated on disinformation and the spread of "fake news" regarding the 2022 elections. It involved 26 randomly selected Filipinos and came up with recommendations on a near-consensus See SEARBO repor for more.

5. Horizon Scanning: Delphi Exercises

Authors: Chris Foulds (chris.foulds@aru.ac.uk), Anglia Ruskin University, UK; Rosie Robison, Anglia Ruskin University, UK; Ami Crowther, Anglia Ruskin University, UK

Horizon Scanning is a foresight approach that identifies priorities for future policy, practice, or research. There are a range of Horizon Scanning methods from literature reviews to expert panels, workshops and interviews. What binds these methods together is drawing on expert knowledge, to seek out cutting-edge directions. This infosheet specifically looks at Delphi Exercises, which have been increasingly used to source, develop, negotiate, and build consensus. By returning multiple times to the same group of experts – often through a survey – recommendations are refined.

HORIZON SCANNING AT-A-GLANCE

- **Co-creates expert recommendations for policy, practice or research. Iterative nature deepens findings and supports mutual learning amongst invited participants.**
- **Requires survey software, virtual or physical meeting space, organisational and people management skills.**

Benefits

1. Establishes expert-derived evidence on strategic priorities, e.g. to guide future investment in research or for public policy interventions.
2. Identifies emerging opportunities and risks, as well as critical knowledge gaps that need filling.
3. Provides clear signposting for action, which is especially important when dealing with complex societal challenges.
4. Ensures a proactive, anticipatory approach, as opposed to reactively waiting for problems.
5. Highlights where consensus amongst expert stakeholders can be more easily attained.

Challenges and limitations

1. **Traditional focus on consensus means** that (inevitable) differences and tensions in expert positions can be underrepresented (although there are some examples where divergence has been embraced).
2. **Achieving sign-off** will require the coordinating team to manage their experts appropriately to ensure they feel comfortable with the final Horizon Scan output.
3. **Considerable organisational work**, e.g. chasing individuals for responses at every part of the Delphi process to avoid or mitigate delays.

Participants

The intended purpose of the Horizon Scan dictates participants. For example, researchers should be included if the purpose is to present researcher priorities for policymaker/funders to consider. Horizon Scanning has traditionally focused on professional expertise, and thus been invitation-only exercises. However, we argue they could be legitimately broadened to involve citizens, as part of including more everyday expertise. The method can be used by (and/or involve) decision-makers to inform future directions.

STEPS

There are a range of ways of implementing a Delphi Exercise, and, in fact, the exact implementation has rarely been detailed. Foulds et al. (2019, section 3.3) gives the following possible steps:

01 PRODUCE TERMS OF REFERENCE
Establish scope, agree on key definitions and target communities.

02 SELECT WORKING GROUP (WG) MEMBERS
We suggest selecting 25-30 members to: lock-in certain expert perspectives and guarantee gateways for wider input. Inclusivity targets are crucial, e.g. gender, geography, seniority, disciplines, policy experience.

03 SOLICIT RECOMMENDATIONS
All WG members complete first online Delphi survey, providing 5+ recommendations in response to a stated question. Each member sends survey to 10+ colleagues.

04 EDIT AND CATEGORISE
Merge or disaggregate submitted recommendations; delete irrelevant ones; edit language for clarity; anonymise.

05 WORKING GROUP VOTE
Longlist of recommendations is circulated to the WG for evaluation, e.g. voting on a scale of 1 (definitely exclude) to 5 (definitely include).

06 GROUP MEETING(S)
The voting will lead to a set of preferred recommendations, and some areas that need discussion. A workshop enables all WG members to directly annotate/edit emerging recommendations.

07 FRAME THE HORIZON SCAN
A second WG workshop could be arranged to discuss a common mission statement; identify critical gaps; cluster sets of recommendations.

08 WRITE FINAL REPORT
The exercise depends on shared ownership (e.g. co-authorship), thus all WG members should sign-off on the final write-up led by the coordinating team.

Timeframe: due to the time needed to obtain responses as well as robustly edit and ensure internal quality assurance it is likely to take a full year to get a high-quality Horizon Scan.

OUTCOMES AND IMPACT

The final output is the Horizon Scan itself, which is a set of recommendations; these could be research questions that need answering/funding, or precise policy interventions that need urgent consideration. Horizon Scans are often made up of a number of recommendations, e.g. "100 priorities", grouped around common themes. Decision-makers (the key actors to deliver impact) can engage with Horizon Scans in different ways. For example, a Horizon Scan could be submitted to decision-makers at the end of the exercise ('inform'); decision-makers could be engaged for validation or review purposes in the latter stages ('consult'); or decision-makers could be involved in the central expert group throughout ('involve').

RESOURCES NEEDED

Survey software to speed up the process of gathering Working Group member (and wider community) recommendations; Spreadsheet software to clean and analyse survey responses; Physical/virtual spaces for group meeting(s); Good organisational and people management skills to ensure timely responses and that disagreements are constructively negotiated.

ONLINE/OFFLINE

The most important element is to bring participants together at some point to discuss and negotiate the emerging recommendations – this can be done virtually or physically.

LEARN MORE

Foulds, C., Bharucha, Z.P., Krupnik, S., de Geus, T., Suboticki, I., Royston, S. and Ryghaug, M., 2019. *An approach to identifying future Social Sciences & Humanities energy research priorities for Horizon Europe: Working Group guidelines for systematic Horizon Scanning*. Cambridge: Energy-SHIFTS.

Sutherland, W.J., Fleishman, E., Clout, M., Gibbons, D.W., Lickorish, F., Peck, L.S., Pretty, J., Spalding, M. and Ockendon, N., 2019. Ten years on: A review of the first global conservation horizon scan. *Trends in ecology & evolution*, 34(2), pp.139-153. Note: This group has led 14 annual Horizon Scans to identify issues of concern for global biological conservation.

REAL LIFE EXAMPLE: Energy-SHIFTS

This EU Horizon2020 project ran four Horizon Scanning exercises to identify 100 priority Social Sciences and Humanities questions for each of the following policy areas: Renewables; Smart Consumption; Energy Efficiency; and, Transport and Mobility. A video on What is Horizon Scanning? was also produced by the project.

6. Living Labs

Author: Helena Duchkova (duchkova.h@czechglobe.cz), The Global Change Research Institute of the Czech Academy of Sciences, Czech Republic

Living Labs involve conducting research activities in a real-life environment. They provide interaction spaces where participants collaborate on new technologies, services, products, or systems. Living Labs are becoming a popular way to address societal challenges and have been used in various domains such as urban development, mobility, education, and sustainability. The format Living Labs take is widely interpreted: some are heavily co-creative, whereas others focus on testing research-led approaches or moving innovations beyond laboratories and academia.

LIVING LABS AT-A-GLANCE

- Aim to tackle real-life issues in the context of participants' lives, usually through a co-ownership approach; this can lead to better outcomes.
- Highly variable in format, and may require tailored equipment, as well as scientific, human interaction, and management skills.

Benefits

1. Tackles complex real-life issues, using data from a real application context.
2. May identify unexpected market opportunities and ways to tailor products/services to specific needs.
3. Can promote sustainable practices and technologies by involving final users in innovation creation and testing processes.
4. Versatile tool to empower communities, help refine new policies and support evidence-based decision-making whilst providing a learning environment for diverse stakeholders.

Challenges and limitations

1. **Resource intensive** to ensure full consideration of factors within the real-life environment context, and the technologies or solutions being tested may of course fail.
2. **Limitations in generalising** the findings from one (localised) Lab.
3. **Possible selection bias** towards certain stakeholder groups.
4. **Ethical concerns** related to privacy, data protection and conflicts of interest need to be considered from the outset.
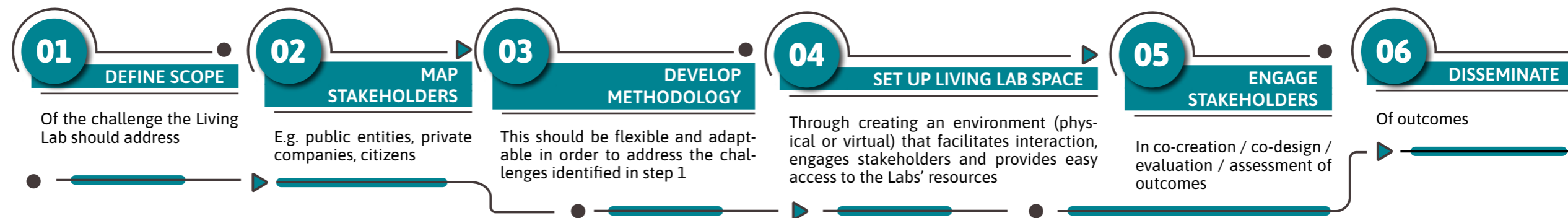
Participants

Living Labs are very widely interpreted and thus have been used to target a wide range of stakeholder groups, depending on their specific purpose. These can be researchers, policymakers, public organisations, businesses, end-users, communities, and others who are encouraged to collaborate on a problem, establish a common ground and gain benefits. The number of stakeholder groups and total participants can, similarly, vary significantly.

STEPS

Whilst there are many approaches for the implementation of a Living Lab, general steps include:

01 DEFINE SCOPE
Of the challenge the Living Lab should address

02 MAP STAKEHOLDERS
E.g. public entities, private companies, citizens

03 DEVELOP METHODOLOGY
This should be flexible and adaptable in order to address the challenges identified in step 1

04 SET UP LIVING LAB SPACE
Through creating an environment (physical or virtual) that facilitates interaction, engages stakeholders and provides easy access to the Labs' resources

05 ENGAGE STAKEHOLDERS
In co-creation / co-design / evaluation / assessment of outcomes

06 DISSEMINATE
Of outcomes

Timeframe: *Highly variable, from short-term user testing of a specific new technology to ongoing Labs with no set end date*

OUTCOMES AND IMPACT

One way to categorise the outcome of a Living Lab is by the innovation driver: **Utiliser-driven** generates new knowledge for a product and/or business development (e.g. sustainable transportation solutions designed via user preferences and behaviour); **Enabler-driven** results in a shift to a preferred direction in a strategy (e.g. sustainable urban planning that promote sustainable living environments); **Provider-driven** creates new knowledge to support the development of operations within a living lab (e.g. development of new protocols to better engage stakeholders); **User-driven** develops solutions to users' everyday-life problems (e.g. testing and validation of new energy-efficient technologies).

Living Labs can aim to have an impact on individuals, local communities, national governments, international policies and beyond, depending on a specific purpose.

ONLINE/OFFLINE

Living Labs can be organised in a physical space (e.g. a city) but can also have discussion facilitated in an online environment (e.g. collaboration via online platforms, digital simulations).

RESOURCES NEEDED

Equipment needed depends on the purpose of the Living Lab, and can range from 'low-tech' flipcharts through to simulation software to smart home devices. Organisational skills, scientific skills (data collection, processing, analysis), facilitation skills, communication skills, human interaction and management, and project management are also required. Finally, access to the networks of stakeholders relevant to the Living Lab topic either needs to be in place, or be developed at the start.

LEARN MORE +

European Network of Living Labs - An umbrella organisation for living labs around the world

Hossain, M., Leminen, S. and Westerlund, M., 2019. A systematic review of living lab literature. *Journal of Cleaner Production* 213, pp.976–988

Schäpke, N., Bergmann, M., Stelzer, F., Lang, D., J. 2018. Labs in the Real World. *GAIA - Ecological Perspectives for Science and Society*, 27(1), pp. 8-11

REAL LIFE EXAMPLE: WRI

The World Resources Institute (WRI) Living Lab for Equitable Climate Action is supporting justice-centred behavioural policies and practices, and quantifying population-level behaviour change impacts in transport, energy, and food choices in Mexico, India and the US.

7. Multi-Actor Multi-Criteria Analysis

Author: Geert te Boveldt (geert.te.boveldt@vub.be), Vrije Universiteit Brussel, Belgium

The Multi-Actor Multi-Criteria Analysis (MAMCA) method is a way of evaluating several project or policy options through taking stakeholder preferences explicitly into account. MAMCA is an extension of Multi-Criteria Analysis (MCA), differing from the latter by explicitly introducing stakeholders before the criteria and weights are defined. Through encouraging stakeholders to reflect on what they want and the rationales behind this, MAMCA facilitates reaching consensus. Online software is available to conduct the evaluation.

MAMCA AT-A-GLANCE

- **Makes synergies and conflicts between stakeholder preferences explicit (and quantified) to aid decision making.**
- **Requires MAMCA software (www.mamca.eu), and rigorous analysis requires resources and thematic experts in order to operationalise.**

Benefits

1. Better-informed decisions through the inclusion of multiple sources of knowledge.
2. Can increase support for those decisions among stakeholders.
3. Fosters problem ownership and learning among stakeholders.
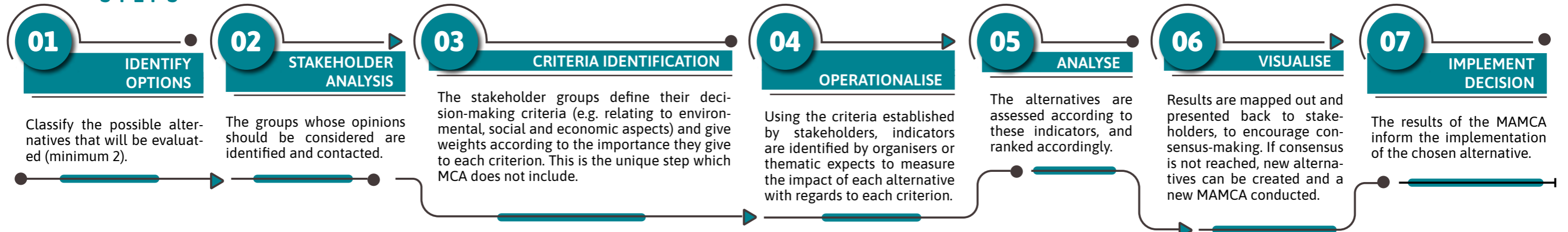
Challenges and limitations

1. **Data availability:** Like any model, accuracy of outputs depends on quality of inputs, but high-precision data on impacts can be difficult or costly to find.
2. **Participation:** engaging a representative sample of participants can be hard and participants may struggle to assign weights to impact factors.
3. **Exploring why:** Care must be taken to not blindly follow the outcome and instead unpick why certain solutions rank high or low.
4. **Conflict:** MAMCA itself is not a conflict-solving tool and a willingness to co-operate is required.

Participants

MAMCA can be used by anyone confronted with multi-stakeholder problems, in particular (local) governments, academics or consultants. As participants, any stakeholder relevant to the project can be included, such as citizen or business interest groups or political actors. MAMCA has most added value in problems with more than three stakeholders. For a rigorous assessment, experts are needed to provide factual input.

STEPS

01 IDENTIFY OPTIONS
Classify the possible alternatives that will be evaluated (minimum 2).

02 STAKEHOLDER ANALYSIS
The groups whose opinions should be considered are identified and contacted.

03 CRITERIA IDENTIFICATION
The stakeholder groups define their decision-making criteria (e.g. relating to environmental, social and economic aspects) and give weights according to the importance they give to each criterion. This is the unique step which MCA does not include.

04 OPERATIONALISE
Using the criteria established by stakeholders, indicators are identified by organisers or thematic expects to measure the impact of each alternative with regards to each criterion.

05 ANALYSE
The alternatives are assessed according to these indicators, and ranked accordingly.

06 VISUALISE
Results are mapped out and presented back to stakeholders, to encourage consensus-making. If consensus is not reached, new alternatives can be created and a new MAMCA conducted.

07 IMPLEMENT DECISION
The results of the MAMCA inform the implementation of the chosen alternative.

Timeframe: The time needed for data collection and stakeholder analysis ranges from several hours to several weeks depending on the scope and depth.

OUTCOMES AND IMPACT
MAMCA results in a ranking of decision options for each stakeholder, which can provide a valuable base for negotiation. As the method is intended to foster better-informed decision making, the scope of the impact is potentially as large as the scope of the project in which it is applied.

RESOURCES NEEDED
MAMCA software is available online to support the process (www.mamca.eu). Skills required are basic digital literacy and familiarity with charts and numbers. If the aim is a rigorous assessment, factual information or data and experts with knowledge of the field are needed to assign the performance scores.

ONLINE/OFFLINE
MAMCA can be run fully online using MAMCA software, but in-person workshops are helpful for guiding participants.

LEARN MORE +

Macharis, C., Turcksin, L., and Lebeau, K., 2012. Multi actor multi criteria analysis (MAMCA) as a tool to support sustainable decisions: State of use. *Decision Support Systems*, 54(1), pp.610–620.
Keserü, I., Bulckaen, J., and Macharis, C., 2016. The multi-actor multi-criteria analysis in action for sustainable urban mobility decisions: The case of Leuven. *International Journal of Multicriteria Decision Making*, 6(3), pp.211–236.

REAL LIFE EXAMPLE: LOOPER

MAMCA was applied in the LOOPER project to assess different solutions to mobility problems in Brussels from the perspectives of transport operators, NGOs, citizens, and authorities.

8. Participatory Knowledge Mapping

Author: Luciano d'Andrea (dandrea@knowledge-innovation.org), Knowledge & Innovation, Italy

Participatory Knowledge Mapping (PKM) refers to approaches aimed at visualising (through diagrams, graphs, workflows, tables, images, or geographical maps) the relationships and issues within an organisation or community. This visualisation is achieved using participatory mechanisms such as workshops, interviews, or deliberative meetings. PKM can also be referred to as Participatory Modelling, Group Model Building, Participatory Mapping, or Participatory System Mapping. It is often used in development contexts.

PKM AT-A-GLANCE

- **Fosters cooperation and the combining of different kinds of knowledge** by helping participants showcase what they know, and shape a shared view of them.
- **Requires inclusive facilitation skills** as well as resources to manage the chosen visualisation techniques.

Benefits

1. Identifies existing knowledge assets (experts, practices, documents, etc.) and helps visualise and transfer this knowledge, as well as flagging up future knowledge needs.
2. Provides a methodological basis allowing different kinds of knowledge (scientific, professional, experiential, political, emotional, etc.) to interact. Resulting conceptual frameworks can be used in planning or evaluation.
3. Can suggest cause-effect relations among factors contributing to a problem or situation.
4. Increases mutual understanding and creates common ground among participants, favouring the involvement of marginalised groups.
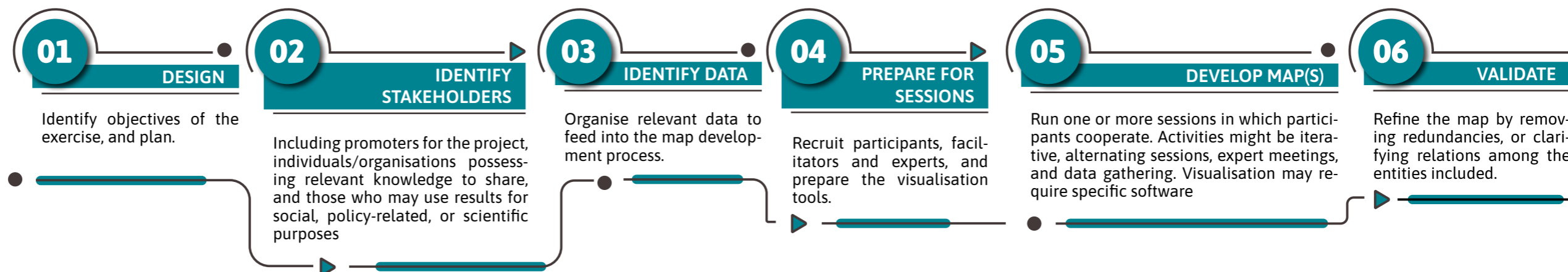
Challenges and limitations

1. **Valuing all types of knowledge** (both scientific and lay) as relevant to the problem in hand.
2. **Ensuring stakeholder participation** is willing and motivated, including agreement among the participants on the overarching goals of PKM.
3. **Inclusive facilitation** to manage any tensions among participants and prevent the dominance of some or marginalisation of others.

Participants

As many as possible of the stakeholders relevant to the topic(s) the PKM is dealing with should be involved (for example students, women in an organisation, farmers, inhabitants of a neighbourhood or rural area, etc.) as well as experts and researchers. Individual sessions usually involve a maximum of 20 participants

STEPS

Whilst PKM exercises vary according to aims, stakeholders, context, visualisation tools, etc., six main steps can be identified:

01 DESIGN
Identify objectives of the exercise, and plan.

02 IDENTIFY STAKEHOLDERS
Including promoters for the project, individuals/organisations possessing relevant knowledge to share, and those who may use results for social, policy-related, or scientific purposes

03 IDENTIFY DATA
Organise relevant data to feed into the map development process.

04 PREPARE FOR SESSIONS
Recruit participants, facilitators and experts, and prepare the visualisation tools.

05 DEVELOP MAP(S)
Run one or more sessions in which participants cooperate. Activities might be iterative, alternating sessions, expert meetings, and data gathering. Visualisation may require specific software

06 VALIDATE
Refine the map by removing redundancies, or clarifying relations among the entities included.

Timeframe: A PKM exercise can take from 3 days to several months, depending on the level of complexity (e.g. number of people, kinds of issues considered, or methodologies used in map development)

OUTCOMES AND IMPACT

A key tangible outcome is the maps developed which may include **geographical maps** (connecting knowledge items to specific areas of a given territory), **organisational maps** (identifying knowledge items held by specific individuals or units in an organisation) or **conceptual or interpretive maps** (organising knowledge items using concepts like causes, effects, risks, or benefits). Ideally these are of direct use to the participants of the PKM exercise. There are four main types of resultant impact: Information sharing; Awareness-raising; Cohesion building; Knowledge co-creation.

RESOURCES NEEDED

The simplest PKM exercises can be implemented with limited resources (flip charts, one room, etc.). The complexity increases with the number/type of sessions and participants, and the use of visualisation software (for mapping and management ideas, for managing geospatial data, etc.).
Facilitators of PKM sessions, as well as the capacities normally required (leadership, active listening, etc.), should be knowledgeable of the PKM and the techniques applied. Support from experts on PKM is needed.

ONLINE/ OFFLINE

PKM exercises can be done both online and offline. The visualisation should be supported with online project collaboration software in the former case.

LEARN MORE +

Eppler, M. J., 2006. Toward a pragmatic taxonomy of knowledge maps. In Tenth Int' Conf. on Information Visualisation (IV'06) (pp. 195-204). IEEE.

Evans, W., and Beutler, J., 2018. Participatory Mapping Toolkit: A Guide for Refugee Contexts. Humanitarian OpenStreetMap Team.

Gerritsen, S., Harré, S., Rees, D., Renker-Darby, A., Bartos, A. E., Waterlander, W. E., and Swinburn, B., N2020. Community group model building as a method for engaging participants and mobilising action in public health. International journal of environmental research and public health, 17(10), 3457.

Matti, C., Martín Corvillo, J.M., Vivas Lalinde, I., Juan Agulló, B., Stamate, E., Avella, G., and Bauer dA., 2020. Challenge-led system mapping. A knowledge management approach. Transitions Hub series. Brussels: EIT Climate-KIC.

REAL LIFE EXAMPLE: IFAD

The International Fund for Agricultural Development (IFAD) has produced a Good Practices Guide which draws on work supporting communities in Angola, Kenya, Madagascar, Mali, Mozambique, Peru, the Philippines, Sudan, and Tunisia.

9. Serious Games

Authors: Christian A. Klöckner (christian.klockner@ntnu.no); Kristoffer S. Fjællingsdal, Norwegian University of Science and Technology, Norway

Serious Games are games in a broad sense with a serious topic, where the intention is to create not only game enjoyment but also a learning experience. Typically, Serious Games are designed to teach citizens about complex, systemic topics such as climate change. Serious Games include all forms of games, including computer games, board games, card games, role-plays, games in Virtual Reality or any other form of learning experience that includes game elements.

SERIOUS GAMES AT-A-GLANCE

- **Facilitate experiential learning, are creative, and can be social.**
- **Require proper equipment, hardware, and/or software, (possibly) internet connection, (possibly) previous gaming experience.**

Benefits

1. Allow safe, experiential learning.
2. Can make complex systems more accessible, e.g. creating an experience about a global problem for a small and local group.
3. Enjoyable, immersive, creative and social.
4. Generate new insights into problems, for example for decision makers.

Challenges and limitations

1. **Lack of knowledge transfer:** An obvious risk is that they are experienced as 'just games' so direct knowledge transfer from the game to real-life is rare.
2. **Difficult to design:** Developing good, deep, and entertaining games is no easy task and requires the professional input of game designers.
3. **Assume simplification is possible:** The assumption that highly complex topics can be presented to players in an easily understandable manner is not always the case.
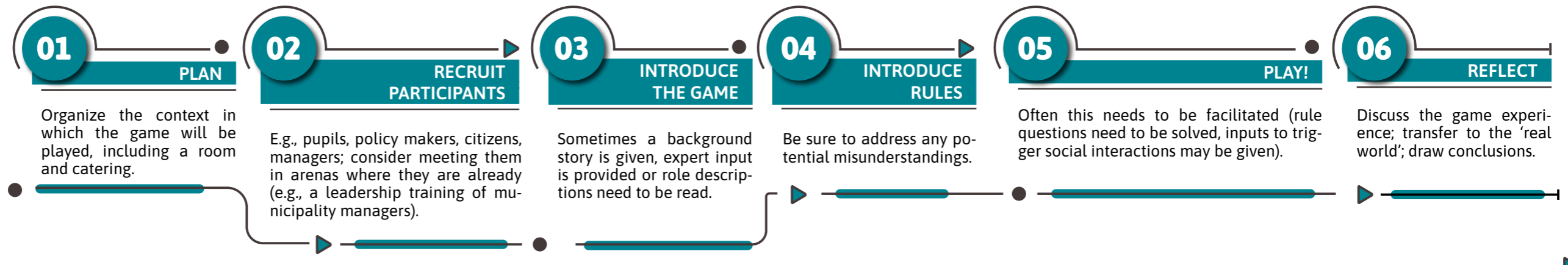
Participants

Serious Games can be applied to any target group that can understand the game rules. Often, they are played with children, adolescents, and young adults following the assumption that younger people respond better to play and game elements. This target group is not exclusive, as older people can also be engaged with Serious Games. A certain game literacy of the target group often makes the introduction of the games easier, and some Serious Games have a non-trivial language component or highly advanced rules. Most Serious Games target between 3 and 10 players, but there are exceptions of games that can be played alone or in larger groups.

STEPS

The implementation of serious games is as diverse as the games that are available. A typical implementation could look like this:

01 PLAN
Organize the context in which the game will be played, including a room and catering.

02 RECRUIT PARTICIPANTS
E.g., pupils, policy makers, citizens, managers; consider meeting them in arenas where they are already (e.g., a leadership training of municipality managers).

03 INTRODUCE THE GAME
Sometimes a background story is given, expert input is provided or role descriptions need to be read.

04 INTRODUCE RULES
Be sure to address any potential misunderstandings.

05 PLAY!
Often this needs to be facilitated (rule questions need to be solved, inputs to trigger social interactions may be given).

06 REFLECT
Discuss the game experience; transfer to the 'real world'; draw conclusions.

Timeframe: *Playing a sophisticated Serious Game (often including an introduction session beforehand and a wrap-up session afterwards) generally takes a couple of hours for the participants, plus the time required for planning the sessions and recruiting participants. There are some Serious Games, however, that run for days or even weeks (played over several sessions).*

OUTCOMES AND IMPACT

Serious Game sessions often lead to a better understanding of complex mechanisms or dilemmas. Gaming contexts allow for trying out extreme and radical solutions without risks connected to the real world. Furthermore, the social context of the experience allows for collective solution development, and the agency of the player allows them to feel the impact of their own actions on the game world.

RESOURCES NEEDED

The resources required to develop a new Serious Game should not be underestimated. Designing a good and entertaining, yet at the same time educational and accurate game experience is not trivial. However, many already exist and can be adapted for alternative themes. The required equipment depends on the game and may include computer hardware / software (some games require a rather complicated network setup). Other games just require the materials that come with them. Usually - but not always - a room is needed to play the game in and catering is recommended to create a relaxed atmosphere.

ONLINE/OFFLINE

Both online, offline, and hybrid versions of Serious Games exist. Game implementation needs to be carefully tailored to the target group and the issue that is being explored.

LEARN MORE +

Fjællingsdal, K.S., and Klöckner, C.A., 2019. Gaming green: the educational potential of eco–a digital simulated ecosystem. *Frontiers in Psychology*, 10, p.2846.

Fjællingsdal, K.S., and Klöckner, C.A., 2020. Green across the board: Board games as tools for dialogue and simplified environmental communication. *Simulation & Gaming*, 51(5), pp.632-652.

Pflanzl, N., Classe, T., Araujo, R. and Vossen, G., 2017. Designing serious games for citizen engagement in public service processes. In *BPM 2016 International Workshops, Rio de Janeiro, Brazil, September 19, 2016, Revised Papers 14* (pp. 180-191). Springer International Publishing.

REAL LIFE EXAMPLE: ECO

Eco is a best practice example of a sophisticated and positively received online Serious Game about the environment. Some environmental games (e.g. Fate of the World) address climate issues holistically, whereas Eco focuses on more specific environmental topics such as biodiversity.

10. Stakeholder-based Impact Scoring

Author: Geert te Boveldt (geert.te.boveldt@vub.be), Vrije Universiteit Brussel, Belgium

Stakeholder-based Impact Scoring (SIS) is a participatory assessment method aimed at predicting the impact of a policy or project prior to its implementation by quantifying and visualising the negative and positive impacts on stakeholders. It leads to 'impact scores' based on objective assessments of effects from data or expert views, and the subjective weighting of these effects by the affected stakeholders. SIS is especially helpful when a decision is not about choosing the 'best' option, but about modifying and mitigating a project throughout the course of its implementation.

SIS AT-A-GLANCE

- **Supports decision making, impact assessment and inter-stakeholder learning.**
- **Requires time to contact stakeholders and basic mathematical / spreadsheet skills as well as thematic experts to determine performance scores.**

Benefits

1. Supports decision making and inter-stakeholder learning by providing insights into the impacts of projects and policies and the distribution of benefits and burdens.
2. Provides an alternative to cost-benefit analysis by disaggregating impacts to specific stakeholder groups and does not require a translation of effects into financial terms.
3. Does not require an exhaustive set of mutually exclusive decision alternatives, but only one option and a do-nothing scenario (as opposed to Multi-Criteria Analysis).

Challenges and limitations

1. **Data availability:** Like any model, accuracy of outputs depends on quality of inputs, but data for performance scores can be hard to find and will always be an estimate.
2. **Participation:** engaging a representative sample of participants can be hard and participants may not easily be able to identify or weight all impact factors.
3. **Interpreting output:** *SIS is a tool to explore impacts, it does not 'tell' you what the impact of different options definitely will be.*

Participants

SIS can be used by anyone confronted with multi-stakeholder problems, in particular (local) governments, academics or consultants. As participants, any stakeholder relevant to the project can be included, such as citizen or business interest groups or political actors. SIS has most added value in problems with more than three stakeholders. For a rigorous assessment, experts are needed to provide factual input.

STEPS

01 IDENTIFY OPTIONS
Determine your decision alternative(s) and the do-nothing scenario.

Timeframe: SIS can be done in a few hours in a workshop setting with approximate data, which is good for exploring a problem, but a rigorous impact analysis requires several weeks for data collection and surveys among larger number of participants.

02 IDENTIFY STAKEHOLDERS
Determine which groups are/would be affected by the project.

03 IDENTIFY IMPACT FACTORS
These are factors via which the stakeholders would be affected by each of the options, e.g. noise level or visual impact. Factors can be proposed by the organiser or participants, but the organiser must ensure minimum ambiguity and overlap between the factors.

04 DETERMINE PERFORMANCE SCORES
Describe how each option will perform on each factor and assign a score to the extent to which the effect is negative or positive (typically between -1 and +1). For a rigorous assessment this is done by thematic experts, but for exploratory purposes approximate data can be used.
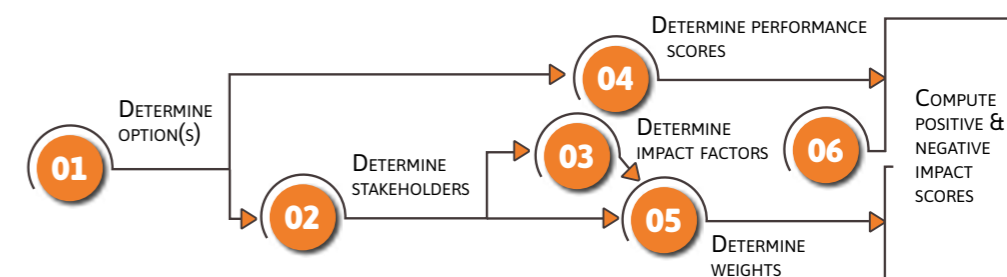
05 STAKEHOLDER ASSESSMENT
Stakeholder groups assess how important each impact factors is to them by assigning weights, in a workshop or via a survey.

06 COMPUTE IMPACT SCORES
Scores for each stakeholder are determined by multiplying the performance scores with the weights. Can be visualised in various ways.

Determine option(s) → 01
Determine stakeholders → 02
Determine impact factors → 03
Determine performance scores → 04
Determine weights → 05
Compute positive & negative impact scores → 06

OUTCOMES AND IMPACT
SIS results in an overview of positive and negative impacts on the relevant stakeholders, exposing the trade-off between the largest upsides and downsides that the decision requires. As the method is intended to foster better-informed decision making, the scope of the impact is potentially as large as the scope of the project in which it is applied.

ONLINE/ OFFLINE
SIS can be run online (Excel template is available; online version is under development) but in-person workshops are helpful for guiding participants.

RESOURCES NEEDED
Use of spreadsheet software such as MS-Excel is recommended and dedicated templates exist. Skills required are basic digital literacy and familiarity with charts and numbers. If the aim is a rigorous assessment, factual information or data and experts with knowledge of the field are needed to assign the performance scores.

LEARN MORE +

Te Boveldt, G., Keseru, I., and Macharis, C., 2022. When monetarisation and ranking are not appropriate. A novel stakeholder-based appraisal method. *Transportation Research Part A: Policy and Practice*, 156, pp.192-205.

REAL LIFE EXAMPLE: MOBRU

An elevated motorway in Brussels is heavily used by commuters, but needs costly renovation. It also generates lots of nuisance for neighbouring residents. Would it be wise to tear it down? How would residents, commuters and transport operators be affected? The MOBRU project explored this problem.
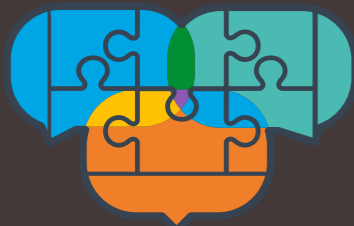
11. Storytelling

Authors: Sara Heidenreich (sara.heidenreich@ntnu.no), Norwegian University of Science and Technology, Norway; Melanie Rohse, Anglia Ruskin University, UK

Storytelling is particularly suited to addressing complex and 'wicked' problems, such as sustainability transitions within energy, climate, and mobility. It brings together stakeholders and/or citizens with different backgrounds, experiences, and points of view and creates an environment for recognition of and learning from the various perspectives represented by the participants. Through facilitation that ensures everyone a voice, storytelling encourages mutual understanding and collective action, but not necessarily a consensus.

STORYTELLING AT-A-GLANCE

- **Facilitates inclusive learning, collaboration, and collective action.**
- **Requires professional facilitation and analytical skills and works best in person.**

Benefits

1. Facilitates inclusive and empathetic dialogue and interaction between different knowledges and perspectives
2. Creates mutual learning and collaboration across disciplines, sectors, and generations
3. Contributes to conflict resolution and agenda-setting, which can support collective action
4. Gives a platform to diverse and often unheard voices
5. Results in rich data sets

Challenges and limitations

1. **Lack of skilled personnel.** Storytelling is demanding and time-intensive and requires people with organisational, moderation and analytical evaluation skills.
2. **Assumption that change will happen.** Stories do not change people's material circumstances, and the impact of storytelling may not be easily measured or necessarily obvious straightaway.
3. **Results are not taken forward.** Organisers should put effort into taking the results further into policy and decision-making so that participants feel that their time and input was worth it.

Participants

Storytelling can be used for various target groups. The participants should represent a diversity of stakeholders and/or citizens and perspectives. The method is best suited to small groups (e.g. 4-6 people), but can be used in larger groups where the storytelling happens in breakout groups.

STEPS

Storytelling can be flexibly adjusted to context. Below is an example implementation (inspired by Mourik et al. 2017):

01 DEVELOP STORY SPINE
Prior to workshop a topic/problem is identified and a template with pre-defined structure to guide participants is developed. Participants are invited.

02 SET THE STORY SCENE
At the workshop, the topic/problem is introduced, tailored to audience and their previous experience with storytelling.

03 INVITE DIVERSITY
Participants write individual stories based on story spine, then tell their stories. Groups discuss commonalities and differences and identify shared challenges.

04 ENVISION
Participants write individual stories about desirable futures based on the challenges identified in step 2. They tell their stories, groups identify conflicts and write one common story about desirable futures where conflicts are sought resolved or highlighted

05 SHARE AND SUMMARISE
Groups share collective stories with each other in plenum or by moving from table to table. Action points/take-home messages are identified.

06 EVALUATE
After the storytelling process, material generated is written up and results provided as input to decision making. Participants should be informed about how their input is used.

Timeframe: The specific method outlined above spans 2+ months with 1-3 weeks needed for preparation (which should start at least 2 months before the workshop), a 1 day workshop, and 2-4 weeks for evaluation. Other forms of storytelling (e.g. creating digital stories) will require different timeframes.

OUTCOMES AND IMPACT

Storytelling generates qualitative data in the form of individual and collective stories and recorded discussions, commonly related to local level topics/problems. These can be used as material for research or as input for practitioners and policymaking, in particular on the local level related to specific projects and problems. Storytelling can provide impact on diverse actors, e.g. policy, publics, scientists, industry, businesses, civil society actors. Its participatory and co-creation nature encourages shared learning.

RESOURCES NEEDED

Physical space with enough rooms, equipment (tables, chairs, papers with story spine, pens, voice recorder) and catering for workshop(s); Good organizational, facilitation and moderation skills; Skills in qualitative social science analysis to ensure high-equality evaluation and input to decision-making.

ONLINE/OFFLINE

Storytelling is preferably carried out face-to-face as interaction and creation of empathy between participants is central. However, with good facilitation it is also possible online

LEARN MORE +

Mourik, R., Robison, R., and Breukers, S., 2017. *Storytelling - SHAPE ENERGY facilitation guidelines for interdisciplinary and multi-stakeholder processes.* Cambridge: SHAPE ENERGY

Mourik, R.M., Sonetti, G., and Robison, R.A.V., 2021. *The same old story – or not? How storytelling can support inclusive local energy policy.* Energy Research & Social Science 73, 101940.

Moezzi, M., Janda, K.B., and Rotmann, S., 2017. *Using stories, narratives, and storytelling in energy and climate change research.* Energy Research & Social Science, 31, pp. 1-10.

REAL LIFE EXAMPLE: SHAPE ENERGY

This EU Horizon 2020 project ran storytelling workshops to unpack the local energy challenges faced by city-level policymakers in 17 European cities. Each workshop used story spines but adapted to its local context and to participants to create a safe environment for conversations.

12. Transformation Labs

Author: Violeta Cabello (violeta.cabello@bc3research.org), Basque Centre for Climate Change, Spain

Transformation Labs* (T-Labs) are long-term multi-actor processes focused on social-ecological change. They have a particular emphasis on just and sustainable transformations, and human-nature connectedness. They typically address complex problems, where people share a sense of urgency but may disagree in their problem understanding. They are a very new tool and have been mostly applied in participatory research projects but could be relevant to any organisation interested in social innovation for environmental problems.

T-LABS AT-A-GLANCE

- **Enable reframing of complex problems, reflexivity and collective agency to foster change.**
- **Require knowledge of participatory processes, creative facilitation and mixed-methods analytical skills, as well as a safe environment.**

Benefits

1. Promote reflexivity on complex social-ecological problems and interconnected causes.
2. Can generate new meanings and shifts in mainstream narratives.
3. Seek to foster individual and collective agency in order to support participants in activating alternative pathways to change.
4. Focuss on a high quality process, rather than judging success on outcome alone.
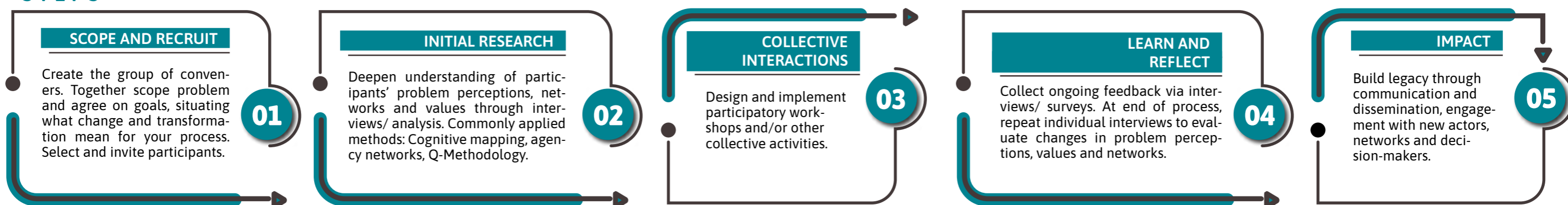
Challenges and limitations

1. **Recruitment:** May not be attractive to participants who expect a direct impact on policies (unless the T-Lab is intentionally targetted at doing so).
2. **Engagement:** Difficulties in achieving long-term engagement, with intermittent participation lessening the possibilities for transformation.
3. **Impact:** The majority of T-Labs to date have prioritised individual and collective transformations, meaning they may achieve low systemic and structural impacts.

Participants

T-Labs gather medium-sized groups (e.g. 10-20 people) of invite-only participants who ideally participate for the full duration of the process so that transformations can be evaluated. Participants should represent diverse perspectives of the problem and have different capacities for action; this means there may be a focus on involving a range of professionals and community leaders. Depending on the context and process goals, diversity is also promoted regarding age, gender, ethnicity, knowledge, background, etc.

STEPS

01 SCOPE AND RECRUIT
Create the group of conveners. Together scope problem and agree on goals, situating what change and transformation mean for your process. Select and invite participants.

02 INITIAL RESEARCH
Deepen understanding of participants' problem perceptions, networks and values through interviews/ analysis. Commonly applied methods: Cognitive mapping, agency networks, Q-Methodology.

03 COLLECTIVE INTERACTIONS
Design and implement participatory workshops and/or other collective activities.

04 LEARN AND REFLECT
Collect ongoing feedback via interviews/ surveys. At end of process, repeat individual interviews to evaluate changes in problem perceptions, values and networks.

05 IMPACT
Build legacy through communication and dissemination, engagement with new actors, networks and decision-makers.

Timeframe:

T-Labs are long-term engagement processes that may last as long as conveners and/or participants are willing to engage. Scoping and preliminary research may take over a year. The collective interaction phase requires 1 year minimum but can expand over several years. Final evaluation requires at least 4-6 months plus communication and public dissemination that may take another 6 months, academic publications aside

OUTCOMES AND IMPACT

T-Labs initiatives build upon a multi-level framework of transformations (individual, collective, systemic and structural). In order to analyse change, T-Labs produce rich qualitative datasets from interviews, surveys and workshops. This approach supports increased impacts for participants and their immediate networks (meaning there is often less focus on policy impact than, for example, Deliberative Forums), however some T-Labs have alternatively targeted impacts at different levels, from local actions to national policy changes.

RESOURCES NEEDED

Knowledge of group dynamics and facilitation skills are required in order to set up the T-Lab and handle relations with and among participants. Qualitative and mixed-methods data analysis and visualisation are needed for process evaluation and interpretation. Complex adaptive systems theory usually underlies the implementation of such methods.

ONLINE/ OFFLINE

T-Labs are primarily designed for in-person interaction, yet online spaces can be accommodated.

LEARN MORE +

Charli-Joseph, L., J. Siqueiros-Garcia, H. Eakin, D. Manuel-Navarrete, and R. Shelton. 2018. Promoting agency for social-ecological transformation: a transformation-lab in the Xochimilco social-ecological system. *Ecology and Society* 23(2):46.

Pereira, L., Olsson, P., Charli-Joseph, L., Zgambo, O., Oxley, N., Van Zwanenberg, P., Siqueiros-Garcia, J.M. and Ely, A., 2021. Transdisciplinary methods and T-Labs as transformative spaces for innovation in social-ecological systems. In *Transformative Pathways to Sustainability* (pp. 53-64). Routledge.

*This infosheet refers to the engagement method developed in particular in the PATHWAYS network and not the business(es) or conference of the same name.

REAL LIFE EXAMPLE: PATHWAYS

The PATHWAYS network has developed and used T-Labs in their work with civil society and policy makers in Argentina, China, Kenya, India, Mexico and the UK to address socio-ecological challenges.

13. Transition Management

Authors: Marianne Ryghaug (marianne.ryghaug@ntnu.no); Susanne Jørgensen; Tomas Moe Skjølsvold, Norwegian University of Science and Technology, Norway

Transition Management (TM) seeks to influence the direction and pace of societal change by enabling new ways of organising, doing, and thinking. It supports actors to move beyond incremental problem solving and engage in transformative change towards desired futures, to stimulate place-based sustainability transitions. A central feature is the establishment of a Transition Arena (TA): a co-creative learning space whose goal is to develop radical ways of thinking. TM seldom aims at broad engagement across society. Rather, TM depends on targeted inclusion of actors who have interests in the transformation in question.

TM AT-A-GLANCE

- **Addresses fundamental changes, gives impulse for local change, contributes to collective empowerment.**
- **Requires substantial planning and resource use, a high level of organisational and scientific skills, and participant commitment.**

Benefits

1. Insight into system dynamics and interlinkages of multiple domains, actors, and scales.
2. Inspire innovation by questioning the status quo and being open to unorthodox ideas and actions.
3. Support change agents who are already adopting alternatives, thereby triggering transitions to a greater extent than starting from vested interests.
4. Catalyse local change inspire new and enhance existing initiatives that contribute to the envisioned future.
5. Collective empowerment enable actors in the chosen locality to tackle challenges and seize opportunities for a sustainable transformation.

Challenges and limitations

1. **Requires detailed planning** and knowledgeable facilitators.
2. **Demanding and time-consuming** approach that is prone to challenges such as lack of volunteer interest and participant drop-out.
3. **Difficulty of documenting effects** which may therefore be interpreted as implementation failure, even when processes are successful.
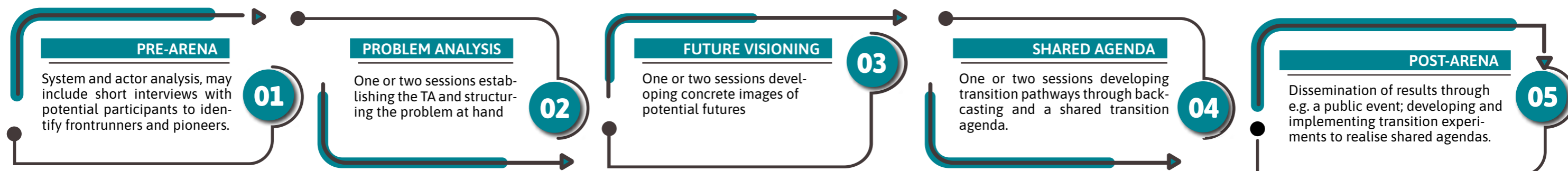
Participants

TM has been applied in energy, healthcare, and water, and on the scale of regions, cities, and neighborhoods. For the method to work well 'problem owners' need to commit to the process (e.g. municipalities, relevant organisation, or owners of a site such as a port). The TA should include frontrunners, pioneers and 'niche players'. It is important to strike a balance between being selective-exclusive (focusing on pioneers) and being broad-inclusive (including a greater diversity of stakeholders).

STEPS

Building on theories of social learning, co-creation and group-facilitation methods, TAs tends to follow a sequence of steps which should be adapted to local conditions and how far progressed the transition is:

These steps should be adapted to local conditions and how far progressed the transition is. Cutting across the steps below, TM seeks to influence via four key dimensions: *Orienting; Agenda-setting; Activating; and Reflecting.*

PRE-ARENA
01
System and actor analysis, may include short interviews with potential participants to identify frontrunners and pioneers.

PROBLEM ANALYSIS
02
One or two sessions establishing the TA and structuring the problem at hand

FUTURE VISIONING
03
One or two sessions developing concrete images of potential futures

SHARED AGENDA
04
One or two sessions developing transition pathways through backcasting and a shared transition agenda.

POST-ARENA
05
Dissemination of results through e.g. a public event; developing and implementing transition experiments to realise shared agendas.

Timeframe: TM and TAs require substantial planning which make them more suited for medium-to-long term initiatives. Each TA (including preparations and dissemination) can last about 9-18 months.

OUTCOMES AND IMPACT

The establishment of a transition agenda is the main tangible outcome of the process. Ideally, TM should increase the capacity of participants to self-organise, including beyond TA activities. This can include a sense of direction, an impulse for local change and collective empowerment. Interviews conducted can give insights into persistent problems, transition possibilities and an understanding of the dynamics and interlinkages of multiple domains, actors, and scales.

RESOURCES NEEDED

High level of: organisational skills; scientific skills related to data collection, data management, analysis and communication; training of TA facilitators, and their commitment and time. Specific equipment needs will be based on TM topic but generally include a robust technical and organisational infrastructure for data collection, data storage, data processing and data analysis. Digital platforms for registration and categorisation of material are beneficial (e.g. Miro and Mentimeter).

ONLINE/OFFLINE

Can be organised as online and/or offline events. Physical events are preferable, and a mix of the two is better than exclusively online. TM often involves participants with busy schedules which can make the logistics challenging, thus online meetings are a suitable part of the mix.

LEARN MORE +

Loorbach, D., and Rotmans, J., 2010. *The practice of transition management: Examples and lessons from four distinct cases. Futures*, 42(3), 237-246.

Roorda, C., Wittmayer, J., Henneman, P, Steenbergen, F. van, Frantzeskaki, N., and Loorbach, D., 2014. *Transition management in the urban context: guidance manual*. Rotterdam: DRIFT, Erasmus University.

Frantzeskaki, N., Hölscher, K., Bach, M. and Avelino, F., 2018. *Co-creating Sustainable Futures. A primer on Applying Transition Management in Cities*. Cham: Springer

REAL LIFE EXAMPLE: TOMORROW

The TOMORROW project produced a workbook on TM for Just and Climate Neutral Cities drawing on their work with six cities implementing participatory governance processes aimed at developing 2050 transition roadmaps.

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K&I Knowledge and Innovation Srls

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